APPENDIX K.1 OPERATING UNIT SAN MATEO (OU-SM) REMEDIAL ACTION PLAN (2 OF 4)

Prepared for

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DATA GAP INVESTIGATION REPORT

SAN MATEO COUNTY PORTION OF UPC OU
BRISBANE, CALIFORNIA

Prepared by

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Project Number: WG2565-04

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Revised 5 August 2019

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San Mateo County Portion of UPC OU
Brisbane, California

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LIST OF ACRONYMS AND ABBREVIATIONS

95%UCL	95% upper confidence limit
µg/kg	micrograms per kilogram
µS/cm	microSiemens per centimeter
AMEC	AMEC Environment and Infrastructure, Inc.
Belshire	Belshire Environmental Services, Inc. of Foothill Ranch, California
bgs	below ground surface
Blaine Tech	Blaine Tech Services of San Jose, California
Caltrain	Peninsula Corridor Joint Power Board
CAM	California Assessment Manual
CARB	California Air Resources Board
Consent Order	Consent Order in the Matter of the Schlage OU and Brisbane Railyard (OU-1)
DTSC	Department of Toxic Substances Control
ELAP	Environmental Laboratory Accreditation Program
ERD	enhanced reductive dechlorination
Fill	A heterogeneous mixture of clay, silt, sand, gravel, and building debris from the 1906 San Francisco earthquake
FS/RAP	Feasibility Study and Remedial Action Plan
ft/ft	feet per foot
Geosyntec	Geosyntec Consultants, Inc.
GPD	gallons per day
GPS	geographic positioning system
GRO	gasoline-range organics
HASP	health and safety plan
IDW	investigation-derived waste
ITC	International Technology Corporation
MACTEC	MACTEC Engineering and Consulting, Inc.

mg/kg	milligrams per kilogram
msl	mean sea level
NAVD88	North American Vertical Datum of 1988
NGVD29	National Geodetic Vertical Datum of 1929
O&M	operation and maintenance
OBM	Old Bay Mud
OBMD	Old Bay Margin Deposit
OBMD-SU	Old Bay Margin Deposit Sand Unit
OCP	organochlorine pesticide
OU	Operable Unit
PAH	polynuclear aromatic hydrocarbon
PaleoWest	PaleoWest Archaeology, Inc.
PCB	polychlorinated biphenyl
Report	Data Gap Investigation Report
RWQCB	San Francisco Bay Regional Water Quality Control Board
SAP/QAPP	Sampling and Analysis Plan and Quality Assurance Project Plan
Schlage	Schlage Lock Company
SCM	Site Conceptual Model
SIM	selective ion monitoring
Site	San Mateo Portion of UPC OU (or UPC OU-SM)
SPTC	Southern Pacific Transportation Company
STLC	soluble threshold limit concentration
Sunquest	Sunquest Properties, Inc.
SVOC	semi-volatile organic compound
TestAmerica	TestAmerica Laboratory, Inc.
TPH	total petroleum hydrocarbon
TPH-d	total petroleum hydrocarbons as diesel
TPH-g	total petroleum hydrocarbons as gasoline

TSCA	Toxic Substances Control Act
Tuntex	Tuntex USA, Inc.
UPC OU-SF	San Francisco Portion of UPC OU
UPC OU-SM	San Mateo Portion of UPC OU
UPC	Universal Paragon Corporation
USA	Underground Service Alert
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds
Work Plan	Final Data Gap Investigation Work Plan for the UPC OU-SM
YBM	Young Bay Mud
YBMD	Young Bay Margin Deposits

1 INTRODUCTION

Geosyntec Consultants, Inc. (Geosyntec) has prepared this Data Gap Investigation Report (Report) for the San Mateo County Portion of the Universal Paragon Corporation (UPC) Operable Unit (OU) (i.e., UPC OU-SM)[1] (the Site). The Site location is shown in **Figure 1**. This Report has been prepared on behalf of Sunquest Properties, Inc. (Sunquest), the owner of the Site,[2] in accordance with the Final DTSC Consent Order in the Matter of the Schlage OU and Brisbane Railyard (OU-1) (Consent Order), Docket Number HAS CO 07/08 185, dated 22 May 2008 [Department of Toxic Substances Control (DTSC), 2008].

The work documented in this Report was completed in accordance with the Final Data Gap Investigation Work Plan for the UPC OU-SM (Work Plan), which was submitted to the DTSC on 15 October 2018 [Geosyntec, 2018b]. The Final Work Plan superseded a Draft Work Plan, which was submitted to DTSC on 20 April 2018 [Geosyntec, 2018a]. DTSC provided comments on the Draft Work Plan in a letter dated 16 July 2018 [DTSC, 2018a]. Geosyntec submitted responses to DTSC's comments following a meeting with UPC, DTSC, GrafCon, and Geosyntec on 13 August 2018. DTSC comments and the responses to comments were included in the Final Work Plan [Geosyntec, 2018b]. DTSC concurred with the scope of the Draft Work Plan and agreed that UPC could proceed with the field work prior to approval of the Final Work Plan [DTSC, 2018b]. The field work described in this Report was conducted from 20 to 27 August 2018 and on 26 September 2018.

The purpose of the data gap investigation described herein is to further characterize the distribution of constituents in the shallow soil and groundwater at the Site to support remedy evaluation and selection. Per the Consent Order, a data gap investigation is a prerequisite to preparing a Feasibility Study and Remedial Action Plan (FS/RAP) [DTSC, 2008].

The work plan included a component of investigation that was designed to assess the presence of archaeological artifacts beneath the Site. The archaeological investigation

[1] UPC OU – formerly known as Southern Pacific Transportation Company (SPTC) Brisbane Railyard Operable Unit 1 (SP OU-1 or Brisbane OU-1) is divided into two portions based on county: the San Francisco County portion of UPC OU (UPC OU-SF) and the San Mateo County portion of UPC OU (UPC OU-SM).

[2] Sunquest Properties, Inc., is a wholly-owned subsidiary of UPC and holds title to the former SPTC parcels in San Mateo County.

was conducted by PaleoWest Archaeology, Inc. of Orinda, California (PaleoWest). The methodology, findings, and conclusions of the archaeological investigation are documented in a separate report and are not addressed herein.

This Report is organized as follows:

- Section 2, *Site Background*, provides a description of the Site, the geologic setting, and the Site use history;
- Section 3, *Investigation Activities*, summarizes the pre-field, field, and post-field activities conducted;
- Section 4, *Investigation Results*, presents the field observations and measurements as well as analytical results for soil and groundwater samples;
- Section 5, *Data Review and Validation*, discusses the assessment of analytical data quality;
- Section 6, *Summary, Conclusions and Recommendations*, summarizes the conclusions from the investigation and provides recommendations for future work; and
- Section 7, *References*, provides a list of the references cited in this Report.

Report sections are followed by tables, figures, and appendices.

2 SITE BACKGROUND

This section provides descriptions of the Site, the geologic and hydrogeologic setting, and the use history. For a record of historical site investigation and remediation, refer to the Work Plan [Geosyntec, 2018b].

2.1 Site Description

The Site, approximately 35 acres, occupies the northern portion of the former Southern Pacific Transportation Company (SPTC) Brisbane Railyard within San Mateo County, between Bayshore Boulevard on the west, the Peninsula Corridor Joint Powers Board (Caltrain) railroad tracks on the east, and extending northward from Geneva Avenue to the San Francisco/San Mateo County line (Portions of Assessor's Parcel Numbers 005-340-060 and 005-340-100) (**Figures 1** and **2**). The Site is currently owned by Sunquest Properties, Inc. (Sunquest), a subsidiary of UPC. The Schlage Lock Company (Schlage) OU and UPC OU-SF are north of the county line, and OU-2, which is under San Francisco Bay Regional Water Quality Control Board (RWQCB or Water Board) oversight, is located to the south. The Brisbane Landfill is east of the Caltrain tracks (**Figure 1**).

2.2 Site Characteristics

2.2.1 Topography

The Site lies at the base of the Visitacion Valley between Candlestick Point to the north and Visitacion Point to the south. The Site is situated on a low-lying flatland that was formed by historical filling of a former embayment located along the western margin of San Francisco Bay. The current land surface has been largely formed by filling of the area in the early 1900s. The Site is nearly flat with a gentle slope to the east, toward San Francisco Bay. Ground surface elevations range from approximately 10 to 13 feet above mean sea level (msl) relative to the National Geodetic Vertical Datum of 1929 (NGVD29), or 12.7 to 15.7 feet relative to the North American Vertical Datum of 1988 (NAVD88).

2.2.2 Surface Water Hydrology

Surface water at the Site and vicinity primarily moves as overland flow that drains into catch basins and drop inlets to the local storm sewer system that drains to San Francisco

Bay. A small drainage ditch is located approximately 2,100 feet southeast of the Site and the Brisbane Lagoon is located approximately 2.5 miles south of the Site.

The eastern edge of the Site is located approximately 2,000 feet west of the San Francisco Bay shoreline. Based on multiple years of groundwater monitoring, surface water and groundwater conditions are not affected by tidal stages in San Francisco Bay.

2.2.3 Local Geology

The Site is underlain by Quaternary-age alluvial deposits, dune sediments, estuarine sediments, and fill [MACTEC Engineering and Consulting, Inc. (MACTEC), 2009a; Burns & McDonnell (B&M) and Treadwell & Rollo (T&R), 2002]. Site stratigraphy has been extensively investigated and characterized as part of the Schlage OU investigations [MACTEC, 2009a]. The Site is underlain by five distinct geological units that are summarized in the Schlage OU reports as follows:

- **Fill**: a heterogeneous mixture of clay, silt, sand, gravel, and building debris that is exposed at ground surface and extends for a thickness of 10 to 15 feet below ground surface ("Fill" zone). At the time SPTC acquired the property in 1896, the northern half of the railyard consisted of fill from undocumented sources that had been placed into the tidal flats of San Francisco Bay. Between 1896 and 1935, fill was placed on most of the remaining area between Bayshore Boulevard and Tunnel Avenue. Sources of the fill reportedly include pulverized Franciscan bedrock derived from the surrounding hills, rubble from the 1906 San Francisco earthquake, and soil, debris, and rubble from other possible undocumented sources [DTSC, 1993].
- **Young Bay Margin Deposits (YBMD)**: high-plasticity, low-permeability clay known as Young Bay Mud (YBM), and some interbedded silty sand and organic material that underlies the Fill and extends for a thickness of 5 to 20 feet below the Fill.
- **Colma Formation**: The upper portion of the formation consists of yellow to brown, fine- to medium-grained sand with some silt and clay which underlies the YBMD and extends for a thickness of approximately 30 feet. The lower portion of the formation consists of an approximately 10 to 20 feet thick layer of Old Bay Margin Deposits (OBMD), including yellow to brown, stiff, low-plasticity clay known as Old Bay Mud (OBM) that is considered to be an aquitard that separates

the Colma Formation from the underlying Merced Formation. The Old Bay Margin Deposit Sand Unit (OBMD-SU) is a sand layer located within the OBM aquitard and has been documented as a laterally discontinuous layer beneath the Schlage OU. It is uncertain whether the OBMD-SU extends beneath the Site;

- **Merced Formation**: weakly consolidated sandstone with secondary siltstone and claystone. The thickness of the Merced Formation is unknown beneath the Site but reportedly extends to the Franciscan Bedrock [MACTEC, 2010].

- **Franciscan Assemblage[3] bedrock**: generally occurs at a depth of 50 to 60 feet below ground surface (bgs) beneath the Schlage OU site [MACTEC, 2010]. The Franciscan bedrock consists of metamorphosed, weathered, and sheared greenstone, interbedded chert and shale, and interbedded sandstone and shale.

Geologic cross-sections prepared for the Schlage OU are provided in **Appendix A** [Mactec, 2010].

2.2.4 Groundwater Occurrence

The water-bearing zones at the Site, as described in the revised Site Conceptual Model (SCM) for the Schlage OU [MACTEC, 2010], include the Fill, Colma Formation, and Merced Formation. The YBMD, where present to the south, constitute an aquitard that separates the Fill from the Colma Formation and confines groundwater in the underlying Colma Formation. The OBMD constitute an aquitard that separates the Colma Formation from the Merced Formation and confines groundwater in the underlying Merced Formation. The first encountered groundwater at the Site exists in the Fill typically between 3 and 10 feet bgs.

A groundwater monitoring network, shown in **Figure 3**, has been previously installed to monitor chlorinated solvents released to the subsurface in the Schlage OU as well as potential metals impacts within the Schlage and UPC OUs. The network consists of groundwater monitoring wells located in the Schlage OU, UPC OU-SF, and the Site and which are screened within the Fill, Colma Formation, and Merced Formation water-bearing zones.

[3] Also known as Franciscan Complex, it is a geologic term for a late Mesozoic terrane of heterogeneous rocks found throughout the California Coast Ranges, and particularly on the San Francisco Peninsula.

Many monitoring wells that that are completed in the Merced Formation exhibit artesian conditions. Groundwater potentiometric elevations increase with depth, and differences in hydraulic head between water-bearing zones range from approximately 5 feet between the Fill and Colma Formation to over 13 feet between the Colma and Merced Formations. Upward vertical pressure gradients, on the order of 0.5 ft/ft, are commonly observed between co-located wells screened in the Merced and Colma Formations [e.g., Geosyntec, 2018c]. The differences in hydraulic pressure (head) result in upward vertical pressure gradients between each water-bearing zone.

The direction and magnitude of lateral hydraulic gradients beneath the Site vary by location and water-bearing zone. In the Fill the general direction of the lateral hydraulic gradient is to the northeast with a historical magnitude of approximately 0.0005 to 0.005 feet per foot (ft/ft). In the Colma Formation, hydraulic gradients are approximately 0.01 ft/ft toward the northwest and appear to be strongly influenced by the Sunnydale Avenue sewer line. The direction of the lateral hydraulic gradient in the Merced Formation is predominantly to the southeast with historical magnitudes that range from 0.007 ft/ft to 0.025 ft/ft [e.g., Geosyntec, 2018c].

2.2.5 Groundwater Use

Groundwater at the Site is not used for domestic or industrial purposes and the City of San Francisco provides the Site and surrounding residences and businesses with public water that originates from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains [T&R, 2005]. According to the San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) [RWQCB, 2017] groundwater in the Fill, Colma, and Merced are considered beneficial as a potential municipal water supply. However, in its letter to UPC, dated May 6, 2019, the RWQCB has made the following determination regarding the shallow (Fill) water-bearing zone:

"*Based on the information provided by Geosyntec [Geosyntec 2019], including lithology, well location, screen interval, and electrical conductivity (EC) data, staff concur that groundwater in the shallow water-bearing zone (SWBZ) to a depth of approximately 15 feet below ground surface (bgs) within those areas meets exceptions (a) and (b) of State Water Resources Control Board (State Water Board) Resolution No. 88-63 and is not likely to be used as a source of drinking water*."

2.3 Site Use History

SPTC acquired the Brisbane Railyard property in 1896. SPTC's major railroad operations at the Site began in 1914, which resulted in the construction of numerous railroad facilities. The railyard was used from 1914 to approximately 1960 as SPTC's railroad switching yard and locomotive/railcar maintenance yard.

During operations, the primary waste streams reportedly generated within the railyard were alkaline cleaners and associated oil and grease [HCI, 1989]. It is believed that herbicides containing lead and arsenic were sprayed at the railyard for weed control during that period [MACTEC, 2009b]. There was no evidence from the historical record that radionuclides were either used or disposed at the site.

In 1960, SPTC's major railyard operations ceased. The Site was unused between 1960 and 1989. Tuntex USA, Inc. (Tuntex)[4] acquired most of the railyard from SPTC in December 1989, after most of the railyard facilities had been abandoned and removed. Tuntex has not performed any manufacturing operation at the Site [DTSC, 2008], which is presently vacant, though various foundations and building slabs remain.

Facilities within the UPC OU-SM that could have affected soil and groundwater quality include the following (**Figure 2**):

- A (passenger) coach car repair shop in the southwest portion of the Site;
- A freight car repair shop and nearby paint shop, forge, and blacksmith shop in the western portion of the Site;
- A paint storage house in the southern portion of the Site;
- A former lumber shed in the center of the Site;
- The former Unit #1 Oil Trap located on the western boundary of the Site; and
- The former Unit #2 Sludge Traps located in the northwest portion of the Site.

Based on the site use history and Geosyntec's experience at similar sites, chemicals that may have been used or generated as waste at these facilities include metals, volatile

[4] Tuntex USA, Inc., changed its name to Universal Paragon Corporation, Inc. (UPC) on 1 January 1997 and all Tuntex subsidiaries were transferred to the new UPC entity [DTSC, 2008].

organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and petroleum hydrocarbons. Organochlorine pesticides (OCPs) also may have been used. Additionally, asbestos may be present in the building debris within the Fill zone and naturally occurring asbestos may be present as a component of the fill that was sourced from the nearby Franciscan Bedrock outcrops.

2.4 Data Gap Analysis

The Data Gap Investigation Work Plan prepared by Geosyntec and approved by the DTSC (Geosyntec, 2018b) presented a detailed analysis of existing data and Site conditions. Upon reviewing the Site history and historical investigation data for the Site, four data gaps were identified:

1. Additional sampling was needed to assess potential impacts to soil and groundwater resulting from historical industrial activities at the Site. Historical sample locations were concentrated in the north area of the Site and were comparatively sparse in the central and south areas. For example, soil beneath the former lumber shed, the former paint storage house, the former wheel press and wheel lathe shop, the former coach repair shop, and the former blacksmith shop had not been characterized.
2. Soil and groundwater samples were not analyzed for chemicals that could reasonably be present in the subsurface based on the Site history, including SVOCs, TPH, PCBs, and OCPs. Additionally, the presence of asbestos in Fill material placed at the Site had not been investigated previously.
3. The resolution of the spatial distribution of metals in soil, particularly arsenic and lead, was not sufficient for assessing potential human health and environmental risks or for developing remedial alternatives.
4. The distribution of Site groundwater constituents was outdated. Grab groundwater samples had not been collected since 2006, and although select groundwater monitoring wells in the UPC OU-SM were monitored routinely as part of the O&M and the remedy performance monitoring programs (PMPs) for the Schlage OU VOC plume, data were concentrated in the north area of the Site with little data in the central or southern portions of the Site.

To address the data gaps, the following sampling strategy were proposed and implemented:

- Shallow soil was characterized by collecting soil samples from the vadose zone (i.e., generally, between ground surface and 5 feet bgs) plus saturated soil samples at select locations; and
- Shallow groundwater (i.e., groundwater in the Fill) was characterized by collecting grab groundwater samples and sampling existing monitoring wells screened within the Fill. (Groundwater in the Colma and Merced Formations is monitored as part of the Schlage OU groundwater monitoring and remedy PMPs.)

Soil vapor conditions will be investigated at a later date and are not included in this data gap investigation.

3 INVESTIGATION ACTIVITIES

Investigation-related activities included planning, permitting, and Site preparation; sample collection and analysis; report preparation; and investigation-derived waste management.

3.1 Planning and Site Preparation

3.1.1 Health and Safety Plan

Field work associated with this investigation was conducted in accordance with the Site-specific health and safety plan (HASP) that was provided in the Work Plan [Geosyntec, 2018b].

3.1.2 Permitting

Boring permits #18-1195 and #18-1196 were acquired on 16 August 2018 from the San Mateo County Department of Environmental Health for parcels 005-340-100 and 005-340-060, respectively. Boring permit #18-1304 for the second mobilization to parcel 005-340-060 was issued by San Mateo County on 19 September 2018. Boring permits are provided as Appendix B.

3.1.3 Site Preparation

The north and south limits of the investigation area were marked on Bayshore Boulevard and Underground Service Alert (USA) was notified of the planned work (ticket #W822700471-00W). The proposed sampling grid was laid out in the field using a field-scale geographic positioning system (GPS) and marking the ground at each sampling location (**Figure 2**). To the extent practical, surface debris and vegetation obstructing proposed boring locations was removed. Subtronic Corporation of Martinez, California scanned each sampling location for underground utilities in advance of drilling. In addition, an attempt was made to locate each existing groundwater monitoring well that was scheduled to be sampled. Well SW-18UA could not be located in the field and was consequently not sampled.

3.2 Sample Collection

Soil samples were collected from 149 soil borings and grab groundwater samples were collected from 19 soil borings, as summarized in the sample matrix provided in **Table 1a.** Groundwater samples were also collected from 12 existing groundwater monitoring wells, as indicated in **Table 1b**. Groundwater sample locations are shown in **Figure 3**. Soil borings, soil sampling, and groundwater sampling was conducted in accordance with the procedures outlined in the DTSC-approved Data Gap Investigation Work Plan [Geosyntec, 2018b].

3.2.1 Soil Sample Collection

Soil borings were advanced by Penecore Drilling of Woodland, California, a C-57 licensed contractor, using direct-push drilling technology between 20 and 27 August 2018. Refusal was met at locations G10 and J9, so a second mobilization occurred 26 September 2018; G10 and J9 were drilled with hollow-stem augers and sampled with a California modified split-spoon sampler. All drilling activities were conducted under the oversight of Geosyntec field staff who were supervised by a California-licensed Geologist. Borings were advanced to a minimum depth of 5 feet bgs and to a maximum depth of 20 feet bgs. The field engineer/geologist documented drilling progress including the percent recovery within each core barrel segment to confirm depth of soil samples.

Soil cores were also inspected by an archaeological monitor on behalf of PaleoWest according to their scope of work provided in the Work Plan [Geosyntec, 2018b]. To identify archaeological artifacts in the UPC OU-SM, 20 borings mostly located in the northeastern portion of the Site were advanced to the contact between the Fill and the underlying YBM.

Soil samples were collected for laboratory analysis using continuous coring techniques. For samples collected by direct-push technology, the core barrel was lined with acetate sleeves that were 5 feet in length. Both the direct push core barrel and split-spoon sampler were advanced to collect the targeted soil depth interval. The soil sample intervals targeted for chemical testing at all borings were 0.5 to 1.0 foot bgs and 3.5 to 4.0 feet bgs. Due to low recovery of the shallow Fill material at some boring locations, the actual sample intervals varied. In addition, soil samples were collected from Fill soil at the bottom 6 inches of the core from borings that were scheduled for grab groundwater sampling, (i.e., generally from 9.5 to 10 feet bgs). Finally, samples of Fill soil were

collected from immediately above the contact with the YBM, provided the contact was deeper than 8 feet bgs, at the borings selected by PaleoWest.

The soil collected from the target sample interval was transferred from the sleeve or sampler to laboratory-provided containers. Soil samples to be analyzed for VOCs and TPH-g were collected from soil cores using TerraCore™ samplers. All soil samples on the 100-foot grid were analyzed for California Assessment Manual (CAM)-17 metals by United States Environmental Protection Agency (USEPA) Methods 6010B and 7471A. Soil samples collected on the 200-foot grid, plus soil samples collected from the saturated zone, were also analyzed for the following:

- VOCs and total petroleum hydrocarbons as gasoline (TPH-g or gasoline-range organics [GRO]), including 1,2,3-trichloropropane and dibromochloropropane, by USEPA Method 8260B/5035;
- SVOCs (polynuclear aromatic hydrocarbons [PAHs]) by USEPA Method 8270C-selective ion monitoring (SIM);
- TPH as diesel (TPH-d) by USEPA Method 8015B;
- OCPS by USEPA Method 8081A;
- PCBs by USEPA Method 8082; and
- Asbestos by California Air Resources Board (CARB) Method 435.

Samples were labeled with sample ID (location and depth), date and time of sample collection, name of sampler, and required analytical method.

Boreholes were backfilled with neat cement grout (i.e., 94 pounds of cement in 6 gallons of water), in accordance with San Mateo County permit requirements, from the bottom up by the tremie method; no boreholes remained open more than 24 hours after drilling. To prevent cross-contamination between borings, reusable equipment that may have contacted contaminated soil or groundwater was decontaminated prior to and after use at each sampling location by pressure-washing with water.

3.2.2 Grab Groundwater Sample Collection

Grab groundwater samples were collected from the target locations (**Figure 3)** by installing a temporary PVC well casing into the open borehole created by direct push

coring. Temporary wells were purged prior to sampling and purge water was placed in drums for offsite disposal. Groundwater was collected from the temporary wells with a peristaltic pump and using low-flow sampling techniques.

When sufficient groundwater volume required for laboratory analysis could not be collected from a well with the initial attempt, the well was allowed to recharge and re-sampling was attempted at a later time. Per the County of San Mateo's drilling permit requirements, borings did not remain open for more than 24 hours. Where sufficient groundwater volume required for laboratory analysis could not be collected from a temporary well after two attempts within 24 hours, the sampling team moved to the next nearest grid sample location, installed a temporary casing, and collected a sample for the full suite of analyses from the substitute well. Partial samples that may have been collected from the original well were discarded. The revised grab groundwater sample locations, documented in the DTSC-approved Final Work Plan [Geosyntec, 2018b], were as follows:

- B4 was sampled instead of A3; and
- F3 was sampled instead of E3 and G3.

In all cases, the substitute well was located within 150-feet from the originally targeted well. Following sample collection, temporary well casings were removed for disposal and the boreholes were backfilled with neat cement grout as in accordance with San Mateo County permit requirements.

Grab groundwater samples were submitted to the analytical laboratory for the following analyses:

- VOCs and TPH-g, including 1,2,3-trichloropropane and dibromochloropropane, by USEPA Method 8260B;[5]
- Dissolved CAM-17 metals by USEPA Method 6010B and 7470A; and
- TPH-d by USEPA Method 8015B.

[5] Groundwater samples were originally analyzed for 1,2,3-trichloropropane by USEPA Method 524.2. However, this is a method more appropriate for drinking water as it includes an additive to remove chlorine, so method 8260B with low-level detection was used to meet the required reporting and detection limits.

Grab groundwater samples were collected from each temporary well casing in the following order: VOC / TPH-g, TPH-d, and CAM 17 metals. All groundwater samples were collected in laboratory-provided glassware containing preservative as appropriate for the method of analysis. Groundwater samples for dissolved metals analysis were filtered through 0.45-micron filters in the field. Sample containers were labeled with sample ID (location and depth), date and time of sample collection, name of sampler, and analytical method. Groundwater samples were packaged in coolers containing water ice, sealed with chain of custody forms, and transported to the laboratory daily by courier. A summary of the sample analysis program is provided in **Tables 1a** and **1b**.

3.2.3 Groundwater Well Gauging and Sampling

Existing groundwater monitoring wells screened in the Fill were gauged and sampled by Blaine Tech Services of San Jose, California (Blaine Tech), on 14 and 15 August 2018. Three wells (i.e., GWE-1, GWE-2, and GWE-3) required servicing, which was completed on 30 August 2018. The three wells were gauged and sampled the same day as servicing.

Groundwater samples were collected from 12 of the 14 existing groundwater monitoring wells within the UPC OU-SM that are screened in the Fill.[6] The gauging and sampling of monitoring wells within the UPC OU-SM was conducted by Blaine Tech Services and was coordinated with gauging and sampling of monitoring wells at the Schlage OU and UPC OU-SF. Each monitoring well was gauged for depth to groundwater prior to purging by inserting a groundwater level sensor into the well and recording the depth relative to the top of the well casing. The monitoring wells were then purged and sampled in accordance with the Amended Operations and Maintenance (O&M) Plan for the Schlage OU [AMEC, 2014] and site-specific Sampling and Analysis Plan and Quality Assurance Project Plan (SAP/QAPP) [Geosyntec, 2018b]. Samples were packaged in coolers containing water ice, sealed with chain of custody forms, and transported to the laboratory daily by courier.

3.3 Waste Management

Investigation-derived waste (IDW) as soil and groundwater was containerized in 55-gallon drums. Containers were labeled with generator ID, generation date, and contact name and telephone number. Soil was tested for soluble limit threshold concentration

[6] An obstruction was encountered in well MW-3A and well SW-18UA could not be located.

(STLC) and determined to be non-hazardous, so the soil drums were transported by Belshire Environmental Services, Inc. of Foothill Ranch, California (Belshire), for disposal at Soil Safe in Adelanto, California. The purged groundwater, classified as hazardous waste because of the presence of VOCs from the Schlage OU plume, was containerized with purged groundwater from the Schlage OU and was transported by Belshire for disposal at DeMenno Kerdoon in Compton, California. STLC results and waste manifests are provided as **Appendix C**.

3.4 Analytical Program

Samples were transported to TestAmerica Laboratory, Inc. (TestAmerica) in Pleasanton, California, an Environmental Laboratory Accreditation Program (ELAP)-certified analytical laboratory, under standard chain-of-custody protocol. Sample analysis was conducted in accordance with the UPC OU-SM SAP/QAPP provided in the Work Plan [Geosyntec, 2018b] and as listed on **Tables 1a and 1b**.

4 INVESTIGATION RESULTS

4.1 Soil Lithology

Observed soil lithologies were described on a boring log prepared for each boring. Boring logs from this investigation are provided in **Appendix D** and a photograph log is provided as **Appendix E**. The observed soil lithologies are consistent with previous investigations. Generally, the Fill zone consists of loose coarse-grained material, primarily silty sand and gravel, for the upper 5 feet to 14.6 feet bgs. In the Fill zone, industrial material (e.g., bricks, pieces of timbers) was noted in some areas.

The YBM encountered beneath the Site consisted of peat and fat clay. The Fill – YBM contact was observed as shallow as 1.1 feet bgs and as deep as 15.5 feet bgs. The Fill – YBM contact generally became shallower toward the south of the Site.

4.2 Soil Analytical Results

The analytical laboratory reports for soil samples are presented in **Appendix F**. Analytical results are presented in **Tables 2 through 5**, along with updated screening levels. Constituent concentrations in soil are discussed in the following sections.

4.2.1 Metals

Soil metals results are presented in **Table 2**. Elevated concentrations of arsenic and lead were observed mostly in the eastern portion of the Site near the railroad tracks and on the western boundary of the Site. Arsenic was detected at a maximum concentration of 740 milligrams per kilogram (mg/kg) at boring I5 (2.5 to 4 feet bgs), and lead was detected at a maximum concentration of 13,000 mg/kg at location B10 (0.5 to 1 foot bgs). Including historical samples, the maximum detected arsenic concentration at the Site is 790 mg/kg at boring B-13 (collected in 2006) and the maximum lead concentration is 13,000 mg/kg at boring B10.

Arsenic and lead concentrations were generally highest in the 12 acres near the railroad tracks on the eastern side of the Site, though elevated concentrations were also observed along Bayshore Boulevard in the western portion of the Site and in the southern portion of the Site near the boundary with OU-2 (**Figures 4 and 5**). Most elevated arsenic and lead concentrations were observed in the top two feet of soil, but elevated concentrations were also encountered at lower frequency between 3 and 5 feet bgs and in saturated soil

samples as deep as 10 feet bgs. In general, concentrations of arsenic and lead in saturated soil were lower than concentrations in unsaturated soil.

Other metals detected in the data gap investigation at elevated concentrations can be summarized as follows:

- Antimony was detected at a maximum concentration of 340 mg/kg at location J7;
- Cadmium was detected at a maximum concentration of 80 mg/kg at location F4;
- Copper was detected at a maximum concentration of 10,000 mg/kg at location C3;
- Mercury was detected at a maximum concentration of 36 mg/kg at location F4 (including historical data, the maximum mercury concentration in soil was 100 mg/kg at location C-26);
- Nickel is detected at a maximum concentration of 500 mg/kg at location I10;
- Zinc was detected at a maximum concentration of 26,000 mg/kg at location F4.

Barium, beryllium, chromium, cobalt, selenium, silver, thallium, and vanadium were detected but no detections exceeded respective screening levels and/or estimated background levels.

4.2.2 Polynuclear Aromatic Hydrocarbons

PAH concentrations are summarized in **Table 3**. Benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-c,d)pyrene, and naphthalene were detected at elevated concentrations in multiple samples. Concentrations for these constituents were greatest at the following locations:

- H5 from 0.5 to 1 foot bgs: 6,900 micrograms per kilogram (µg/kg) for benzo(a)pyrene, 7,400 µg/kg for benzo(b)fluoranthene, 3,700 µg/kg for benzo(k)fluoranthene, and 2,500 µg/kg for indeno(1,2,3-c,d)pyrene;
- J1 from 0.5 to 1 foot bgs: 5,300 µg/kg benz(a)anthracene, 930 µg/kg dibenzo(a,h)anthracene; and
- I9 from 0.5 to 1 foot bgs: 57,000 µg/kg naphthalene.

Benzo(a)pyrene toxicity equivalents, or B(a)P TEQ, represents total carcinogenic PAH concentrations; the distribution of B(a)P TEQ in soil is presented in **Figure 6**. Note that 900 µg/kg for benzo(a)pyrene toxic equivalents (BaP TEq) was reported as the 95th percentile value for ambient concentrations in northern California [DTSC, 2009].

4.2.3 Total Petroleum Hydrocarbons as Diesel and Gasoline

TPH-d concentrations are summarized in **Table 3** and **Figure 7**. TPH-d was detected at a maximum concentration of 7,000 mg/kg at boring L13 from 1.0-2.5 feet bgs. At location I9 from 0.5-1 foot bgs, where several PAHs were detected at elevated concentrations, TPH-d was detected at 2,100 mg/kg. Otherwise, correlation between TPH-d and PAHs is not evident. The highest TPH-d concentrations were generally observed in the 0.5-1 foot bgs interval and decreased with depth.

TPH-g results are summarized in **Table 5**. TPH-g was detected in a limited number of samples at low concentrations, slightly exceeding the laboratory detection limit.

4.2.4 Organochlorine Pesticides

OCP concentrations are summarized in **Table 4**. OCPs were detected at only a few locations and generally at concentrations below reporting limits. Chlordane and alpha- and gamma-chlordane were detected in multiple samples as summarized below:

- At location B10 depth 0.5 to 1 foot bgs, alpha-chlordane, chlordane, and gamma-chlordane were detected at concentrations of 12 µg/kg, 82 µg/kg, and 8.4 µg/kg respectively; and
- At location F11 depth 2.5 to 4 feet bgs, alpha-chlordane, chlordane, and gamma-chlordane were detected at concentrations of 780 µg/kg, 3,900 µg/kg, and 940 µg/kg respectively.

4.2.5 Polychlorinated Biphenyls

PCB results are summarized in **Table 4**. Of the six Aroclors reported, only Aroclor 1254 and Aroclor 1260 were detected above method detection limits. Concentrations of these Aroclors exceeded screening levels at only two locations:

- Aroclor 1254 and Aroclor 1260 were detected at concentrations of 590 µg/kg and 420 µg/kg, respectively, at J5 (0.5 to 1 foot bgs); and

- Aroclor 1260 was detected at concentrations of 13,000 µg/kg and 3,000 µg/kg in the parent and duplicate sample, respectively, at L5 (0.5 to 1 foot bgs).

Results indicate that PCB impacts at the Site were limited to only these two locations and the 0.5-1 foot bgs depth.

4.2.6 Volatile Organic Compounds

VOC results are summarized in **Table 5** and **Figure 8**. VOCs with elevated concentrations in soil included 2-butanone, acetone, carbon disulfide, PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, vinyl chloride and naphthalene. All were observed at concentrations near the detection limit, with the exception of naphthalene at location I9 (0.5-1 foot bgs), which was detected in one sample at a concentration of 26,000 µg/kg by USEPA Method 8260B. Acetone and 2-butanone are suspected laboratory contaminants and when considered with all of the other VOC detections in the soil, are not considered to be indicative of releases of these compounds at the Site from historical activities.

4.2.7 Asbestos

Asbestos was not detected in any soil samples and no evidence of asbestos was observed in soils at the Site.

4.3 Groundwater Conditions in Fill

Consistent with historical reports, shallow groundwater was encountered in the Fill between 3 feet and 10 feet bgs. The field notes from the August 2018 groundwater monitoring well gauging and sampling event are provided as **Appendix G** and groundwater elevations are summarized in **Table 6**. Contouring of the groundwater potentiometric surface in the Fill water-bearing zone at the UPC OU-SM and adjacent OU-2 and Brisbane Landfill is provided in **Figure 9**. Horizontal groundwater flow in this zone appears to be generally toward the east near the western boundary of the Site, southwest from the northeast part of the Site, and southeast in the central portion of the west near Site. Groundwater gradient appears to be influenced by higher topography and groundwater elevations to the north, south, and west.

4.4 Groundwater Analytical Results

The analytical laboratory reports for grab groundwater samples are presented in **Appendix F** and for monitoring well samples are presented in **Appendix H**. Analytical results are presented in **Tables 7 and 8**, along with updated screening levels.

4.4.1 Metals

Dissolved metals concentrations in grab groundwater and monitoring well samples are summarized in **Table 7**. Dissolved metals concentrations were screened against Water Board ESLs for saltwater ecotoxicity with an attenuation factor of 100 to account for adsorption and dilution between the Site and San Francisco Bay. In general, concentrations were low though some exceeded screening levels. Dissolved concentrations of arsenic and lead are shown in **Figures 10 and 11**. The maximum dissolved arsenic concentration was 190 micrograms per liter (µg/L) in the grab sample from location F3, and the maximum dissolved lead concentration was 21 µg/L in the grab sample from locations C3 and I11.

Elevated concentrations of dissolved metals are commonly localized. For example, within 300 feet of F3, the dissolved arsenic concentration decreases at least by half, from 190 µg/L to 84 µg/L at I3. Around well MK-5AR, which had dissolved arsenic at 130 µg/L, the highest concentration is 42 µg/L at J5, approximately 200 feet to the northeast. And the highest concentration around MW-4A, which had dissolved arsenic at 120 µg/L, is 34 µg/L at B9, approximately 200 feet to the northeast. Considering the lateral and upward vertical hydraulic gradients discussed in the previous section, dissolved metals in the Fill at the Site likely are not migrating laterally offsite nor vertically downward from the Fill.

4.4.2 Total Petroleum Hydrocarbons

Concentrations of TPH-g and TPH-d in groundwater are summarized in **Table 8** and **Figure 12**. The maximum concentrations of TPH-g and TPH-d were 380 µg/L at location B5 and 1,100 µg/L at well MW-4A, respectively. Well MW-4A is located approximately 200 feet southwest of the former sludge traps; impacted soil in this area was previously remediated by excavation [International Technology Corporation (ITC), 1994].

4.4.3 Volatile Organic Compounds

VOC results are presented in **Table 8** and the distribution of chlorinated ethenes is shown in **Figure 13**. VOCs were not detected in groundwater above reporting limits with the exception of chlorinated solvents (CVOCs). The concentration of CVOCs are highest along the northern border of the Site and decrease across the Site toward the south. The most frequent CVOCs detected above the laboratory detection limits and not indicated with a "J-Flag" (estimated value) are tetrachloroethene (PCE), trichloroethene (TCE) and their degradation products cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), and vinyl chloride. Maximum concentrations of PCE, TCE, and trans-1,2-DCE were 5.7 µg/L, 200 µg/L, and 24 µg/L, respectively, at location A7, while maximum concentrations of cis-1,2-DCE and vinyl chloride were 160 µg/L and 410 µg/L, respectively, at location B5.

This distribution and chemical fingerprint are consistent with the interpretation that CVOCS were released at the upgradient Schlage OU (north of the Site) and have migrated onto the Site. At the Schlage OU and the UPC OU-SF, an enhanced reductive dechlorination (ERD) remedy was implemented in the Colma Formation and, to a lesser extent, in the Fill from 2010 to 2011 [Mactec, 2010, 2011]. At the Schlage OU and UPC OU-SF, the Colma Formation and Fill are in communication with each other. This condition would allow CVOCs released at the Schlage OU to impact both the Colma and Fill downgradient of the Schlage OU, even though the two units are separated by an aquitard in the downgradient direction. Elevated concentrations of cis-1,2-DCE and vinyl chloride in the Fill beneath the Site are indicative of reductive dechlorination of PCE and TCE.

Comparison of the CVOC concentrations in the unsaturated Fill soil with CVOC concentrations in the Fill groundwater indicates very similar chemical and concentration signatures. This observation suggests that CVOCs are volatilizing off groundwater and migrating into the soil vapor occupying the unsaturated zone pore space. The presence of CVOCs in the soil samples appear to be representative of CVOCs in the soil vapor occupying the unsaturated zone pore space and not CVOCs adsorbed onto the soil as a result of a surface spill or release from past activity at the Site. In addition, groundwater extraction associated with the Schlage OU remedy from extraction wells on the Site likely has resulted in a distribution of CVOCs within the Fill that is not representative of natural groundwater flow patterns (see areas around GWE-1, GWE-2, GWE-3, and GWE-4 on

Figure 13). VOC concentrations in groundwater detected in the Fill at the Site are likely from CVOC sources from the upgradient Schlage OU and UPC OU-SF sites.

5 DATA REVIEW AND VALIDATION

The data validation process consisted of data generation, reduction, and two levels of review. The analytical laboratory generated and reduced the data and conducted the first level of review. Geosyntec staff, under the direction of the Project Quality Assurance Manager, independently conducted a second level of review. Consistent with the UPC OU-SM SAP/QAPP, all data were validated at Stage 2a and 10% of data were validated at Stage 4. The data validation reports are provided in **Appendix I**.

The data validation reports concluded that the analytical results for soil samples are of sufficient quality for meeting project objectives. Although some sample results were flagged as "R" meaning that the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria, other nearby validated data were available to draw appropriate conclusions.

The data validation reports concluded that the analytical results for groundwater samples are of sufficient quality for meeting project objectives except data for 1,2,3-trichloropropane for the field blank FB-1, MW-6AR, and MW-7A, which exceeded the holding time for analysis. Because FB-1 was a field blank and not representative of Site data, this condition is not considered materially significant. The data for MW-6AR and MW-7A were not used for data interpretation.

6 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The results of the UPC OU-SM Data Gap Investigation indicate the presence of metals and PAHs in shallow soil at elevated concentrations in some areas of the Site. Specifically, arsenic and lead were detected frequently at elevated concentrations in shallow soil, likely resulting from the historical application of lead arsenate herbicide to the ground surface. Dissolved metals concentrations in groundwater were generally low with localized elevated concentrations that were poorly correlated with concentrations in co-located soil samples. For example, arsenic was 31 µg/L in groundwater at location I7, and the unsaturated zone soil sample from 3.5 to 4 feet bgs at that location was 46 mg/kg. Roughly the same groundwater concentration, 28 µg/L, was observed at location H5, but the unsaturated zone soil sample from 3.5 to 4 feet bgs was 160 mg/kg, approximately four times higher than at I7. The data indicate the concentrations of metals in unsaturated soil are not a good predictor of concentrations of dissolved metals in groundwater. Therefore, the metals in groundwater may not be from historical activities at the Site.

OCPs and PCBs in soil were detected at only a few locations, indicating that impacts to soil are localized at the Site. VOCs were effectively absent from soil samples and their distribution in groundwater is indicative of impacts from the adjacent Schlage OU that have migrated under the Site rather than sources associated with historical activities at the Site. TPH-g was detected in soil only at low concentrations, and concentrations of TPH-d in soil were elevated only at a few locations, again indicating that impacts to the subsurface are localized at the Site. Asbestos was not detected in any soil samples.

The results of this investigation support the following conclusions and recommendations:

1. The distribution of constituents in the Fill material and groundwater in the Fill has been adequately assessed across the Site;
2. Due to elevated concentrations of some constituents in soil and groundwater and the contemplated future mixed-use redevelopment of the Site, a baseline health risk assessment for the Site is recommended;
3. The data gap investigation data, along with historical data, are sufficient for assessing risk to human health and the environment and performing a FS to develop remediation or mitigation strategies for addressing constituents of potential concern in Site soil and groundwater; and

4. Information from the risk assessment and FS should be presented in a combined FS/RAP for the Site.

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TABLES

Table 1a: Soil and Grab Groundwater Sampling Matrix
UPC OU-SM
Brisbane, California

Boring ID	Grid Node (Figure 2)		Work Plan Soil Sample Depth (feet bgs)	Actual Soil Sample Depth[1] (feet bgs)	Soil Analyses								Groundwater Analyses				
	Ordinate	Abscissa			VOCs & TPH-gasoline (8260B)	1,2,3-TCP (8260B-SIM/5035)	SVOCs - PAHs (8270-SIM)	TPH - Diesel (8015B)	CAM-17 Metals (6010 B, 7471)	OCPs (8081A)	PCBs (8082)	Asbestos (CARB 435)	VOCs + TPH-gasoline (8260B)	1,2,3-TCP (524.2SIM)	CAM-17 Metals (6010B, 7471)	CrVI (7196)	TPH Diesel (8015B)
DG-C7	C	7	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-C7	C	7	3.5-4	3.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-C7	C	7	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-C8	C	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-C8	C	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-C9	C	9	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-C9	C	9	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-C10	C	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-C10	C	10	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D1	D	1	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-D1	D	1	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-D1	D	1	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-D2	D	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D2	D	2	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D3	D	3	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D3	D	3	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D3	D	3	9.5-10	9.5-10	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-D4	D	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D4	D	4	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D5	D	5	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-D5	D	5	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-D6	D	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D6	D	6	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D7	D	7	0.5-1	1.5-2	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D7	D	7	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D8	D	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D8	D	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D9	D	9	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-D9	D	9	3.5-4	1-2.5	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-D9	D	9	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-D10	D	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-D10	D	10	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-DE8-9	D-E	8-9	0.5-1	0.5-1	X	X	X	X	X	--	X	X	--	--	--	--	--
DG-DE8-9	D-E	8-9	3.5-4	2.5-4	X	--	X	X	X	--	X	X	--	--	--	--	--
DG-DE8-9	D-E	8-9	9.5-10	9.5-10	X	--	X	X	X	--	X	X	X	X	X	X	X
DG-E1	E	1	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E1	E	1	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E2	E	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E2	E	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E3	E	3	0.5-1	0.5-1	--	X	--	--	X	--	--	--	--	--	--	--	--
DG-E3	E	3	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E3	E	3	9.5-10	9.5-10	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-E4	E	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E4	E	4	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E5	E	5	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E5	E	5	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E5	E	5	9-9.5	9-9.5	X	--	X	X	X	X	X	--	--	--	--	--	--
DG-E6	E	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E6	E	6	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E7	E	7	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-E7	E	7	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-E7	E	7	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-E8	E	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E8	E	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E9	E	9	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E9	E	9	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E10	E	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--

Table 1a: Soil and Grab Groundwater Sampling Matrix
UPC OU-SM
Brisbane, California

Boring ID	Grid Node (Figure 2)		Work Plan Soil Sample Depth (feet bgs)	Actual Soil Sample Depth[1] (feet bgs)	Soil Analyses								Groundwater Analyses				
	Ordinate	Abscissa			VOCs & TPH-gasoline (8260B)	1,2,3-TCP (8260B-SIM/5035)	SVOCs - PAHs (8270-SIM)	TPH - Diesel (8015B)	CAM-17 Metals (6010 B, 7471)	OCPs (8081A)	PCBs (8082)	Asbestos (CARB 435)	VOCs + TPH-gasoline (8260B)	1,2,3-TCP (524.2SIM)	CAM-17 Metals (6010B, 7471)	CrVI (7196)	TPH Diesel (8015B)
DG-E10	E	10	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-E11	E	11	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-E11	E	11	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-E11	E	11	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-F1	F	1	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-F1	F	1	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-F1	F	1	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-F2	F	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F2	F	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F3	F	3	0.5-1	0.5-1	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-F3	F	3	3.5-4	1-2.5	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-F3	F	3	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-F4	F	4	0.5-1	0-0.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F4	F	4	3.5-4	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F5	F	5	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-F5	F	5	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-F6	F	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F6	F	6	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F7	F	7	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F7	F	7	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F8	F	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F8	F	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F9	F	9	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-F9	F	9	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-F9	F	9	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-F10	F	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F10	F	10	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F11	F	11	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-F11	F	11	3.5-4	2.5-4	--	--	X	X	X	X	X	--	--	--	--	--	--
DG-FG910	F-G	9-10	0.5-1	1-2.5	X	--	X	X	X	--	X	X	--	--	--	--	--
DG-FG910	F-G	9-10	3.5-4	0.5-1	X	X	X	X	X	--	X	X	--	--	--	--	--
DG-G1	G	1	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G1	G	1	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G2	G	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G2	G	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G3	G	3	0.5-1	0.5-1	--	X	--	--	X	--	--	--	--	--	--	--	--
DG-G3	G	3	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G3	G	3	9.5-10	9.5-10	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-G4	G	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G4	G	4	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G5	G	5	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G5	G	5	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G6	G	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G6	G	6	3.5-4	1-2	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-G6	G	6	2.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G7	G	7	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-G7	G	7	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-G8	G	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G8	G	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G9	G	9	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G9	G	9	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G10	G	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G10	G	10	3.5-4	3.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-G11	G	11	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-G11	G	11	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-G11	G	11	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-H1	H	1	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-H1	H	1	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-H2	H	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H2	H	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H3	H	3	0.5-1	0.5-1	X	--	X	X	X	X	X	X	--	--	--	--	--

Table 1a: Soil and Grab Groundwater Sampling Matrix
UPC OU-SM
Brisbane, California

Boring ID	Grid Node (Figure 2)		Work Plan Soil Sample Depth (feet bgs)	Actual Soil Sample Depth[1] (feet bgs)	Soil Analyses								Groundwater Analyses				
	Ordinate	Abscissa			VOCs & TPH-gasoline (8260B)	1,2,3-TCP (8260B-SIM/5035)	SVOCs - PAHs (8270-SIM)	TPH - Diesel (8015B)	CAM-17 Metals (6010 B, 7471)	OCPs (8081A)	PCBs (8082)	Asbestos (CARB 435)	VOCs + TPH-gasoline (8260B)	1,2,3-TCP (524.2SIM)	CAM-17 Metals (6010B, 7471)	CrVI (7196)	TPH Diesel (8015B)
DG-H3	H	3	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-H3	H	3	9.5-10	9.5-10	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-H4	H	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H4	H	4	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H5	H	5	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-H5	H	5	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-H6	H	6	0.5-1	0.5-1	X	X	X	X	X	--	X	X	--	--	--	--	--
DG-H6	H	6	3.5-4	1-2.5	X	X	X	X	X	--	X	X	--	--	--	--	--
DG-H7	H	7	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H7	H	7	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H8	H	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H8	H	8	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H9	H	9	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-H9	H	9	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-H9	H	9	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-H10	H	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H10	H	10	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H11	H	11	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H11	H	11	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H12	H	12	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-H12	H	12	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I1	I	1	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I1	I	1	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I2	I	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I2	I	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I3	I	3	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-I3	I	3	3.5-4	1-2.5	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-I4	I	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I4	I	4	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I5	I	5	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I5	I	5	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I6	I	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I6	I	6	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I7	I	7	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-I7	I	7	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-I8	I	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I8	I	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I9	I	9	0.5-1	0.5-1	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-I9	I	9	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I10	I	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I10	I	10	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I11	I	11	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-I11	I	11	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-I11	I	11	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-I12	I	12	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-I12	I	12	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J1	J	1	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-J1	J	1	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-J2	J	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J2	J	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J3	J	3	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J3	J	3	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J4	J	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J4	J	4	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J5	J	5	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-J5	J	5	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--

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UPC OU-SM
Brisbane, California

Boring ID	Grid Node (Figure 2)		Work Plan Soil Sample Depth (feet bgs)	Actual Soil Sample Depth[1] (feet bgs)	Soil Analyses								Groundwater Analyses				
	Ordinate	Abscissa			VOCs & TPH-gasoline (8260B)	1,2,3-TCP (8260B-SIM/5035)	SVOCs - PAHs (8270-SIM)	TPH - Diesel (8015B)	CAM-17 Metals (6010 B, 7471)	OCPs (8081A)	PCBs (8082)	Asbestos (CARB 435)	VOCs + TPH-gasoline (8260B)	1,2,3-TCP (524.2SIM)	CAM-17 Metals (6010B, 7471)	CrVI (7196)	TPH Diesel (8015B)
DG-J5	J	5	7-7.5	7-7.5	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-J6	J	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J6	J	6	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J7	J	7	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J7	J	7	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J8	J	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J8	J	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J9	J	9	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-J9	J	9	3.5-4	3.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-J10	J	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J10	J	10	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J11	J	11	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J11	J	11	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J12	J	12	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-J12	J	12	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K1	K	1	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K1	K	1	3.5-4	3.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K2	K	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K2	K	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K3	K	3	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-K3	K	3	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-K4	K	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K4	K	4	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K5	K	5	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K5	K	5	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K6	K	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K6	K	6	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K7	K	7	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-K7	K	7	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-K8	K	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K8	K	8	3.5-4	1-2	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-K8	K	8	3.5-4	3.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K9	K	9	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K9	K	9	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K10	K	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K10	K	10	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K11	K	11	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-K11	K	11	3.5-4	1.0-2.5	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-K11	K	11	9.5-10	9.5-10	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-K12	K	12	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K12	K	12	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K13	K	13	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-K13	K	13	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L1	L	1	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-L1	L	1	3.5-4	1.0-2.5	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-L1	L	1	10-10.5	10-10.5	--	--	--	--	X	--	--	--	X	X	X	X	X
DG-L2	L	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L2	L	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L3	L	3	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L3	L	3	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L4	L	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L4	L	4	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L5	L	5	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-L5	L	5	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-L6	L	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L6	L	6	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L7	L	7	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L7	L	7	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L8	L	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L8	L	8	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L9	L	9	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-L9	L	9	3.5-4	1.0-2.5	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-L10	L	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L10	L	10	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L11	L	11	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--

Table 1a: Soil and Grab Groundwater Sampling Matrix
UPC OU-SM
Brisbane, California

Boring ID	Grid Node (Figure 2)		Work Plan Soil Sample Depth (feet bgs)	Actual Soil Sample Depth[1] (feet bgs)	Soil Analyses								Groundwater Analyses				
	Ordinate	Abscissa			VOCs & TPH-gasoline (8260B)	1,2,3-TCP (8260B-SIM/5035)	SVOCs - PAHs (8270-SIM)	TPH - Diesel (8015B)	CAM-17 Metals (6010 B, 7471)	OCPs (8081A)	PCBs (8082)	Asbestos (CARB 435)	VOCs + TPH-gasoline (8260B)	1,2,3-TCP (524.2SIM)	CAM-17 Metals (6010B, 7471)	CrVI (7196)	TPH Diesel (8015B)
DG-L11	L	11	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L12	L	12	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L12	L	12	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-L13	L	13	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-L13	L	13	3.5-4	1.0-2.5	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-M1	M	1	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M1	M	1	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M2	M	2	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M2	M	2	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M3	M	3	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-M3	M	3	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-M3	M	3	7.5-8	7.5-8	X	--	X	X	X	X	X	X	X	X	X	X	X
DG-M4	M	4	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M4	M	4	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M5	M	5	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M5	M	5	3.5-4	1-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M6	M	6	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M6	M	6	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M7	M	7	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-M7	M	7	3.5-4	3.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-M8	M	8	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M8	M	8	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M9	M	9	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M9	M	9	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M10	M	10	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M10	M	10	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M11	M	11	0.5-1	0.5-1	X	X	X	X	X	X	X	X	--	--	--	--	--
DG-M11	M	11	3.5-4	2.5-4	X	--	X	X	X	X	X	X	--	--	--	--	--
DG-M12	M	12	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M12	M	12	3.5-4	2.5-4	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M13	M	13	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M13	M	13	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M14	M	14	0.5-1	0.5-1	--	--	--	--	X	--	--	--	--	--	--	--	--
DG-M14	M	14	3.5-4	1.0-2.5	--	--	--	--	X	--	--	--	--	--	--	--	--
Field Sample Total					121	51	122	122	333	115	122	120	19	19	19	19	19
Total Number of Borings					149												

Note:
1. Due to poor recovery at some locations, the sample depth was revised to account for uncertainty in the exact depth interval.

Abbreviations:
bgs = below ground surface
CAM = California Assessment Manual
CARB = California Air Resources Board
CrVI = hexavalent chromium
OCP = organochlorine pesticide
PAH = polynuclear aromatic hydrocarbon
PCB = polychlorinated biphenyl
SIM = Selective Ion Monitoring
SVOC = semi-volatile organic compound
1,2,3-TCP = 1,2,3-trichloropropane
TPH = total petroleum hydrocarbons
VOC = volatile organic compound

Key:
X = Sample collected and analyzed

Table 1b: Groundwater Well Sampling Matrix

UPC OU-SM

Brisbane, California

Well ID	Groundwater Analyses				Well Construction Details				
	CAM-17 Metals (6010B, 7471) + CrVI (7196)	TPH Gasoline, Diesel (8015B)	VOCs (8260B)	1,2,3-TCP (8260-SIM, 524.2-SIM)	Top of Casing Elevation (ft MSL)[1,2]	Ground Surface Elevation (ft MSL)[1,2]	Casing Diameter (inches)	Total Well Depth (ft bgs)	Screened Interval (ft bgs)
GWE-1	X	X	X	X	9.92	10.00	5	13	4-13
GWE-2	X	X	X	X	7.16	7.80	5	9	4-9
GWE-3	X	X	X	X	8.58	9.17	5	16	5-16
GWE-4	X	X	X	X	8.08	9.00	5	16	5-16
MK-2A	X	X	X	X	12.96	9.83	2	13	3-13
MK-4A	X	X	X	X	17.46	14.65	2	15	5-15
MK-5AR	X	X	X	X	10.74	8.42	2	--	--
MK-6A	X	X	X	X	17.28	14.05	2	18	8-18
MW-3A	O	O	O	O	11.18	9.00	2	15.3	2.5-12.5
MW-4A	X	X	X	X	12.82	9.50	2	12	2-12
MW-6AR	X	X	X	X	13.02	--	2	13	5-13
MW-7A	X	X	X	X	11.19	9.00	2	13	3-13
MW-8A	X	X	X	X	10.62	9.00	2	13	3-13
SW-18UA	O	O	O	O	9.29	9.56	1	10	5-10

1 - Source: AMEC, 2014. "*Amended Operations and Maintenance Plan, Schlage Operable Unit,* Former Schlage and Southern Pacific Transportation Company Properties, San Francisco and Brisbane, California. 10 January.

2 - Elevations were surveyed during well installation and may have changed since the time of measurement.

3 - All wells screened in Fill water-bearing zone.

Abbreviations:

CAM = California Assessment Manual

CrVI = hexavalent chromium

TPH = total petroleum hydrocarbons

VOCs = volatile organic compounds

1,2,3-TCP = 1,2,3-trichloropropane

SIM = selected ion monitoring

ft MSL = feet above mean sea level

ft bgs = feet below ground surface

Key:

X = sampled

O = planned but not sampled; an obstruction was encountered in MW-3A and SW-18UA could not be located.

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
A1	DG-A1S-0.5-1	8/21/18	0.5-1	**3.5**	**160**	**85**	**0.18 J**	**0.14 J**	**63**	**13**	**77**	**100**	**0.73**	<0.19	**71**	**0.59 J**	<0.15	<0.43	**57**	**110**
A1	DG-A1S-3.5-4	8/21/18	3.5-4	**0.85 J**	**7.8**	**58**	**0.60**	<0.043	**31**	**17**	**19**	**9.9**	**0.041**	<0.22	**28**	<0.52	<0.17	<0.50	**42**	**58**
A2	DG-A2S-0.5-1	8/22/18	0.5-1	**17**	**190**	**250**	**0.095 J**	**11**	**51**	**11**	**740**	**2,400**	**0.52 F1**	**4.9**	**47**	<0.41	**2.7**	**1.2 J**	**58**	**1,100**
A2	DG-A2S-3.5-4	8/22/18	2.5-4	**3.1**	**110**	**210**	**0.27 J**	**0.24 J**	**120**	**22**	**74**	**150**	**1.4**	**0.98 J**	**150**	<0.59	<0.20	**1.5 J**	**92**	**140**
A2	DG-A2S-19.5-20	8/21/18	19.5-20	**0.27 J B**	<0.22	**21**	**0.29**	<0.032	**59**	**3.7**	**2.5 J**	**2.0**	**0.0068 J**	<0.17	**15**	<0.39	<0.13	<0.38	**29**	**8.3**
A3	DG-A3S-0.5-1	8/21/18	0.5-1	**1.8 J**	**41**	**74**	**0.30 J**	**0.19 J**	**65**	**13**	**43**	**59**	**0.044**	**0.35 J**	**71**	<0.57	<0.19	<0.55	**58**	**120**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	**0.72 J**	**3.2 J**	**110**	**0.28 J**	<0.044	**43**	**5.2**	**12**	**5.3**	**0.17**	<0.23	**30**	**0.56 J**	<0.18	<0.52	**50**	**32**
A3	DG-A3S-9.5-10	8/21/18	9.5-10	**1.4 J**	**1.9 J**	**50**	**0.14 J**	<0.044	**130**	**4.4**	**3.9 J**	**1.1 J**	**0.013 J**	<0.22	**20**	<0.53	<0.18	<0.51	**58**	**15**
A4	DG-A4S-0.5-1	8/22/18	0.5-1	**8.8**	**20 B**	**240**	**0.18 J**	**24**	**42**	**14**	**400**	**690**	**0.62**	**3.3**	**37**	<0.57	<0.19	**1.2 J**	**93**	**690**
A4	DG-A4S-3.5-4	8/22/18	2.5-4	**1.6**	**11 B**	**68**	**0.22 J**	**0.20 J**	**30**	**7.8**	**140**	**130**	**0.18**	**0.22 J**	**25**	<0.48	<0.16	**0.55 J**	**42**	**250**
A4	DG-A4S-19.5-20	8/22/18	19.5-20	**0.58 J**	**0.73 J**	**40**	<0.079	<0.030	**72**	**2.5**	**4.7**	**1.6**	<0.0023	<0.16	**18**	<0.37	<0.12	<0.35	**23**	**16**
A5	DG-A5S-0.5-1	8/23/18	0.5-1	**1.4**	**8.9**	**71 B**	**0.10 J**	**0.34 J**	**33**	**15**	**170**	**220**	**0.38**	**0.47 J**	**16**	<0.43	**0.16 J**	**1.2 J**	**100**	**160**
A5	DG-A5S-3.5-4	8/23/18	2.5-4	**0.80 R**	**2.1 J B**	**83 F1**	**0.12 J**	<0.038	**96**	**30**	**45 F1**	**2.7**	**0.13**	**0.22 J**	**68**	<0.46	<0.15	**1.6**	**100 F1**	**68**
A5	DG-A5S-19.5-20	8/23/18	19.5-20	**0.68 J**	**2.1 J B**	**39**	<0.097	<0.037	**89**	**4.8**	**6.4**	**1.4 J**	**0.0067 J**	<0.19	**18**	**0.50 J**	<0.15	**0.81 J**	**80**	**18**
A6	DG-A6S-0.5-1	8/22/18	0.5-1	**23**	**16**	**130**	<0.11	**2.1**	**16**	**9.5**	**6,000**	**1,200**	**0.27**	**0.95 J**	**20**	**1.4 J**	**2.4**	**1.4 J**	**110**	**450**
A6	DG-A6S-3.5-4	8/22/18	2.5-4	**0.99 J**	**4.8**	**86**	**0.16 J**	<0.046	**51**	**12**	**42**	**19**	**0.041**	**0.36 J**	**70**	<0.55	<0.19	**0.72 J**	**32**	**56**
A6	DG-A6S-3.5-4 (D)	8/22/18	2.5-4	**0.78 J**	**8.3**	**160**	**0.32 J**	<0.042	**42**	**13**	**37**	**12**	**0.037**	**0.40 J**	**61**	<0.51	**0.20 J**	**0.75 J**	**32**	**66**
A6	DG-A6S-19.5-20	8/22/18	19.5-20	**0.61 J**	**0.76 J**	**29**	**0.14 J**	<0.041	**48**	**4.6**	**3.6 J**	**1.8**	**0.0052 J**	<0.21	**19**	<0.50	<0.17	**0.50 J**	**30**	**13**
A7	DG-A7S-0.5-1	8/23/18	0.5-1	**0.72 J B**	**2.3 J**	**53 B**	<0.12	**0.24 J**	**12**	**9.6**	**79**	**48**	**0.078**	**0.65 J**	**15**	<0.56	<0.19	<0.54	**83**	**79**
A7	DG-A7S-3.5-4	8/23/18	2.5-4	**0.60 J**	**14**	**62**	**0.16 J**	<0.037	**67 B**	**9.8**	**20**	**22**	**0.076**	**0.57 J**	**80**	**1.1 J**	<0.15	<0.43	**41**	**37**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	**0.13 J**	**0.43 J**	**24**	**0.10**	<0.011	**34 B**	**2.3**	**4.2**	**2.1**	**0.012 J**	**0.51**	**12**	**0.68 J**	<0.046	<0.13	**24**	**13**
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.29	**0.83 J**	**32**	<0.11	<0.043	**46**	**1.7**	<2.5	**2.0**	**0.0047 J**	<0.22	**6.5**	<0.52	<0.17	<0.50	**45**	**5.9**
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.28	**1.3 J**	**52**	<0.11	<0.042	**8.7**	**9.7**	**110**	**2.1**	**0.049**	**0.36 J**	**16**	<0.51	<0.17	**0.97 J**	**98**	**33**
A8	DG-A8S-3.5-4	8/27/18	2.5-4	**2.7**	**230**	**120**	**0.28 J**	**1.5**	**49**	**11**	**160**	**220**	**1.4**	**0.72 J**	**65**	**0.69 J**	<0.19	**0.85 J**	**36**	**190**
A8	DG-A8S-17-17.5	8/27/18	17-17.5	**0.48 J**	**2.8 J**	**41**	**0.16 J**	<0.044	**53**	**8.3**	**5.0 J**	**1.1 J**	**0.0040 J**	<0.22	**28**	<0.53	<0.18	<0.51	**47**	**18**
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	**0.39 J**	**2.3 J**	**25**	<0.087	<0.033	**44**	**4.7**	**4.1**	**0.87 J**	<0.0022	<0.17	**17**	<0.40	<0.13	<0.39	**37**	**14**
B1	DG-B1S-0.5-1	8/21/18	0.5-1	**0.89 J F1**	**110**	**48**	<0.11	**0.26 J**	**23**	**6.1**	**56**	**66**	**0.045**	**0.33 J**	**18**	<0.50	<0.17	<0.48	**36**	**73**
B1	DG-B1S-3.5-4	8/21/18	3.5-4	**1.3 J**	**94**	**100**	**0.12 J**	**0.077 J**	**85**	**18**	**33**	**3.5**	**0.48**	<0.24	**120**	<0.56	<0.19	<0.54	**71**	**53**
B2	DG-B2S-0.5-1	8/22/18	0.5-1	**5.9**	**130**	**240**	<0.10	**2.8**	**90**	**16**	**310**	**510**	**0.57**	**4.1**	**55**	<0.48	**0.74 J**	**1.3 J**	**78**	**580**
B2	DG-B2S-3.5-4	8/22/18	2.5-4	**2.6**	**280**	**250**	**0.20 J**	**0.21 J**	**34**	**6.0**	**49**	**250**	**0.063**	**0.51 J**	**37**	<0.54	**0.41 J**	<0.52	**26**	**170**
B2	DG-B2S-19.5-20	8/21/18	19.5-20	**0.31 J B**	**5.0**	**31**	**0.18 J**	<0.042	**14**	**6.3**	**4.8 J**	**0.83 J**	**0.011 J**	**0.43 J**	**15**	**3.4**	<0.17	<0.50	**72**	**3.0 J**
B3	DG-B3S-0.5-1	8/21/18	0.5-1	**24**	**67**	**630**	<0.098	**5.7**	**210**	**14**	**870**	**5,300**	**0.81**	**1.5**	**43**	<1.1	**4.4**	**1.9 J**	**56**	**1,900**
B3	DG-B3S-3.5-4	8/21/18	2.5-4	**10**	**9.7**	**640**	<0.088	**2.2**	**19 B**	**3.8**	**2,100**	**2,300**	**1.3**	<0.17	**16**	<0.41	**1.2**	**0.53 J**	**7.5**	**2,100**
B4	DG-B4S-0.5-1	8/23/18	0.5-1	**1.5 B**	**4.1**	**74 B**	<0.084	**1.4**	**17**	**11**	**200**	**130**	**0.19**	**1.3**	**10**	<0.39	**0.47 J**	**0.66 J**	**88**	**240**
B4	DG-B4S-0.5-1 (D)	8/23/18	0.5-1	**1.1 J**	**3.9**	**80**	<0.089	**1.3**	**21**	**12**	**200**	**130**	**0.21**	**1.4**	**11**	<0.41	**0.27 J**	**1.0 J**	**100**	**240**
B4	DG-B4S-3.5-4	8/23/18	1-2.5	**0.75 J B**	**1.6 J**	**47 B**	<0.069	**0.41**	**13**	**11**	**120**	**48**	**0.31**	**0.30 J**	**10**	<0.32	**0.19 J**	**0.84 J**	**78**	**130**
B5	DG-B5S-0.5-1	8/23/18	0.5-1	**1.5**	**16 B**	**82**	**0.18 J**	**0.71**	**34**	**13**	**190**	**95**	**0.41**	**2.4**	**39**	**1.1 J**	<0.10	<0.29	**88**	**190**
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.22	**4.1 B**	**160**	**0.24 J**	**0.27 J**	**210**	**28**	**230**	**170**	**0.12**	**0.81 J**	**230**	**1.2 J**	**0.25 J**	<0.38	**92**	**280**
B6	DG-B6S-0.5-1	8/22/18	0.5-1	**7.4**	**13**	**150**	**0.095 J**	**2.1**	**26**	**9.6**	**190**	**500**	**0.25**	**1.2**	**25**	**0.67 J**	**1.1**	**0.99 J**	**60**	**380**
B6	DG-B6S-3.5-4	8/22/18	2.5-4	**2.2**	**3.0 J**	**120**	<0.11	**0.043 J**	**150**	**32**	**59**	**27**	**0.063**	**0.52 J**	**130**	**0.53 J**	**0.94**	**3.1**	**140**	**84**
B7	DG-B7S-0.5-1	8/23/18	0.5-1	**0.42 J**	**4.4**	**68**	**0.24 J**	**0.22 J**	**32 B**	**8.9**	**99**	**62**	**0.11**	**2.1**	**23**	**0.51 J**	<0.16	<0.46	**69**	**77**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B7	DG-B7S-3.5-4	8/23/18	2.5-4	**1.4 J F1**	**4.3**	**90**	<0.12	**0.20 J**	**45 F1**	**9.1**	**31 F1**	**100 F1 F2**	**0.12**	**0.36 J**	**60 F1**	<0.57	<0.19	<0.55	**26 F1**	**86 F1**
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.32	**0.61 J**	**34**	<0.13	<0.048	**29**	**0.81**	<2.8	**1.5 J**	**0.018**	<0.25	**4.6**	<0.58	<0.20	<0.56	**23**	**3.2 J**
B8	DG-B8S-0.5-1	8/23/18	0.5-1	**4.6**	**7.0**	**100**	**0.19 J**	**0.21 J**	**43**	**11**	**110**	**260**	**0.046**	**0.87 J**	**48**	<0.55	<0.18	**1.1 J**	**52**	**120**
B8	DG-B8S-3.5-4	8/23/18	2.5-4	**2.2**	**4.8**	**160**	**0.15 J**	<0.039	**180**	**18**	**22**	**2.0**	**0.024**	<0.20	**160**	<0.47	<0.16	**1.5 J**	**120**	**48**
B9	DG-B9S-0.5-1	8/24/18	0.5-1	**10 B**	**24**	**50 B**	<0.25	**3.0**	**21**	**17**	**590**	**2,600**	**0.76**	**5.8**	**21**	<1.2	**4.1**	<1.1	**62**	**640**
B9	DG-B9S-3.5-4	8/24/18	2.5-4	**1.6 J B**	**3.8**	**75 B**	<0.12	**0.12 J**	**83**	**11**	**34**	**36**	**0.54**	**0.39 J**	**73**	<0.53	<0.18	<0.51	**38**	**61**
B9	DG-B9S-9.5-10	8/24/18	9.5-10	**0.39 J**	**1.8 J**	**56**	**0.075 J**	<0.027	**34**	**5.5**	**7.4**	**5.5**	**0.072**	<0.14	**20**	<0.33	<0.11	<0.32	**26**	**23**
B10	DG-B10S-0.5-1	8/24/18	0.5-1	**7.4**	**28**	**150**	<0.13	**0.72**	**72**	**14**	**140**	**610**	**0.34**	**0.83 J**	**72**	<0.58	**0.50 J**	**1.2 J**	**60**	**250**
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	**9.1**	**39**	**370**	<0.12	**1.4**	**68**	**8.4**	**210**	**13,000**	**0.49**	**1.8 J**	**41**	<0.57	**0.58 J**	**1.2 J**	**45**	**450**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.26	**1.3 J**	**36 B**	**0.13 J**	<0.038	**28**	**4.2**	**6.1**	**6.9**	**0.048**	<0.20	**16**	<0.46	<0.16	<0.45	**22**	**22**
C1	DG-C1S-0.5-1	8/21/18	0.5-1	**3.0**	**270**	**63**	**0.13 J**	**0.63**	**17**	**10**	**110**	**250**	**0.12**	**0.37 J**	**15**	<0.50	**0.17 J**	<0.48	**59**	**180**
C1	DG-C1S-3.5-4	8/21/18	3.5-4	**100**	**30**	**75**	**0.12 J**	**0.16 J**	**35**	**9.8**	**92**	**220**	**0.050**	**0.24 J**	**46**	<0.48	<0.16	<0.46	**43**	**83**
C2	DG-C2S-0.5-1	8/21/18	0.5-1	**2.7 B**	**15**	**110**	**0.15 J**	**1.9**	**52**	**9.2**	**100**	**420**	**0.45**	**2.4**	**49**	**0.64 J**	<0.18	<0.51	**32**	**310**
C2	DG-C2S-3.5-4	8/21/18	2.5-4	**1.6 B**	**16**	**180**	**0.32**	**0.33**	**29**	**6.0**	**58**	**300**	**0.13**	**0.68 J**	**29**	<0.38	**0.24 J**	<0.37	**28**	**320**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	**16**	**5.2**	**110**	<0.10	**0.40**	**13 B**	**15**	**240**	**670**	**0.21**	**0.56 J**	**26**	<0.48	**0.36 J**	<0.46	**120**	**300**
C3	DG-C3S-3.5-4	8/21/18	2.5-4	**38**	**49**	**1,100**	**0.28 J**	**9.2**	**38 B**	**12**	**10,000**	**5,200**	**6.0**	**3.6**	**39**	<2.4	**3.9**	**2.5 J**	**28**	**5,700**
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.30	**4.4**	**21**	**0.34 J**	**0.10 J**	**51**	**9.0**	**23**	**8.0**	**0.037**	**1.0 J**	**48**	<0.54	<0.18	<0.52	**41**	**49**
C4	DG-C4S-0.5-1	8/23/18	0.5-1	**10 B**	**24**	**89 B**	<0.10	**1.1**	**17**	**11**	**310**	**1,000**	**0.20**	**0.34 J**	**13**	<0.48	**0.64 J**	**0.87 J**	**74**	**320**
C4	DG-C4S-3.5-4	8/23/18	2.5-4	**4.1 B**	**5.0**	**110 B**	**0.21 J**	**0.50**	**62**	**11**	**35**	**1,100**	**0.21**	**0.41 J**	**41**	<0.50	**0.19 J**	<0.48	**54**	**180**
C5	DG-C5S-0.5-1	8/23/18	0.5-1	<0.19 R	**3.1 B**	**53 F1**	**0.11 J**	**0.51 F1**	**15 F1**	**11 F1**	**140**	**130 F1**	**0.28**	**1.1**	**9.4 F1**	**0.72 J**	<0.12	<0.33	**94 F1**	**130 F1**
C5	DG-C5S-3.5-4	8/23/18	1-2.5	**3.1**	**9.3 B**	**210**	**0.32**	**0.68**	**44**	**10**	**260**	**410**	**0.47**	**1.2 J**	**41**	**0.72 J**	<0.16	<0.46	**46**	**530**
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.33	**10 B**	**370**	**0.58**	**0.12 J**	**48**	**18**	**39**	**15**	**0.28**	**0.85 J**	**51**	**2.5 J**	<0.20	<0.58	**70**	**85**
C6	DG-C6S-0.5-1	8/23/18	0.5-1	**1.9 F1**	**4.2**	**44 F1**	<0.13	**0.54**	**19**	**12**	**150 F1**	**140 F1**	**0.12**	**1.5 J**	**15**	<0.58	**0.66 J**	**1.4 J**	**88 F1**	**120 F1**
C6	DG-C6S-3.5-4	8/23/18	2.5-4	**4.2**	**6.0**	**98**	<0.098	**0.27 J**	**35**	**12**	**3,400**	**230**	**1.7**	**1.1 J**	**33**	**0.67 J**	**0.81**	**0.84 J**	**51**	**140**
C7	DG-C7S-0.5-1	8/24/18	0.5-1	**24**	**9.4**	**120**	<0.098	**0.56**	**17**	**12**	**220**	**910**	**0.20**	**1.7**	**10**	<0.45	**0.60 J**	**0.72 J**	**89**	**190**
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	**2.8**	**5.2**	**60**	<0.12	**0.98**	**16**	**11**	**210**	**310**	**0.17**	**2.5**	**9.4**	<0.57	**0.30 J**	**1.2 J**	**93**	**150**
C7	DG-C7S-3.5-4	8/24/18	3.5-4	**4.4**	**7.1**	**68**	<0.073	**0.41**	**32**	**7.1**	**82**	**170**	**0.042**	**0.40 J**	**34**	<0.34	**0.20 J**	**0.56 J**	**39**	**92**
C7	DG-C7S-9.5-10	8/24/18	9.5-10	**1.1 J**	**6.8**	**73**	**0.14 J**	<0.040	**66**	**14**	**25**	**8.6**	**0.049**	**0.42 J**	**83**	<0.49	<0.16	**0.82 J**	**43**	**59**
C8	DG-C8S-0.5-1	8/23/18	0.5-1	**1.4 J**	**5.1**	**55**	<0.11	**0.60**	**17**	**13**	**190**	**89**	**0.077**	**0.39 J**	**11**	<0.53	<0.18	**1.5 J**	**100**	**380**
C8	DG-C8S-3.5-4	8/23/18	2.5-4	**1.7**	**4.1 B**	**90**	**0.26 J**	**0.067 J**	**130**	**15**	**37**	**150**	**0.35**	**0.31 J**	**130**	<0.42	<0.14	**0.78 J**	**52**	**88**
C9	DG-C9S-0.5-1	8/27/18	0.5-1	**1.6**	**10**	**140**	**0.12 J**	**1.1**	**40**	**12**	**220**	**270**	**0.14**	**2.3**	**31**	**1.0 J**	**0.31 J**	**0.77 J**	**94**	**250**
C9	DG-C9S-3.5-4	8/27/18	1-2.5	**6.1 F1**	**19**	**110 F1**	<0.10	**4.0**	**13 F1**	**15 F1**	**420**	**1,400**	**0.029**	**0.70 J**	**9.5 F1**	**1.4 J**	**4.0**	**1.0 J**	**92 F1**	**780**
C10	DG-C10S-0.5-1	8/23/18	0.5-1	**1.1 J**	**11**	**34**	<0.13	**0.060 J**	**13**	**19**	**150**	**58**	**0.084**	**0.47 J**	**11**	<0.59	<0.20	**1.9 J**	**130**	**88**
C10	DG-C10S-3.5-4	8/23/18	2.5-4	**2.6**	**190**	**120**	**0.42**	<0.048	**180**	**24**	**45**	**16**	**2.3**	**0.56 J**	**200**	<0.58	<0.20	**1.1 J**	**89**	**81**
D1	DG-D1S-0.5-1	8/20/18	0.5-1	**2.3**	**92**	**95 B**	<0.094	**0.44**	**13 B**	**11**	**100**	**95**	**0.12**	**0.22 J**	**11**	<0.43	**0.24 J**	**0.86 J**	**75**	**130**
D1	DG-D1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**75**	**100 B**	**0.16 J**	<0.036	**64 B**	**14**	**22**	**11**	**0.054**	<0.19	**110**	<0.44	**0.18 J**	**0.44 J**	**27**	**40**
D1	DG-D1S-9.5-10	8/20/18	9.5-10	**2.2**	**12**	**95 B**	**0.66**	<0.040	**120 B**	**28**	**44**	**7.9**	**2.7**	**0.40 J**	**250**	**0.83 J**	**0.29 J**	**0.74 J**	**55**	**78**
D2	DG-D2S-0.5-1	8/20/18	0.5-1	<0.31	**2.2 J**	**48 B**	<0.12	<0.046	**12 B**	**10**	**140**	**7.3**	**0.075**	<0.24	**4.5**	**0.83 J**	**0.20 J**	**1.2 J**	**120**	**41**
D2	DG-D2S-3.5-4	8/20/18	1-2.5	**2.1**	**62**	**230 B**	**0.35**	**0.24 J**	**56 B**	**14**	**58**	**180**	**0.12**	**0.37 J**	**80**	<0.41	**0.45 J**	**0.57 J**	**43**	**170**
D3	DG-D3S-0.5-1	8/21/18	0.5-1	**3.9**	**210**	**44**	<0.12	**0.74**	**15**	**13**	**180**	**190**	**0.11**	**0.34 J**	**33**	<0.55	**0.35 J**	<0.53	**56**	**160**
D3	DG-D3S-3.5-4	8/21/18	2.5-4	**3.5**	**300**	**86**	**0.080 J**	**0.38**	**40**	**10**	**440**	**230**	**0.10**	**0.29 J**	**40**	<0.32	**0.22 J**	<0.31	**44**	**350**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
D3	DG-D3S-9.5-10	8/21/18	9.5-10	**0.86 J**	**29**	**67**	<0.10	**0.19 J**	**35**	**9.1**	**56**	**270**	**0.76**	**0.34 J**	**33**	<0.48	<0.16	<0.47	**32**	**160**
D4	DG-D4S-0.5-1	8/21/18	0.5-1	**6.8**	**6.2**	**43**	<0.11	**0.23 J**	**22**	**8.9**	**140**	**890**	**0.22**	**0.24 J**	**9.3**	<0.52	<0.18	<0.50	**64**	**110**
D4	DG-D4S-0.5-1 (D)	8/21/18	0.5-1	**1.4**	**3.2**	**44**	<0.069	**0.12 J**	**20**	**8.7**	**97**	**450**	**0.11**	**0.47 J**	**9.5**	<0.32	**0.14 J**	<0.31	**64**	**71**
D4	DG-D4S-3.5-4	8/21/18	2.5-4	**3.5**	**130**	**110**	<0.11	**0.33 J**	**16**	**12**	**150**	**340**	**0.17**	<0.22	**16**	<0.53	**0.27 J**	<0.51	**95**	**130**
D5	DG-D5S-0.5-1	8/22/18	0.5-1	**6.9**	**12 B**	**180**	<0.099	**5.2**	**78**	**18**	**330**	**620**	**0.19**	**3.9**	**45**	**1.1 J**	**0.24 J**	<0.44	**77**	**850**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.22	**2.9 B**	**48**	<0.087	**0.49**	**12**	**14**	**110**	**58**	**0.32**	**0.71 J**	**6.7**	**1.1 J**	<0.13	<0.39	**110**	**97**
D6	DG-D6S-0.5-1	8/22/18	0.5-1	**0.54 J**	**2.2 J**	**33**	<0.11	<0.044	**12**	**15**	**150**	**47**	**0.12**	**0.52 J**	**6.3**	<0.53	<0.18	**1.5 J**	**130**	**77**
D6	DG-D6S-3.5-4	8/22/18	2.5-4	**1.2 J**	**4.4**	**53**	**0.094 J**	**0.098 J**	**13**	**11**	**99**	**78**	**0.10**	**0.40 J**	**6.9**	<0.41	<0.14	**1.1 J**	**79**	**77**
D7	DG-D7S-1.5-2	8/27/18	1.5-2	<0.21	**3.0**	**53**	<0.084	**0.12 J**	**10**	**8.6**	**110**	**98**	**0.052**	<0.17	**5.3**	**0.47 J**	<0.13	**0.63 J**	**83**	**78**
D7	DG-D7S-3.5-4	8/27/18	2.5-4	**1.6 J**	**2.4 J**	**66**	<0.12	**0.21 J**	**21**	**8.8**	**78**	**87**	**0.15**	<0.23	**16**	**1.2 J**	<0.18	<0.51	**73**	**77**
D8	DG-D8S-0.5-1	8/23/18	0.5-1	<0.28	**0.41 J**	**35**	<0.11	<0.042	**10**	**12**	**140**	**9.9**	**0.036**	**0.34 J**	**5.3**	<0.51	<0.17	**0.94 J**	**100**	**42**
D8	DG-D8S-3.5-4	8/23/18	2.5-4	**1.2 J**	**2.5 J**	**58**	<0.11	<0.042	**5.7**	**6.0**	**15**	**32**	**0.18**	<0.22	**3.4**	<0.51	<0.17	<0.49	**36**	**59**
D8	DG-D8S-3.5-4 (D)	8/23/18	2.5-4	**1.8**	**2.3 J**	**48**	<0.11	**0.053 J**	**4.6**	**6.6**	**25**	**36**	**0.14**	<0.21	**3.0**	<0.50	<0.17	<0.48	**42**	**59**
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.25	**0.74 J**	**36**	<0.098	<0.037	**11**	**11**	**130**	**23**	**0.099**	**0.33 J**	**3.6**	<0.45	<0.15	**0.78 J**	**110**	**49**
D9	DG-D9S-3.5-4	8/24/18	1-2.5	**3.3**	**5.8**	**60**	<0.11	**0.14 J**	**16**	**12**	**150**	**150**	**0.061**	**0.38 J**	**13**	<0.50	**0.37 J**	**0.78 J**	**86**	**81**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	**0.37 J**	**1.7 J**	**28**	<0.069	<0.026	**30**	**5.3**	**5.4**	**3.2**	<0.0024	**0.17 J**	**34**	<0.32	<0.11	<0.31	**19**	**16**
D10	DG-D10S-0.5-1	8/23/18	0.5-1	**8.9**	**64**	**110**	<0.10	**0.36 J**	**32**	**16**	**640**	**1,200**	**0.29**	**3.4**	**29**	<1.2	**1.0 J**	<1.1	**96**	**460**
D10	DG-D10S-3.5-4	8/23/18	2.5-4	**8.1**	**7.2**	**68**	<0.10	**0.41**	**28**	**14**	**140**	**270**	**0.064**	**0.42 J**	**27**	<0.48	**0.50 J**	**1.3 J**	**93**	**140**
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	**0.57 J B**	**0.25 J**	**8.2 B**	<0.083	**0.070 J**	**8.3**	**15**	**120**	**13**	**0.047**	**0.41 J**	**4.5**	<0.38	**0.36 J**	**0.70 J**	**110**	**71**
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	**21 B**	**34**	**430 B**	<0.23	**5.9**	**61**	**12**	**750**	**6,100**	**0.15**	**0.54 J**	**30**	<1.1	**2.9**	<1.0	**51**	**2,100**
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	**1.9 B**	**6.8**	**160 B**	**0.42**	**0.059 J**	**180**	**20**	**44**	**8.2**	**0.096**	**0.35 J**	**230**	<0.37	**0.31 J**	<0.35	**63**	**78**
E1	DG-E1S-0.5-1	8/20/18	0.5-1	<0.29	**22**	**62 B**	<0.11	<0.043	**16 B**	**11**	**160**	**40**	**0.085**	<0.22	**4.9**	<0.52	**0.27 J**	**0.90 J**	**130**	**67**
E1	DG-E1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**160**	**90 B**	**0.11 J**	**0.11 J**	**32 B**	**5.8**	**29**	**68**	**0.054**	<0.20	**29**	<0.48	**0.20 J**	<0.46	**25**	**83**
E2	DG-E2S-0.5-1	8/20/18	0.5-1	**3.2**	**11**	**94 B**	<0.12	**1.5**	**22 B**	**12**	**180**	**430**	**0.36**	**1.1 J**	**18**	**0.58 J**	**0.53 J**	**0.78 J**	**98**	**490**
E2	DG-E2S-3.5-4	8/20/18	2.5-4	**2.7**	**120**	**470 B**	**0.12 J**	**0.45**	**21 B**	**10**	**330**	**620**	**0.074**	**0.39 J**	**19**	<0.35	**1.4**	**1.0 J**	**87**	**400**
E3	DG-E3S-0.5-1	8/21/18	0.5-1	**4.7**	**14**	**120**	<0.13	**6.8**	**340**	**15**	**190**	**200**	**0.28**	**2.5**	**130**	<0.60	**0.22 J**	<0.58	**56**	**260**
E3	DG-E3S-3.5-4	8/21/18	2.5-4	**9.7**	**44**	**240**	<0.12	**2.1**	**33**	**11**	**530**	**1,800**	**1.0**	**0.71 J**	**49**	<0.53	**1.1**	<0.51	**48**	**730**
E3	DG-E3S-9.5-10	8/21/18	9.5-10	**20**	**50**	**700**	**0.17 J**	<0.11	**110**	**24**	**330**	**160**	**0.060**	**2.0**	**76**	<1.4	<0.47	**2.3 J**	**80**	**230**
E4	DG-E4S-0.5-1	8/21/18	0.5-1	**0.60 J F1**	**2.9 J**	**36 F1**	<0.12	**0.063 J**	**8.2 F1**	**13**	**110 F1**	**45 F1**	**0.068**	<0.23	**4.2**	<0.53	<0.18	<0.51	**98 F1**	**63 F1**
E4	DG-E4S-3.5-4	8/21/18	1-2.5	<0.22	**0.85 J**	**39**	<0.085	<0.032	**8.9**	**11**	**110**	**13**	**0.032**	**0.17 J**	**2.9**	<0.39	**0.26 J**	<0.38	**120**	**41**
E5	DG-E5S-0.5-1	8/22/18	0.5-1	<0.29	**2.4 J B**	**80**	<0.12	**0.14 J**	**10**	**10**	**130**	**76**	**0.14**	**0.48 J**	**5.3**	<0.53	<0.18	**1.0 J**	**97**	**100**
E5	DG-E5S-3.5-4	8/22/18	2.5-4	**71**	**22 B**	**150**	<0.10	**0.44**	**18**	**9.8**	**300**	**3,300**	**0.070**	**0.42 J**	**13**	<0.47	**0.72 J**	**1.1 J**	**71**	**350**
E5	DG-E5S-9-9.5	8/22/18	9-9.5	**1.8**	**3.2**	**73**	**0.34**	<0.027	**60**	**9.1**	**20**	**30**	**0.057**	<0.14	**40**	**0.84 J**	**0.16 J**	**0.43 J**	**60**	**41**
E6	DG-E6S-0.5-1	8/22/18	0.5-1	**2.2**	**4.0**	**84**	<0.11	**0.52**	**19**	**13**	**190**	**140**	**0.15**	**1.1 J**	**14**	<0.50	<0.17	**1.3 J**	**94**	**170**
E6	DG-E6S-3.5-4	8/22/18	1-2.5	**1.4 J**	**4.6**	**67**	**0.12 J**	**1.1**	**11**	**13**	**170**	**170**	**0.089**	**0.34 J**	**7.4**	<0.45	**0.62 J**	**1.8**	**110**	**230**
E6	DG-E6S-3.5-4 (D)	8/22/18	1-2.5	**0.29 J**	**1.8 J**	**51**	<0.078	**0.34**	**11**	**12**	**130**	**58**	**0.061**	**0.28 J**	**5.7**	<0.36	**0.14 J**	**1.2**	**110**	**96**
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.27	**3.5**	**58**	<0.11	**0.36 J**	**14**	**11**	**170**	**110**	**0.070**	<0.21	**8.5**	<0.50	**0.35 J**	**0.98 J**	**110**	**150**
E7	DG-E7S-3.5-4	8/24/18	2.5-4	**0.98 J**	**2.8 J**	**110**	**0.13 J**	**0.17 J**	**52**	**9.1**	**20**	**28**	**0.042**	**0.29 J**	**44**	<0.45	<0.15	<0.44	**42**	**57**
E7	DG-E7S-9.5-10	8/24/18	9.5-10	**1.3 J**	**1.2 J**	**97**	**0.20 J**	<0.038	**60**	**29**	**47**	**0.75 J**	**0.19**	**0.36 J**	**53**	<0.45	**0.46 J**	**1.6**	**140**	**65**
E8	DG-E8S-0.5-1	8/23/18	0.5-1	<0.26	**0.87 J**	**63**	<0.10	<0.038	**11**	**10**	**130**	**15**	**0.085**	**0.21 J**	**4.1**	**0.54 J**	**0.20 J**	**1.1 J**	**110**	**45**
E8	DG-E8S-3.5-4	8/23/18	2.5-4	**60**	**7.3**	**84**	<0.12	**0.073 J**	**17**	**10**	**380**	**170**	**0.13**	**0.64 J**	**16**	<0.57	<0.19	**1.1 J**	**79**	**95**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
E9	DG-E9S-0.5-1	8/24/18	0.5-1	<0.31	**0.40 J**	**47**	<0.12	<0.046	**14**	**13**	**260**	**6.7**	**0.32**	<0.24	**4.6**	<0.56	**0.72 J**	**0.63 J**	**130**	**43**
E9	DG-E9S-3.5-4	8/24/18	1-2.5	**14**	**45**	**62**	<0.12	<0.23	**110**	**26**	**470**	**400**	**0.11**	**3.5**	**120**	<2.8	<0.94	**4.8 J**	**57**	**280**
E10	DG-E10S-0.5-1	8/23/18	0.5-1	**3.6**	**13**	**68**	<0.085	**0.68**	**28**	**13**	**220**	**400**	**0.12**	**1.0 J**	**24**	**0.86 J**	**0.42 J**	**1.6**	**94**	**190**
E10	DG-E10S-0.5-1 (D)	8/23/18	0.5-1	**2.5**	**9.8**	**68**	<0.067	**0.72**	**25**	**13**	**200**	**310**	**0.18**	**0.83 J**	**21**	**1.2 J**	**0.42 J**	**1.4**	**90**	**160**
E10	DG-E10S-3.5-4	8/23/18	2.5-4	**1.0 J**	**2.1 J**	**68**	<0.087	**0.054 J**	**19**	**13**	**120**	**76**	**0.039**	<0.17	**13**	**0.62 J**	**0.24 J**	**1.0 J**	**120**	**91**
E11	DG-E11S-0.5-1	8/27/18	0.5-1	**0.33 J F1**	**2.6 J**	**36 F1**	<0.090	**0.077 J**	**12 F1**	**12 F1**	**130 F1 F2**	**32 F1**	**0.073**	<0.18	**6.2**	<0.42	**0.20 J F1**	**1.0 J**	**110 F1**	**55 F1**
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.22	**2.5 J**	**40**	<0.086	<0.033	**16**	**13**	**120**	**26**	**0.15**	<0.17	**10**	<0.40	**0.17 J**	**1.2 J**	**130**	**57**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	**8.0**	**19**	**110**	<0.10	**0.32 J**	**34**	**13**	**110**	**140**	**0.32**	**0.31 J**	**34**	<0.48	**0.36 J**	**1.0 J**	**73**	**160**
E11	DG-E11S-9.5-10	8/27/18	9.5-10	**0.37 J**	**1.9 J**	**55**	**0.24 J**	<0.049	**28**	**6.0**	**5.7 J**	**4.3**	**0.030**	<0.25	**22**	<0.59	<0.20	<0.57	**23**	**15**
F1	DG-F1S-0.5-1	8/20/18	0.5-1	**16**	**47**	**80 B**	<0.12	**0.75**	**21 B**	**11**	**180**	**460**	**0.18**	**0.37 J**	**12**	**1.2 J**	**0.42 J**	**1.0 J**	**97**	**240**
F1	DG-F1S-3.5-4	8/20/18	2.5-4	**2.0**	**110**	**81 B**	<0.10	**0.19 J**	**24 B**	**10**	**72**	**180**	**0.065**	<0.20	**21**	<0.47	**0.38 J**	<0.46	**63**	**110**
F1	DG-F1S-9.5-10	8/20/18	9.5-10	**6.4**	**180**	**85 B**	**0.40**	<0.039	**66 B**	**21**	**100**	**36**	**0.49**	**0.62 J**	**94**	**2.0 J**	**1.0**	**0.85 J**	**51**	**73**
F2	DG-F2S-0.5-1	8/20/18	0.5-1	**2.0**	**18**	**66 B**	<0.11	**0.82**	**15 B**	**13**	**170**	**130**	**0.27**	**0.84 J**	**13**	**0.85 J**	**0.43 J**	**0.92 J**	**110**	**170**
F2	DG-F2S-3.5-4	8/20/18	2.5-4	**0.44 J**	**82**	**79 B**	<0.12	<0.046	**14 B**	**13**	**98**	**20**	**0.060**	**0.30 J**	**11**	<0.55	**0.21 J**	**0.98 J**	**93**	**58**
F3	DG-F3S-0.5-1	8/21/18	0.5-1	**2.4**	**170**	**290**	<0.11	**1.0**	**25**	**11**	**150**	**370**	**0.24**	**0.84 J**	**25**	<0.50	**0.53 J**	<0.48	**72**	**260**
F3	DG-F3S-3.5-4	8/21/18	1-2.5	**2.1**	**140**	**140**	**0.11 J**	**0.27 J**	**33**	**5.5**	**48**	**320**	**0.050**	**0.34 J**	**26**	<0.49	**0.63 J**	<0.48	**26**	**260**
F3	DG-F3S-9.5-10	8/21/18	9.5-10	**3.1**	**140**	**130**	**0.12 J**	**0.31 J**	**33**	**6.0**	**59**	**300**	**0.070**	**0.46 J**	**28**	<0.38	**0.26 J**	<0.37	**27**	**210**
F4	DG-F4S-0.5-1	8/21/18	0-0.5	<0.24	**27**	**200**	**0.16 J**	**3.8**	**11**	**7.9**	**130**	**86**	**0.88**	**0.50 J**	**8.5**	<2.1	**1.9**	<2.1	**65**	**4,400**
F4	DG-F4S-3.5-4	8/21/18	0.5-1	<7.4	**280**	**820**	**0.64 J**	**80**	**32**	**11**	**220**	**1,600**	**36**	**4.8 J**	**22**	<13	**1.8 J**	<13	**85**	**26,000**
F5	DG-F5S-0.5-1	8/22/18	0.5-1	**8.8**	**1.7 J B**	**33**	**0.11 J**	<0.042	**8.1**	**11**	**150**	**270**	**0.049**	<0.22	**6.9**	<0.51	<0.17	**1.3 J**	**73**	**46**
F5	DG-F5S-3.5-4	8/22/18	2.5-4	**13**	**18 B**	**1,400**	**0.57**	**2.8**	**43**	**7.4**	**800**	**2,600**	**0.31**	**0.67 J**	**29**	**1.4 J**	**6.0**	**1.3 J**	**45**	**2,300**
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	**1.8**	**22**	**85 B**	**0.12 J**	**0.43**	**10**	**11**	**130**	**300**	**0.095**	**0.26 J**	**7.1**	<0.44	<0.15	**1.2 J**	**78**	**240**
F6	DG-F6S-0.5-1	8/23/18	0.5-1	**3.0**	**6.6**	**100**	<0.11	**1.2**	**42**	**16**	**620**	**370**	**0.29**	**3.1**	**29**	**0.86 J**	**1.4**	**1.3 J**	**98**	**400**
F6	DG-F6S-3.5-4	8/23/18	2.5-4	**0.54 J**	**5.9**	**21**	<0.11	<0.044	**14**	**15**	**130**	**37**	**0.026**	**1.4 J**	**6.5**	**0.88 J**	**0.46 J**	**1.1 J**	**100**	**74**
F7	DG-F7S-0.5-1	8/27/18	0.5-1	**2.1**	**9.8**	**73**	<0.092	**0.66**	**18**	**12**	**140**	**290**	**0.97**	**0.52 J**	**16**	**0.99 J**	**0.27 J**	**0.87 J**	**82**	**220**
F7	DG-F7S-3.5-4	8/27/18	2.5-4	**2.3**	**7.0**	**180**	**0.27 J**	**0.63**	**120**	**18**	**260**	**220**	**0.52**	<0.25	**82**	**0.92 J**	**0.38 J**	**0.71 J**	**77**	**500**
F8	DG-F8S-0.5-1	8/23/18	0.5-1	**3.2**	**14**	**69**	<0.070	**0.94**	**12**	**8.4**	**110**	**290**	**0.10**	**0.98 J**	**13**	**0.69 J**	**0.31 J**	**0.31 J**	**45**	**210**
F8	DG-F8S-3.5-4	8/23/18	2.5-4	**2.1**	**7.0**	**78**	**0.15 J**	**0.21 J**	**48**	**8.0**	**32**	**42**	**0.039**	**0.44 J**	**39**	**0.70 J**	<0.13	**0.55 J**	**39**	**57**
F9	DG-F9S-0.5-1	8/24/18	0.5-1	**0.35 J**	**1.4 J**	**47**	<0.11	**0.045 J**	**10**	**11**	**120**	**48**	**0.083**	<0.21	**9.6**	<0.49	<0.17	<0.48	**81**	**59**
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.31	**2.4 J**	**61**	<0.12	**0.26 J**	**35**	**5.1**	**13**	**23**	**0.025**	<0.24	**27**	<0.56	<0.19	<0.54	**24**	**81**
F9	DG-F9S-9.5-10	8/24/18	9.5-10	**0.94 J**	**6.2**	**210**	**0.46**	**0.074 J**	**110**	**15**	**29**	**18**	**0.14**	**0.54 J**	**78**	<0.54	**0.22 J**	<0.52	**71**	**84**
F10	DG-F10S-0.5-1	8/23/18	0.5-1	**1.3 J**	**2.6 J B**	**52**	<0.11	**0.073 J**	**14**	**15**	**120**	**85**	**0.070**	**0.51 J**	**12**	<0.52	<0.18	**1.3 J**	**110**	**80**
F10	DG-F10S-3.5-4	8/23/18	2.5-4	**0.63 J**	**6.2 B**	**160**	**0.47**	<0.046	**72**	**23**	**49**	**14**	**0.13**	**0.33 J**	**87**	<0.55	<0.19	**1.5 J**	**67**	**93**
F11	DG-F11S-0.5-1	8/24/18	0.5-1	**8.6**	**130**	**110**	<0.11	**2.6**	**240**	**11**	**250**	**650**	**0.38**	**2.5**	**42**	**0.62 J**	**1.8**	**1.4 J**	**44**	**390**
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**2.5**	**120**	**100**	**0.35 J**	**0.22 J**	**68**	**10**	**63**	**140**	**0.28 B**	**2.0**	**38**	**0.73 J**	**0.29 J**	**0.91 J**	**39**	**200**
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	**1.1 J**	**8.9**	**71**	**0.79**	**0.063 J**	**47**	**26**	**56**	**22**	**0.27**	<0.25	**52**	**0.62 J**	**0.93 J**	**0.58 J**	**49**	**99**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	**1.7**	**3.6**	**250**	<0.10	**0.43**	**40**	**11**	**360**	**160**	**0.070**	**0.88 J**	**69**	<0.47	**0.98**	**0.60 J**	**90**	**190**
G1	DG-G1S-0.5-1	8/20/18	0.5-1	**3.2 F1**	**270**	**120 F1 B**	<0.13	**0.58**	**19 F1 B**	**8.0**	**110 F1**	**250**	**0.19**	**0.32 J**	**16**	<0.58	**0.30 J**	<0.56	**52 F1**	**150**
G1	DG-G1S-3.5-4	8/20/18	2.5-4	**2.1**	**44**	**120 B**	<0.13	<0.049	**130 B**	**18**	**30**	**3.8**	**4.3**	<0.25	**160**	<0.59	**0.39 J**	**1.2 J**	**81**	**57**
G2	DG-G2S-0.5-1	8/20/18	0.5-1	**4.8**	**320**	**130 B**	<0.13	**1.6**	**22 B**	**12**	**210**	**440**	**0.42**	**0.67 J**	**23**	**0.60 J**	**0.90 J**	**1.6 J**	**68**	**360**
G2	DG-G2S-3.5-4	8/20/18	2.5-4	**110**	**39**	**1,700 B**	**0.82**	**1.7**	**52 B**	**9.0**	**620**	**8,800**	**0.69**	**2.8**	**45**	**2.3 J**	**5.2**	**1.8 J**	**38**	**2,600**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
G3	DG-G3S-0.5-1	8/21/18	0.5-1	**1.4 J**	**230**	**76**	<0.13	**0.16 J**	**35**	**4.9**	**21**	**73**	**0.069**	<0.25	**25**	<0.59	<0.20	<0.57	**27**	**84**
G3	DG-G3S-3.5-4	8/21/18	2.5-4	**2.0**	**340**	**110**	**0.26 J**	**0.13 J**	**45**	**7.9**	**11**	**14**	**0.036**	<0.23	**37**	<0.54	<0.18	<0.52	**32**	**43**
G3	DG-G3S-9.5-10	8/21/18	9.5-10	**1.5**	**67**	**52**	**0.73**	<0.035	**39**	**16**	**51**	**10**	**0.053**	**0.36 J**	**42**	<0.42	**0.14 J**	<0.41	**46**	**96**
G4	DG-G4S-0.5-1	8/21/18	0.5-1	**22 B**	**20**	**460**	**0.20 J**	**16**	**160**	**21**	**1,200**	**1,500**	**10**	**22**	**170**	**2.6 J**	**1.0**	**2.3**	**34**	**3,800**
G4	DG-G4S-3.5-4	8/21/18	1-2.5	**4.4 B**	**18**	**300**	**0.18 J**	**6.0**	**50**	**6.2**	**300**	**590**	**0.71**	**2.3**	**37**	**0.48 J**	**0.31 J**	<0.33	**25**	**630**
G5	DG-G5S-0.5-1	8/22/18	0.5-1	<0.27	**17 B**	**50**	<0.11	**0.13 J**	**25**	**14**	**110**	**48**	**0.095**	**2.3**	**12**	<0.49	<0.16	**1.3 J**	**110**	**100**
G5	DG-G5S-3.5-4	8/22/18	1-2.5	**2.2**	**5.3 B**	**110**	**0.24**	**0.76**	**72**	**9.7**	**74**	**200**	**0.33**	<0.13	**51**	<0.31	<0.10	**0.61 J**	**55**	**260**
G6	DG-G6S-0.5-1	8/22/18	0.5-1	**0.58 J**	**2.2 J**	**38**	<0.11	**0.15 J**	**17**	**15**	**130**	**55**	**0.063**	**1.1 J**	**13**	<0.53	<0.18	**1.5 J**	**99**	**84**
G6	DG-G6S-0.5-1 (D)	8/22/18	0.5-1	**0.68 J**	**1.8 J**	**33**	<0.095	**0.12 J**	**20**	**15**	**130**	**37**	**0.067**	**0.93 J**	**12**	<0.44	<0.15	**1.0 J**	**97**	**82**
G6	DG-G6S-1-2	8/22/18	1-2	<0.30 R	**1.2 J**	**42 F1**	<0.12	<0.045	**11**	**8.2**	**120 F1**	**6.9**	**0.029**	<0.23	**5.0**	<0.54	<0.18	**0.83 J**	**81 F1**	**32**
G6	DG-G6S-3.5-4	8/22/18	2.5-4	**3.0**	**64**	**71**	<0.12	**0.079 J**	**190**	**22**	**32**	**83**	**0.20**	**0.26 J**	**320**	<0.53	<0.18	**0.57 J**	**40**	**83**
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.26	**2.8 J**	**85**	<0.10	**0.11 J**	**26**	**11**	**110**	**510**	**0.078**	**0.24 J**	**18**	<0.47	**0.20 J**	**0.88 J**	**85**	**110**
G7	DG-G7S-3.5-4	8/24/18	2.5-4	**3.0**	**5.8**	**200**	<0.098	<0.037	**390**	**28**	**81**	**61**	**0.89**	<0.19	**400**	<0.45	**0.41 J**	**1.4 J**	**86**	**170**
G8	DG-G8S-0.5-1	8/23/18	0.5-1	**0.39 J**	**6.3**	**51**	<0.10	**0.14 J**	**12**	**12**	**110**	**95**	**0.090**	**0.81 J**	**6.6**	<0.47	**0.47 J**	**1.3 J**	**100**	**80**
G8	DG-G8S-0.5-1 (D)	8/23/18	0.5-1	**1.2 J**	**2.9 J**	**50**	<0.12	**0.25 J**	**16**	**13**	**120**	**120**	**0.090**	**0.56 J**	**7.6**	<0.55	**0.23 J**	**0.81 J**	**98**	**99**
G8	DG-G8S-3.5-4	8/23/18	2.5-4	**1.8**	**11**	**130**	<0.097	**0.28 J**	**28**	**9.1**	**66**	**150**	**0.062**	**0.35 J**	**82**	<0.45	**0.62 J**	**0.78 J**	**41**	**190**
G9	DG-G9S-0.5-1	8/27/18	0.5-1	**1.0 J**	**2.2 J**	**49**	**0.21 J**	<0.041	**15**	**14**	**150**	**91**	**0.078**	**0.75 J**	**8.2**	<0.50	<0.17	<0.48	**110**	**130**
G9	DG-G9S-3.5-4	8/27/18	2.5-4	**4.6**	**0.97 J**	**45**	**0.14 J**	**0.22 J**	**30**	**4.7**	**14**	**22**	**0.024**	<0.20	**23**	<0.46	<0.16	<0.45	**23**	**97**
G10	DG-G10S-0.5-1	9/26/18	0.5-1	**2.0 F1**	**6.2**	**72 F1**	**0.34 F1**	**0.60**	**51 F1**	**13 F1**	**86 F1**	**260 F2**	**0.84**	**0.92 J**	**47 F1**	**0.79 J**	**0.33 J F1**	**0.81 J**	**67 F1**	**190 F2**
G10	DG-G10S-3.5-4	9/26/18	3.5-4	**1.7 J**	**8.1**	**96**	**0.54**	**0.22 J**	**87**	**18**	**85**	**110**	**0.73**	**1.6 J**	**99**	**1.3 J**	**0.27 J**	**1.2 J**	**69**	**130**
G11	DG-G11S-0.5-1	8/27/18	0.5-1	**0.91 J**	**2.9 J**	**49**	<0.098	**0.16 J**	**31**	**14**	**130**	**83**	**0.057**	<0.19	**15**	<0.45	**0.30 J**	**0.94 J**	**110**	**130**
G11	DG-G11S-3.5-4	8/27/18	2.5-4	**0.39 J**	**2.6 J**	**51**	**0.17 J**	<0.042	**52**	**6.5**	**9.4**	**5.7**	**0.015**	<0.22	**27**	<0.51	**0.19 J**	<0.49	**44**	**25**
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.28	**2.4 J**	**75**	<0.11	**0.047 J**	**43**	**7.9**	**12**	**7.5**	**0.044**	<0.21	**33**	**0.50 J**	**0.23 J**	<0.48	**33**	**32**
H1	DG-H1S-0.5-1	8/20/18	0.5-1	**1.5 J**	**81**	**73 B**	<0.12	**0.17 J**	**54 B**	**12**	**67**	**47**	**1.6**	<0.23	**64**	<0.53	**0.23 J**	**1.2 J**	**59**	**73**
H1	DG-H1S-3.5-4	8/20/18	2.5-4	**3.3**	**96**	**130 B**	**0.14 J**	<0.044	**150 B**	**23**	**38**	**14**	**5.6**	**0.25 J**	**230**	**0.56 J**	**0.23 J**	**1.2 J**	**77**	**65**
H2	DG-H2S-0.5-1	8/20/18	0.5-1	**1.3 J B**	**180**	**140**	**0.39**	**0.11 J**	**41**	**9.5**	**120**	**140**	**0.10**	**0.51 J**	**33**	**0.66 J**	<0.16	<0.47	**37**	**110**
H2	DG-H2S-3.5-4	8/20/18	2.5-4	**9.4**	**49**	**590**	**0.24 J**	**1.8**	**170**	**17**	**270**	**1,300**	**2.9**	**1.5 J**	**110**	<0.51	**4.6**	<0.50	**59**	**1,100**
H3	DG-H3S-0.5-1	8/21/18	0.5-1	**0.99 J**	**200**	**66**	<0.11	**0.15 J**	**31**	**5.0**	**24**	**69**	**0.066**	<0.22	**23**	<0.50	<0.17	<0.49	**24**	**78**
H3	DG-H3S-3.5-4	8/21/18	2.5-4	**1.3 J**	**220**	**110**	<0.11	**0.18 J**	**33**	**5.2**	**36**	**130**	**0.039**	**0.25 J**	**26**	<0.51	<0.17	<0.50	**24**	**150**
H3	DG-H3S-9.5-10	8/21/18	9.5-10	**0.44 J**	**8.2**	**24**	**0.24 J**	**0.23 J**	**51**	**10**	**21**	**4.1**	**0.058**	**1.1 J**	**49**	**0.60 J**	<0.15	<0.42	**40**	**50**
H4	DG-H4S-0.5-1	8/21/18	0.5-1	**9.7**	**11**	**120**	<0.12	**4.2**	**49**	**11**	**1,000**	**700**	**1.3**	**5.6**	**43**	<0.57	**0.97**	<0.55	**48**	**870**
H4	DG-H4S-3.5-4	8/21/18	2.5-4	**20**	**86**	**1,100**	**0.22 J**	**3.5**	**46**	**11**	**490**	**1,600**	**1.6**	**1.1 J**	**59**	<0.51	**2.1**	**1.3 J**	**46**	**1,300**
H5	DG-H5S-0.5-1	8/22/18	0.5-1	**8.6**	**67 B**	**300**	**0.26 J**	**2.9**	**40**	**15**	**310**	**990**	**0.27**	**1.8 J**	**31**	<0.58	**0.44 J**	**1.4 J**	**110**	**850**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	**4.4**	**160 B**	**200**	**0.47**	**0.097 J**	**74**	**15**	**100**	**400**	**0.27**	**0.41 J**	**50**	<0.37	**0.42 J**	**1.0 J**	**61**	**310**
H6	DG-H6S-0.5-1	8/23/18	0.5-1	**1.6**	**8.5**	**100**	**0.15 J**	**0.16 J**	**88**	**13**	**48**	**110**	**0.34**	**0.22 J**	**51**	**0.66 J**	**0.39 J**	**0.89 J**	**64**	**120**
H6	DG-H6S-3.5-4	8/23/18	1-2.5	**1.1 J**	**4.5**	**87**	**0.11 J**	**0.17 J**	**74**	**8.7**	**43**	**820**	**0.15**	<0.19	**44**	<0.45	**0.37 J**	**0.95 J**	**62**	**130**
H7	DG-H7S-0.5-1	8/27/18	0.5-1	**2.8**	**12**	**210**	**0.35**	<0.044	**140**	**22**	**230**	**720**	**0.56**	**2.0**	**87**	**1.1 J**	<0.18	<0.51	**100**	**450**
H7	DG-H7S-3.5-4	8/27/18	1-2.5	**2.0**	**27**	**130**	**0.55**	<0.043	**130**	**27**	**310**	**120**	**0.39**	**2.1**	**200**	**1.8 J**	<0.17	<0.50	**67**	**220**
H8	DG-H8S-0.5-1	8/23/18	0.5-1	**0.48 J**	**7.8**	**56**	<0.12	<0.044	**17 B**	**11**	**140**	**180**	**0.15**	**1.1 J**	**11**	**1.4 J**	<0.18	<0.52	**83**	**140**
H8	DG-H8S-3.5-4	8/23/18	1-2.5	**0.69 J**	**2.2**	**29**	<0.067	**0.027 J**	**19**	**5.7**	**29**	**29**	**0.024**	<0.13	**12**	<0.31	<0.10	**0.34 J**	**37**	**31**
H9	DG-H9S-0.5-1	8/27/18	0.5-1	**0.83 J**	**4.2**	**58**	<0.11	**0.24 J**	**11**	**8.5**	**100**	**110**	**0.18**	**0.33 J**	**7.6**	<0.53	**0.38 J**	<0.51	**63**	**120**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
H9	DG-H9S-3.5-4	8/27/18	2.5-4	**1.7 J**	**3.6 J**	**61**	<0.12	**0.12 J**	**30**	**5.8**	**24**	**120**	**0.036**	**0.36 J**	**25**	**0.63 J**	**0.44 J**	<0.55	**29**	**49**
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	**0.34 J**	**1.3 J**	**42**	**0.19 J**	<0.048	**23**	**4.1**	**4.6 J**	**4.4**	**0.037**	<0.25	**18**	<0.58	<0.19	<0.56	**17**	**17**
H9	DG-H9S-9.5-10	8/27/18	9.5-10	**1.7**	**1.5 J**	**95**	<0.075	<0.029	**120**	**24**	**43**	**5.4**	**0.14**	**0.42 J**	**69**	<0.35	**0.50 J**	**1.8**	**120**	**51**
H10	DG-H10S-0.5-1	8/23/18	0.5-1	<0.19	**0.50 J**	**40**	<0.073	<0.028	**12**	**9.2**	**120**	**23**	**0.056**	**0.16 J**	**4.3**	**0.67 J**	**0.12 J**	**0.73 J**	**100**	**40**
H10	DG-H10S-0.5-1 (D)	8/23/18	0.5-1	<0.28	**0.34 J**	**36**	<0.11	<0.042	**11**	**8.3**	**110**	**23**	**0.068**	<0.22	**3.7**	<0.51	<0.17	**0.79 J**	**88**	**38**
H10	DG-H10S-3.5-4	8/23/18	1-2.5	**0.51 J**	**1.8 J**	**33**	<0.087	<0.033	**8.2**	**11**	**68**	**45**	**0.030**	**0.32 J**	**3.9**	**0.80 J**	**0.26 J**	**0.69 J**	**82**	**62**
H11	DG-H11S-0.5-1	8/24/18	0.5-1	**1.2 J F1**	**1.6 J**	**27 F1**	<0.13	**0.19 J**	**9.9**	**17**	**120 F1**	**120 F1**	**0.15 B**	<0.25	**5.8**	<0.59	**0.24 J F1**	**1.1 J**	**120 F1**	**100 F1**
H11	DG-H11S-3.5-4	8/24/18	2.5-4	**0.46 J**	**2.4 J**	**40**	<0.13	<0.048	**53**	**6.0**	**6.8**	**5.9**	**0.023 B**	<0.25	**22**	<0.58	<0.20	<0.56	**44**	**22**
H12	DG-H12S-0.5-1	8/24/18	0.5-1	**2.3**	**340**	**27**	**0.17 J**	**5.5**	**15 B**	**12**	**84**	**190**	**0.42**	**0.96 J**	**14**	**1.5 J**	<0.18	<0.50	**92**	**100**
H12	DG-H12S-3.5-4	8/24/18	2.5-4	**2.1**	**72**	**30**	**0.26 J**	<0.041	**500 B**	**32**	**44**	**6.5**	**0.087**	**0.79 J**	**360**	**1.4 J**	<0.17	<0.48	**79**	**65**
I1	DG-I1S-0.5-1	8/20/18	0.5-1	**5.1**	**130**	**79**	**0.12 J**	**0.34 J**	**34**	**11**	**78**	**140**	**0.092**	**0.44 J**	**34**	<0.49	<0.16	<0.47	**53**	**110**
I1	DG-I1S-3.5-4	8/20/18	1-2.5	**2.5**	**43**	**130**	**0.38**	<0.036	**140**	**23**	**39**	**10**	**2.9**	**1.2 J**	**170**	<0.43	<0.15	<0.42	**86**	**66**
I2	DG-I2S-0.5-1	8/21/18	0.5-1	**2.6 F1**	**230**	**210**	<0.13	**0.79**	**20**	**9.5**	**120 F1**	**2,300**	**0.19**	**0.35 J**	**19**	<0.59	**0.95 J**	<0.57	**46 F1**	**490 F2**
I2	DG-I2S-3.5-4	8/21/18	2.5-4	**1.4 J**	**3.7**	**82**	<0.12	**0.053 J**	**120**	**19**	**24**	**3.3**	**1.7**	<0.23	**160**	<0.55	<0.19	<0.53	**66**	**48**
I3	DG-I3S-0.5-1	8/22/18	0.5-1	**1.3 J**	**55**	**68**	**0.14 J**	**0.40**	**22**	**13**	**98**	**170**	**0.088**	**0.85 J**	**18**	**0.99 J**	**0.18 J B**	<0.44	**73**	**150**
I3	DG-I3S-3.5-4	8/22/18	1-2.5	**2.9**	**180**	**140**	**0.18 J**	**0.39**	**27**	**7.1**	**64**	**290**	**0.077**	**1.2 J**	**24**	**0.59 J**	<0.13	<0.37	**30**	**280**
I4	DG-I4S-0.5-1	8/21/18	0.5-1	**3.7**	**15**	**130**	<0.099	**2.8**	**37**	**11**	**170**	**250**	**0.23**	**3.3**	**33**	**0.64 J**	<0.15	<0.44	**55**	**420**
I4	DG-I4S-3.5-4	8/21/18	2.5-4	**1.1 J**	**110**	**100**	**0.15 J**	**0.24 J**	**22**	**3.6**	**33**	**140**	**0.15**	**0.26 J**	**20**	<0.37	**0.25 J B**	<0.36	**14**	**140**
I5	DG-I5S-0.5-1	8/22/18	0.5-1	**3.3**	**14 B**	**170**	**0.097 J**	**2.5**	**42**	**17**	**240**	**380**	**0.57**	**3.6**	**25**	<0.43	**0.55 J**	**1.3 J**	**110**	**580**
I5	DG-I5S-3.5-4	8/22/18	2.5-4	**35**	**740 B**	**1,200**	**0.82**	**2.3**	**35**	**5.6**	**380**	**2,600**	**0.31**	**0.74 J**	**30**	<0.34	**6.7**	**0.79 J**	**36**	**1,400**
I5	DG-I5S-3.5-4 (D)	8/22/18	2.5-4	**2.6**	**120**	**88 B**	**0.22 J**	**0.13 J**	**41**	**5.2**	**25**	**79**	**0.085**	<0.17	**29**	<0.39	<0.13	**0.39 J**	**28**	**160**
I6	DG-I6S-0.5-1	8/22/18	0.5-1	**1.2 J**	**3.1 J**	**61**	<0.13	<0.049	**68**	**9.6**	**22**	**37**	**0.099**	<0.25	**48**	<0.59	<0.20	<0.57	**57**	**56**
I6	DG-I6S-0.5-1 (D)	8/22/18	0.5-1	**0.60 J**	**3.5**	**70 B**	**0.25 J**	<0.039	**72**	**9.5**	**13**	**15**	**0.13**	<0.20	**52**	<0.48	<0.16	**0.52 J**	**53**	**46**
I6	DG-I6S-3.5-4	8/22/18	1-2.5	**1.3**	**4.3**	**100**	**0.26**	**0.039 J**	**80**	**11**	**24**	**28**	**0.23**	**0.22 J**	**48**	<0.34	<0.11	**0.61 J**	**63**	**79**
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**0.44 J B**	**2.5**	**35 B**	**0.10 J**	**0.15 J**	**11**	**8.0**	**130**	**49**	**0.14**	**0.30 J**	**4.8**	<0.35	**0.19 J**	**0.48 J**	**69**	**65**
I7	DG-I7S-3.5-4	8/24/18	2.5-4	**1.3 B**	**21**	**30 B**	<0.078	**0.20 J**	**11**	**11**	**140**	**170**	**0.050**	<0.15	**8.8**	<0.36	**0.35 J**	**0.95 J**	**86**	**120**
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	**1.6**	**71**	**33**	<0.084	**0.34**	**10**	**11**	**210**	**230**	**0.21**	**0.27 J**	**7.6**	<0.39	**0.23 J**	**0.58 J**	**79**	**140**
I8	DG-I8S-0.5-1	8/23/18	0.5-1	**0.55 J**	**3.4**	**39**	<0.096	**0.047 J**	**13**	**14**	**99**	**96**	**0.068**	**0.27 J**	**6.6**	**0.88 J**	**0.40 J**	**1.6**	**120**	**88**
I8	DG-I8S-3.5-4	8/23/18	2.5-4	**0.36 J**	**1.6 J**	**49**	<0.11	<0.041	**14**	**8.3**	**67**	**18**	**0.049**	<0.21	**8.2**	<0.50	**0.27 J**	**0.85 J**	**71**	**51**
I8	DG-I8S-3.5-4 (D)	8/23/18	2.5-4	**0.71 J**	**1.5 J**	**25**	<0.084	**0.12 J**	**10**	**15**	**120**	**49**	**0.042**	<0.17	**5.5**	**0.69 J**	**0.45 J**	**1.4**	**120**	**72**
I9	DG-I9S-0.5-1	8/24/18	0.5-1	**0.90 J**	**5.4**	**130**	<0.10	**0.48**	**24**	**9.5**	**51**	**190**	**0.057**	**0.70 J**	**36**	<0.47	<0.16	<0.46	**32**	**120**
I9	DG-I9S-3.5-4	8/24/18	1-2.5	<0.30	**0.44 J**	**21**	<0.12	**0.081 J**	**13**	**16**	**120**	**22**	**0.056**	**0.24 J**	**6.0**	<0.55	**0.68 J**	**0.98 J**	**120**	**55**
I10	DG-I10S-0.5-1	8/23/18	0.5-1	<0.28	**3.7**	**500 F2**	<0.11	**2.2**	**22 F1**	**3.9**	**43 F1**	**500 F2**	**0.092**	**0.40 J**	**19 F1**	<0.51	**0.18 J**	**0.58 J**	**20 F1**	**520 F2**
I10	DG-I10S-3.5-4	8/23/18	1-2.5	**2.9**	**5.1**	**82**	**0.23 J**	<0.037	**350**	**36**	**34**	**8.1**	**0.087**	**0.20 J**	**500**	**0.49 J**	**0.24 J**	**0.82 J**	**61**	**67**
I11	DG-I11S-0.5-1	8/27/18	0.5-1	**4.5**	**4.2**	**71**	<0.10	**0.45**	**35**	**13**	**120**	**160**	**0.094**	**0.34 J**	**18**	<0.46	**0.29 J**	**0.61 J**	**90**	**140**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	**0.76 J**	**2.9 J**	**48**	<0.11	<0.043	**51**	**8.2**	**8.6**	**6.1**	**0.010 J**	**1.8**	**38**	<0.52	<0.17	<0.50	**45**	**23**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	**0.48 J**	**2.1 J**	**50**	<0.11	<0.043	**56**	**6.8**	**8.6**	**5.4**	**0.016**	<0.22	**32**	<0.52	<0.17	**0.55 J**	**44**	**23**
I11	DG-I11S-9.5-10	8/27/18	9.5-10	**1.1 J**	**3.9**	**95**	**0.24 J**	<0.039	**130**	**12**	**18**	**6.7**	**0.025**	**1.3 J**	**160**	<0.48	**0.18 J**	<0.46	**40**	**38**
I12	DG-I12S-0.5-1	8/24/18	0.5-1	**0.58 J**	**33**	**32**	<0.093	**0.41**	**29 B**	**15**	**260**	**160**	**0.099**	**1.6**	**25**	**1.4 J**	<0.14	<0.41	**100**	**230**
I12	DG-I12S-3.5-4	8/24/18	2.5-4	<0.20	**44**	**63**	**0.18 J**	<0.030	**50 B**	**6.8**	**14**	**19**	**0.072**	**0.56 J**	**34**	**0.38 J**	<0.12	<0.35	**46**	**35**
I12	DG-I12S-3.5-4 (D)	8/24/18	2.5-4	**1.4**	**230**	**120**	<0.085	**0.096 J**	**110**	**15**	**24**	**43**	**0.12**	**0.18 J**	**120**	<0.39	**0.23 J**	**0.88 J**	**79**	**49**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
J1	DG-J1S-0.5-1	8/20/18	0.5-1	**1.0 J**	**150**	**110**	**0.12 J**	**0.17 J**	**30**	**13**	**110**	**120**	**0.17**	**0.61 J**	**27**	<0.47	**0.26 J**	<0.46	**92**	**110**
J1	DG-J1S-3.5-4	8/20/18	2.5-4	**1.8**	**20**	**120**	**0.51**	<0.045	**110**	**22**	**57**	**51**	**3.8**	**0.37 J**	**140**	<0.55	<0.18	<0.53	**76**	**80**
J2	DG-J2S-0.5-1	8/21/18	0.5-1	**0.80 J**	**57**	**820**	**0.087 J**	**0.17 J**	**14**	**20**	**95**	**49**	**0.14**	**1.7**	**64**	<1.6	**0.33 J**	<1.6	**52**	**63**
J2	DG-J2S-3.5-4	8/21/18	2.5-4	**1.5 J**	**65**	**99**	**0.13 J**	**0.060 J**	**90**	**16**	**28**	**12**	**1.9**	**0.34 J**	**110**	<0.54	<0.18	<0.52	**59**	**52**
J3	DG-J3S-0.5-1	8/22/18	0.5-1	**1.7**	**58**	**150**	**0.26**	**0.68**	**16**	**10**	**110**	**380**	**0.10**	**0.91 J**	**15**	**0.48 J**	**0.21 J B**	<0.36	**67**	**200**
J3	DG-J3S-3.5-4	8/22/18	2.5-4	**2.6**	**46**	**61**	**0.17 J**	**0.27 J**	**27**	**4.8**	**49**	**790**	**0.031**	**0.21 J**	**24**	<0.48	**0.23 J B**	<0.46	**19**	**84**
J4	DG-J4S-0.5-1	8/21/18	0.5-1	**2.7**	**19**	**110**	<0.13	**1.0**	**46**	**9.3**	**120**	**170**	**0.14**	**3.6**	**50**	<0.58	<0.19	<0.56	**39**	**180**
J4	DG-J4S-3.5-4	8/21/18	2.5-4	**0.68 J**	**83**	**26**	<0.11	**0.061 J**	**20**	**3.5**	**3.6 J**	**8.4**	**0.015 J**	<0.21	**16**	<0.49	<0.16	<0.47	**15**	**14**
J5	DG-J5S-0.5-1	8/22/18	0.5-1	**8.1**	**7.4 B**	**640**	<0.090	**4.8**	**45**	**15**	**470**	**2,000**	**0.23**	**13**	**33**	<0.41	**0.67 J**	**1.5**	**97**	**1,500**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	**15**	**65 B**	**390**	**0.24 J**	**2.3**	**57**	**12**	**360**	**1,100**	**0.36**	**1.4 J**	**54**	<0.46	**1.1**	**1.0 J**	**48**	**770**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	**1.9**	**12 B**	**150**	**0.89**	**0.12 J**	**32**	**13**	**65**	**210**	**0.081**	**0.30 J**	**34**	<0.38	**0.60 J**	**0.82 J**	**40**	**240**
J6	DG-J6S-0.5-1	8/22/18	0.5-1	**1.9**	**8.2**	**180 B**	**0.17 J**	**1.6**	**52**	**10**	**160**	**270**	**0.24**	**12**	**88**	<0.39	<0.13	**1.1 J**	**58**	**350**
J6	DG-J6S-3.5-4	8/22/18	2.5-4	<0.29	**3.0 J**	**53 B**	**0.13 J**	<0.044	**7.0**	**2.3**	**7.6**	**22**	**0.052**	<0.22	**4.1**	<0.53	<0.18	<0.51	**14**	**39**
J7	DG-J7S-0.5-1	8/27/18	0.5-1	<0.31	**1.2 J**	**45**	**0.12 J**	<0.047	**7.9**	**8.7**	**110**	**66**	**0.077**	**0.37 J**	**6.7**	**0.88 J**	<0.19	<0.55	**87**	**44**
J7	DG-J7S-3.5-4	8/27/18	1-2.5	**340**	**81**	**67**	**0.16 J**	<0.038	**36**	**17**	**110**	**7,900**	**0.13**	**1.0 J**	**20**	**0.78 J**	**0.61 J**	<0.45	**110**	**83**
J8	DG-J8S-0.5-1	8/22/18	0.5-1	<0.23	**4.4**	**110 B**	**0.43**	**1.3**	**24**	**12**	**51**	**27**	**0.033**	**0.54 J**	**35**	<0.41	<0.14	**0.62 J**	**50**	**81**
J8	DG-J8S-3.5-4	8/22/18	2.5-4	**0.37 J**	**0.50 J**	**17 B**	<0.093	<0.035	**25**	**17**	**100**	**2.8**	**0.040**	<0.18	**14**	<0.43	<0.14	**0.50 J**	**110**	**53**
J9	DG-J9S-0.5-1	9/26/18	0.5-1	**0.89 J**	**3.7 J**	**97**	**0.21 J**	**0.12 J**	**41**	**8.3**	**38**	**150**	**0.034**	**0.67 J**	**34**	**0.63 J**	<0.20	<0.57	**51**	**55**
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	**1.1 J**	**3.2 J**	**72**	**0.14 J**	**0.068 J**	**29**	**8.6**	**49**	**220**	**0.043**	**0.51 J**	**29**	**0.97 J**	<0.19	<0.54	**60**	**58**
J9	DG-J9S-3.5-4	9/26/18	3.5-4	**1.7**	**5.7**	**87**	**0.37**	<0.041	**110**	**14**	**26**	**30**	**0.037**	**0.54 J**	**120**	**0.99 J**	<0.17	<0.48	**45**	**52**
J10	DG-J10S-0.5-1	8/23/18	0.5-1	**1.0 J B**	**3.1**	**78 B**	<0.081	**0.23 J**	**110**	**10**	**100**	**130**	**0.042**	**15**	**30**	<0.37	<0.13	**0.65 J**	**81**	**65**
J10	DG-J10S-0.5-1 (D)	8/23/18	0.5-1	<0.26	**3.5**	**190**	<0.10	**0.44**	**40**	**9.2**	**69**	**250**	**0.037**	**0.70 J**	**35**	<0.46	**0.25 J**	**1.6**	**93**	**130**
J10	DG-J10S-3.5-4	8/23/18	1-2.5	**0.98 J B**	**5.0**	**120 B**	**0.41**	**0.042 J**	**95**	**21**	**32**	**7.2**	**0.088**	**0.31 J**	**110**	<0.44	**0.22 J**	**0.70 J**	**63**	**54**
J11	DG-J11S-0.5-1	8/24/18	0.5-1	**2.1**	**2.7 J**	**53**	<0.10	<0.039	**33**	**11**	**63**	**52**	**0.055**	<0.20	**26**	<0.47	**0.42 J**	**0.46 J**	**70**	**45**
J11	DG-J11S-3.5-4	8/24/18	2.5-4	**1.4 J**	**4.6**	**60**	<0.12	**0.045 J**	**65**	**9.8**	**26**	**49**	**0.023**	<0.23	**41**	<0.55	**0.42 J**	**0.67 J**	**70**	**39**
J12	DG-J12S-0.5-1	8/24/18	0.5-1	**21**	**11**	**140**	**0.20 J**	**0.36 J**	**39 B**	**16**	**270**	**1,500**	**0.16**	**1.6**	**33**	**2.3 J**	<0.17	<0.48	**90**	**330**
J12	DG-J12S-3.5-4	8/24/18	1-2.5	**1.5**	**2.3 J**	**52**	**0.15 J**	<0.032	**57 B**	**6.9**	**24**	**52**	**0.053**	**0.58 J**	**33**	**0.74 J**	<0.13	<0.37	**50**	**36**
K1	DG-K1S-0.5-1	8/20/18	0.5-1	**1.6 F1**	**380**	**130 F1 F2**	**0.15 J F1**	**0.35 J**	**25 F1**	**9.3 F1**	**71 F1**	**310**	**3.6**	<0.20	**26 F1**	<0.47	<0.16	<0.45	**40 F1**	**220**
K1	DG-K1S-3.5-4	8/20/18	3.5-4	**1.1 J**	**29**	**65**	**0.20 J**	**0.061 J**	**66**	**7.3**	**12**	**8.0**	**0.055**	<0.22	**47**	<0.50	<0.17	<0.49	**49**	**33**
K2	DG-K2S-0.5-1	8/21/18	0.5-1	**2.5**	**150**	**72**	<0.12	**1.3**	**25**	**14**	**140**	**200**	**0.18**	**1.1 J**	**22**	<0.55	**0.26 J**	<0.53	**77**	**230**
K2	DG-K2S-3.5-4	8/21/18	2.5-4	**0.73 J**	**37**	**73**	<0.097	<0.037	**26**	**7.9**	**17**	**5.2**	**0.14**	<0.19	**42**	<0.45	<0.15	<0.43	**19**	**35**
K3	DG-K3S-0.5-1	8/22/18	0.5-1	**3.5**	**28**	**46**	**0.11 J**	**0.40 J**	**13**	**13**	**88**	**110**	**0.059**	**0.59 J**	**12**	<0.50	<0.17	<0.49	**74**	**130**
K3	DG-K3S-3.5-4	8/22/18	2.5-4	**54**	**90**	**140**	**0.20 J**	**0.43**	**33**	**4.9**	**64**	**12,000**	**0.030**	**0.24 J**	**26**	<0.49	**0.72 J**	**0.61 J**	**25**	**140**
K4	DG-K4S-0.5-1	8/21/18	0.5-1	**1.4 J B F1**	**120 F1**	**140 F1 F2**	**0.21 J**	**0.50**	**15**	**8.5**	**92 F1**	**160 F1 F2**	**0.32**	**0.78 J**	**13**	**0.87 J**	<0.18	<0.50	**59**	**170 F1 F2**
K4	DG-K4S-3.5-4	8/21/18	1.0-2.5	<0.29	**95**	**22**	**0.18 J**	**0.091 J**	**18**	**3.1**	**15**	**6.8**	**0.023**	**0.22 J**	**14**	**0.64 J**	<0.17	<0.50	**14**	**76**
K5	DG-K5S-0.5-1	8/22/18	0.5-1	<0.32	**2.7 J**	**63**	<0.12	**0.43 J**	**14**	**12**	**180**	**90**	**0.099**	**1.1 J**	**11**	<0.57	<0.19	**1.0 J**	**99**	**120**
K5	DG-K5S-3.5-4	8/22/18	2.5-4	<0.29	**0.49 J**	**33**	<0.11	<0.044	**21**	**12**	**130**	**5.8**	**0.057**	<0.22	**5.4**	<0.53	<0.18	**1.4 J**	**110**	**36**
K6	DG-K6S-0.5-1	8/23/18	0.5-1	**3.2**	**19**	**51**	<0.12	**0.38 J**	**23**	**15**	**160**	**170**	**0.21**	**0.79 J**	**35**	**0.74 J**	**0.49 J**	**1.5 J**	**85**	**110**
K6	DG-K6S-3.5-4	8/23/18	1.0-2.5	**2.7**	**440**	**69**	<0.11	**0.37 J**	**41**	**11**	**84**	**130**	**0.38**	**0.95 J**	**38**	**0.73 J**	**0.35 J**	**1.6 J**	**54**	**92**
K7	DG-K7S-0.5-1	8/24/18	0.5-1	**12**	**6.0**	**630**	<0.13	**8.4**	**130 B**	**16**	**590**	**3,100**	**0.11**	**1.1 J**	**18**	**1.6 J**	<0.20	<0.57	**120**	**830**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.21	<0.21	**130**	**0.26**	<0.031	**80 B**	**25**	**24**	**11**	**0.27**	**1.3**	**41**	**0.86 J**	<0.13	<0.36	**130**	**54**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.21	**3.2**	**120**	<0.084	<0.032	**86**	**22**	**32**	**12**	**0.37**	<0.17	**38**	<0.39	**0.45 J**	**2.2**	**150**	**53**
K8	DG-K8S-0.5-1	8/22/18	0.5-1	**1.5 J**	**8.3**	**270 B**	**0.17 J**	**1.9**	**48**	**9.9**	**100**	**690**	**0.16**	**0.56 J**	**28**	<0.57	<0.19	**0.86 J**	**72**	**410**
K8	DG-K8S-1-2	8/22/18	1-2	**1.1 J**	**2.5 J**	**83 B**	<0.094	<0.036	**88**	**17**	**37**	**19**	**0.061**	<0.19	**42**	<0.43	<0.15	**1.7**	**100**	**48**
K8	DG-K8S-3.5-4	8/22/18	3.5-4	**1.2 J**	**6.9**	**70 B**	**0.72**	<0.043	**39**	**13**	**39**	**29**	**0.081**	**0.28 J**	**36**	<0.52	<0.18	**0.80 J**	**52**	**120**
K9	DG-K9S-0.5-1	8/24/18	0.5-1	<0.27	**0.31 J**	**43**	<0.11	<0.041	**12**	**12**	**130**	**35**	**0.084**	<0.21	**4.0**	<0.50	**0.48 J**	**0.54 J**	**110**	**56**
K9	DG-K9S-3.5-4	8/24/18	2.5-4	**0.69 J**	**4.3**	**97**	<0.12	**0.10 J**	**26**	**9.1**	**61**	**38**	**0.053**	**0.89 J**	**28**	<0.54	**0.48 J**	**0.67 J**	**58**	**75**
K10	DG-K10S-0.5-1	8/23/18	0.5-1	**5.5**	**12**	**490**	**0.098 J**	**2.0**	**62**	**11**	**240**	**440**	**1.0**	**4.7**	**41**	<0.38	**0.29 J**	**0.75 J**	**67**	**510**
K10	DG-K10S-3.5-4	8/23/18	1.0-2.5	**1.9**	**4.4**	**120**	<0.12	**0.29 J**	**88**	**17**	**98**	**330**	**0.28**	<0.23	**150**	**0.74 J**	**0.67 J**	**1.3 J**	**88**	**160**
K11	DG-K11S-0.5-1	8/27/18	0.5-1	**3.2**	**5.7**	**120**	<0.095	**0.32 J**	**25**	**16**	**150**	**420**	**0.073**	**0.56 J**	**15**	<0.44	**0.25 J**	**1.4 J**	**120**	**160**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	**2.1**	**2.1 J**	**110**	<0.12	<0.047	**110**	**34**	**46**	**7.0**	**0.16**	<0.24	**52**	<0.57	**0.70 J**	**2.8**	**190**	**77**
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	**2.1**	**5.0**	**140**	**0.22 J**	<0.046	**150**	**24**	**42**	**45**	**0.16**	**0.28 J**	**160**	<0.55	**0.53 J**	**1.7 J**	**100**	**87**
K11	DG-K11S-9.5-10	8/27/18	9.5-10	**1.2 J**	**11**	**130**	**0.49**	**0.057 J**	**48**	**14**	**41**	**15**	**0.24**	**0.29 J**	**70**	<0.41	**0.27 J**	**0.92 J**	**52**	**78**
K12	DG-K12S-0.5-1	8/24/18	0.5-1	**0.36 J**	**170**	**170**	**0.34 J**	<0.046	**130 B**	**37**	**97**	**74**	**0.064**	**1.4 J**	**57**	**2.0 J**	<0.19	<0.54	**240**	**160**
K12	DG-K12S-0.5-1 (D)	8/24/18	0.5-1	**4.4**	**210**	**170**	<0.11	**0.54**	**130**	**38**	**120**	**86**	**0.042**	**0.31 J**	**58**	<0.50	**1.4**	**3.9**	**250**	**190**
K12	DG-K12S-3.5-4	8/24/18	1.0-2.5	<0.24	**40**	**430**	**0.51**	<0.035	**68 B**	**24**	**43**	**21**	**0.10**	**1.8**	**170**	**1.8 J**	<0.14	<0.41	**70**	**82**
K13	DG-K13S-0.5-1	8/24/18	0.5-1	<0.32	**6.4**	**140**	**0.31 J**	<0.048	**100 B**	**19**	**68**	**100**	**0.35**	**0.97 J**	**120**	**2.0 J**	<0.19	<0.56	**94**	**140**
K13	DG-K13S-3.5-4	8/24/18	2.5-4	**1.0 J**	**2.1 J**	**78**	**0.27**	**0.50**	**280 B**	**24**	**26**	**11**	**0.073**	**0.63 J**	**310**	**0.97 J**	<0.12	<0.36	**65**	**710**
L1	DG-L1S-0.5-1	8/20/18	0.5-1	**5.0**	**220**	**130**	**0.21 J**	**1.0**	**35**	**11**	**150**	**270**	**0.48**	**1.0 J**	**27**	<0.54	**0.47 J**	<0.52	**53**	**350**
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	**1.6 J**	**59**	**74**	**0.25 J**	**0.075 J**	**41**	**8.8**	**24**	**21**	**2.6**	**0.58 J**	**39**	<0.51	**0.18 J**	<0.50	**44**	**46**
L1	DG-L1S-10-10.5	8/20/18	10-10.5	**2.4**	**29**	**69**	**0.52**	<0.040	**35**	**11**	**51**	**29**	**0.040**	**0.69 J**	**31**	<0.49	**0.19 J**	<0.47	**50**	**65**
L2	DG-L2S-0.5-1	8/21/18	0.5-1	**2.0**	**190**	**71**	<0.12	**0.34 J**	**25**	**11**	**86**	**97**	**0.074**	**0.23 J**	**26**	<0.54	<0.18	<0.52	**61**	**95**
L2	DG-L2S-3.5-4	8/21/18	2.5-4	**1.3 J**	**37**	**97**	**0.22 J**	**0.047 J**	**89**	**18**	**27**	**3.3**	**17**	<0.22	**170**	<0.52	<0.17	<0.50	**62**	**52**
L3	DG-L3S-0.5-1	8/22/18	0.5-1	**2.3 F1**	**12**	**75 F1**	**0.14 J F1**	**1.0**	**26 F1**	**11**	**140 F1**	**170 F1**	**0.096**	**1.4 J**	**20 F1**	<0.49	<0.17	**0.95 J**	**76 F1**	**290**
L3	DG-L3S-3.5-4	8/22/18	2.5-4	**17**	**150**	**720**	**0.76**	**1.9**	**23**	**9.9**	**450**	**1,800**	**1.2**	**1.1 J**	**21**	<0.50	**3.1**	**1.2 J**	**68**	**1,300**
L3	DG-L3S-3.5-4 (D)	8/22/18	2.5-4	**0.91 J**	**39**	**100**	**0.11 J**	**0.39**	**13**	**9.0**	**97**	**130**	**0.10**	**0.23 J**	**11**	<0.34	**0.19 J**	**0.87 J**	**78**	**180**
L4	DG-L4S-0.5-1	8/21/18	0.5-1	**0.45 J**	**100**	**33**	<0.10	**0.32 J**	**18**	**7.7**	**73**	**30**	**0.062**	<0.20	**11**	**0.55 J**	<0.16	<0.45	**60**	**95**
L4	DG-L4S-3.5-4	8/21/18	2.5-4	**1.7**	**5.0**	**68**	**0.11 J**	**0.19 J**	**33**	**5.4**	**16**	**310**	**0.023**	**0.70 J**	**28**	<0.42	<0.14	<0.41	**23**	**94**
L5	DG-L5S-0.5-1	8/22/18	0.5-1	**4.7**	**14**	**150**	**0.19 J**	**1.6**	**49**	**9.4**	**170**	**250**	**0.19**	**3.5**	**51**	**0.64 J**	**0.50 J**	**0.99 J**	**37**	**350**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	**4.1**	**9.5**	**140**	**0.12 J**	**1.7**	**37**	**12**	**190**	**260**	**0.37**	**3.5**	**39**	<0.46	**0.22 J**	**1.2 J**	**61**	**350**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	**13**	**55**	**850**	**0.48**	**5.4**	**38**	**11**	**500**	**1,900**	**0.67**	**1.9**	**35**	**2.1 J**	**3.7**	**2.6 J**	**59**	**2,300**
L6	DG-L6S-0.5-1	8/22/18	0.5-1	**0.38 J**	**0.84 J**	**34 B**	<0.10	<0.038	**9.4**	**14**	**85**	**0.74 J**	**0.040**	**0.28 J**	**5.4**	<0.46	<0.16	**1.4 J**	**140**	**51**
L6	DG-L6S-0.5-1 (D)	8/22/18	0.5-1	<0.27	**0.97 J**	**33 B**	<0.10	<0.040	**9.9**	**13**	**86**	**2.2**	**0.044**	**0.31 J**	**5.8**	<0.48	<0.16	**1.1 J**	**110**	**53**
L6	DG-L6S-3.5-4	8/22/18	2.5-4	**2.2**	**61**	**72 B**	**0.16 J**	**0.17 J**	**24**	**7.6**	**120**	**300**	**0.14**	**0.36 J**	**15**	<0.44	<0.15	**0.62 J**	**61**	**170**
L7	DG-L7S-0.5-1	8/27/18	0.5-1	**1.0 J**	**2.0 J**	**39**	**0.16 J**	<0.047	**12**	**11**	**120**	**64**	**0.095**	**0.56 J**	**6.2**	**0.66 J**	<0.19	<0.55	**93**	**60**
L7	DG-L7S-3.5-4	8/27/18	1.0-2.5	**2.5**	**94**	**50**	<0.12	<0.045	**26**	**14**	**140**	**230**	**0.12**	**0.80 J**	**30**	**0.73 J**	**0.21 J**	<0.53	**85**	**170**
L8	DG-L8S-0.5-1	8/22/18	0.5-1	**1.7**	**97**	**150**	**0.26 J**	**0.090 J**	**97**	**21**	**130**	**680**	**1.2**	**0.99 J**	**110**	**0.96 J**	**0.74 J**	<0.47	**94**	**230**
L8	DG-L8S-3.5-4	8/22/18	2.5-4	**1.0 J**	**59**	**45**	<0.12	<0.046	**70**	**9.4**	**15**	**8.1**	**0.049**	<0.24	**33**	<0.56	<0.19	<0.54	**44**	**36**
L8	DG-L8S-3.5-4 (D)	8/22/18	2.5-4	**1.0 J**	**84**	**59 B**	**0.28 J**	<0.038	**86**	**8.5**	**12**	**24**	**0.036**	<0.20	**37**	<0.46	<0.15	**0.80 J**	**56**	**29**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.31	**4.9**	**88**	<0.12	**0.064 J**	**19**	**10**	**67**	**170**	**0.11**	**0.25 J**	**12**	<0.56	**0.27 J**	<0.54	**65**	**81**
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	**2.2**	**7.0**	**100**	**0.30 J**	**0.15 J**	**21**	**8.7**	**41**	**640**	**0.099**	<0.24	**8.1**	<0.57	<0.19	**0.64 J**	**55**	**120**
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	**0.91 J**	**10**	**120**	**0.53**	**0.10 J**	**45**	**13**	**26**	**15**	**0.056**	**0.49 J**	**26**	<0.38	**0.45 J**	<0.37	**42**	**71**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
L10	DG-L10S-0.5-1	8/23/18	0.5-1	**1.8 B**	**4.2**	**83 B**	<0.082	**0.47**	**27**	**8.7**	**95**	**400**	**1.1**	**0.20 J**	**5.9**	<0.38	**0.21 J**	**0.62 J**	**68**	**120**
L10	DG-L10S-3.5-4	8/23/18	2.5-4	**1.4 J B**	**11**	**97 B**	**0.61**	**0.050 J**	**31**	**17**	**62**	**14**	**0.065**	**0.47 J**	**45**	<0.47	**0.32 J**	<0.46	**35**	**95**
L11	DG-L11S-0.5-1	8/24/18	0.5-1	**0.63 J**	**2.5 J**	**42**	<0.12	**0.16 J**	**13**	**17**	**120**	**31**	**0.051**	<0.24	**9.8**	<0.56	**0.63 J**	**1.0 J**	**110**	**130**
L11	DG-L11S-3.5-4	8/24/18	2.5-4	**1.2 J**	**7.3**	**140**	**0.54**	**0.18 J**	**36**	**16**	**54**	**76**	**0.077**	**0.88 J**	**38**	<0.54	**0.55 J**	<0.52	**54**	**100**
L12	DG-L12S-0.5-1	8/27/18	0.5-1	<0.33	**1.6 J**	**130**	**0.39 J**	<0.049	**83**	**35**	**52**	**25**	**0.027**	**1.4 J**	**54**	**1.2 J**	<0.20	<0.57	**200**	**78**
L12	DG-L12S-3.5-4	8/27/18	1.0-2.5	<0.24	**6.8**	**110**	**0.49**	<0.035	**95**	**21**	**49**	**14**	**0.23**	**1.1 J**	**110**	**0.82 J**	<0.14	<0.41	**85**	**75**
L13	DG-L13S-0.5-1	8/24/18	0.5-1	**1.4 J F1**	**38 F2 F1**	**90 F2 F1**	<0.12	**0.12 J**	**51 F1 B**	**9.5**	**55 F1**	**120 F1**	**0.066**	**0.90 J**	**52 F1**	**1.6 J**	<0.19	<0.55	**43 F1**	**130 F2 F1**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	**0.59 J**	**33**	**210**	**0.52**	<0.044	**180 B**	**23**	**37**	**11**	**0.085**	**1.1 J**	**140**	**1.5 J**	<0.18	<0.51	**99**	**71**
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	**5.2**	**61**	**110**	<0.090	**0.052 J**	**600**	**40**	**50**	**2.2**	**0.055**	**0.21 J**	**360**	<0.42	**0.59 J**	**1.8**	**130**	**92**
M1	DG-M1S-0.5-1	8/20/18	0.5-1	**2.2**	**350**	**110**	<0.12	**3.4**	**39**	**12**	**130**	**280**	**0.14**	**1.7 J**	**28**	<0.54	**0.40 J**	<0.52	**79**	**1,900**
M1	DG-M1S-3.5-4	8/20/18	2.5-4	**1.3 J**	**16**	**39**	**0.48**	**0.055 J**	**35**	**12**	**26**	**8.0**	**0.10**	**0.48 J**	**36**	<0.51	<0.17	<0.50	**48**	**80**
M2	DG-M2S-0.5-1	8/21/18	0.5-1	**0.94 J**	**120**	**61**	<0.098	**0.37 J**	**16**	**12**	**80**	**82**	**0.065**	<0.19	**18**	<0.45	**0.18 J**	<0.44	**82**	**140**
M2	DG-M2S-3.5-4	8/21/18	2.5-4	**0.78 J**	**50**	**78**	**0.23**	**0.11 J**	**71**	**15**	**27**	**3.9**	**0.53**	<0.14	**100**	<0.34	**0.17 J**	<0.33	**61**	**49**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	**0.33 J**	**21**	**76**	**0.19 J**	<0.040	**15**	**12**	**110**	**33**	**0.035**	<0.20	**7.5**	<0.48	<0.16	**1.2 J**	**120**	**71**
M3	DG-M3S-3.5-4	8/22/18	2.5-4	**15**	**140**	**1,200**	**0.94**	**1.3**	**46**	**7.2**	**590**	**2,300**	**1.2**	**1.8**	**33**	**1.7 J**	**4.9**	**1.2 J**	**41**	**1,300**
M3	DG-M3S-7.5-8	8/22/18	7.5-8	**0.98 J**	**37**	**82**	**0.70**	**0.086 J**	**32**	**17**	**25**	**9.8**	**0.020**	**0.65 J**	**33**	<0.46	<0.15	<0.44	**48**	**68**
M4	DG-M4S-0.5-1	8/21/18	0.5-1	**4.3**	**310**	**170**	<0.088	**3.4**	**21**	**7.1**	**120**	**700**	**0.24**	<0.17	**25**	<0.41	**0.29 J**	<0.39	**42**	**2,800**
M4	DG-M4S-3.5-4	8/21/18	2.5-4	**1.1**	**58**	**190**	**0.092 J**	**0.34**	**40**	**5.5**	**310**	**340**	**0.043**	<0.14	**29**	<0.34	**1.9**	<0.33	**22**	**220**
M5	DG-M5S-0.5-1	8/22/18	0.5-1	**1.2 J**	**28**	**100**	**0.11 J**	**0.86**	**23**	**13**	**170**	**150**	**0.15**	**1.5 J**	**18**	<0.51	**0.27 J**	**1.3 J**	**100**	**230**
M5	DG-M5S-3.5-4	8/22/18	1-2.5	**16**	**330**	**1,700**	**0.70**	**10**	**57**	**7.8**	**1,100**	**8,300**	**0.69**	**0.49 J**	**38**	<0.37	**9.5**	**0.84 J**	**35**	**5,600**
M6	DG-M6S-0.5-1	8/22/18	0.5-1	**3.3**	**16**	**160 B**	**0.12 J**	**3.1**	**53**	**10**	**200**	**360**	**0.29**	**9.8**	**49**	<0.38	**0.19 J**	**0.98 J**	**53**	**400**
M6	DG-M6S-3.5-4	8/22/18	2.5-4	**4.7**	**83**	**100 B**	<0.096	**0.89**	**18**	**12**	**300**	**340**	**0.18**	**0.35 J**	**15**	<0.44	**3.3**	**1.5**	**90**	**460**
M7	DG-M7S-0.5-1	8/24/18	0.5-1	**0.82 J B**	**270**	**55 B**	<0.12	**0.18 J**	**66**	**4.8**	**8.2**	**7.4**	**0.020**	<0.23	**32**	<0.53	<0.18	<0.51	**55**	**650**
M7	DG-M7S-3.5-4	8/24/18	3.5-4	**1.0 J B**	**1.8 J**	**44 B**	<0.11	<0.041	**51**	**5.7**	**6.7**	**1.3 J**	**0.030**	<0.21	**30**	<0.50	<0.17	<0.48	**37**	**17**
M8	DG-M8S-0.5-1	8/22/18	0.5-1	**0.56 J**	**1.4 J**	**19 B**	<0.079	<0.030	**12**	**12**	**98**	**17**	**0.055**	**0.29 J**	**13**	<0.36	<0.12	**1.1 J**	**88**	**48**
M8	DG-M8S-3.5-4	8/22/18	1.0-2.5	**6.3**	**32**	**130 B**	**0.89**	<0.048	**67**	**19**	**42**	**100**	**0.023**	**0.58 J**	**36**	<0.58	<0.19	**0.93 J**	**77**	**53**
M9	DG-M9S-0.5-1	8/24/18	0.5-1	**4.8 F1**	**25**	**77 F1**	**0.24 J F1**	**0.28 J**	**34 F1**	**21**	**240**	**120 F1 F2**	**0.10**	**1.5 J**	**58**	**0.66 J**	**0.57 J F1**	**0.89 J**	**44 F1 F2**	**83 F1**
M9	DG-M9S-3.5-4	8/24/18	2.5-4	**2.2**	**16**	**67**	**0.55**	**0.16 J**	**36**	**18**	**52**	**26**	**0.042**	**0.48 J**	**44**	<0.58	**0.64 J**	<0.56	**46**	**120**
M9	DG-M9S-3.5-4 (D)	8/24/18	2.5-4	**1.9**	**9.8**	**56**	**0.51**	**0.084 J**	**35**	**16**	**48**	**19**	**0.044 B**	**0.26 J**	**37**	<0.52	**0.54 J**	<0.50	**43**	**100**
M10	DG-M10S-0.5-1	8/24/18	0.5-1	**1.8**	**39**	**110**	<0.11	**0.50**	**26**	**12**	**110**	**320**	**0.24**	**0.31 J**	**21**	<0.50	**0.51 J**	**0.86 J**	**72**	**150**
M10	DG-M10S-0.5-1 (D)	8/24/18	0.5-1	**4.5**	**44**	**120**	<0.12	**0.76**	**45**	**13**	**130**	**510**	**0.19 B**	**0.71 J**	**38**	<0.57	**0.79 J**	**0.62 J**	**67**	**200**
M10	DG-M10S-3.5-4	8/24/18	1.0-2.5	**0.81 J**	**16**	**46**	**0.56**	**0.13 J**	**33**	**17**	**47**	**20**	**0.063**	**0.26 J**	**35**	<0.56	<0.19	<0.54	**53**	**88**
M11	DG-M11S-0.5-1	8/27/18	0.5-1	**0.90 J**	**2.3 J**	**42**	<0.078	**0.077 J**	**13**	**15**	**110**	**85**	**0.099**	**0.15 J**	**7.8**	<0.36	**0.33 J**	**1.0 J**	**110**	**80**
M11	DG-M11S-3.5-4	8/27/18	2.5-4	**1.1 J**	**12**	**63**	**0.78**	**0.078 J**	**44**	**20**	**76**	**47**	**0.072**	**0.27 J**	**46**	<0.52	**0.24 J**	<0.50	**68**	**110**
M12	DG-M12S-0.5-1	8/27/18	0.5-1	**0.84 J**	**7.1**	**170**	**0.65**	<0.033	**49**	**17**	**43**	**65**	**0.19**	**0.85 J**	**58**	**0.87 J**	<0.13	<0.38	**47**	**89**
M12	DG-M12S-3.5-4	8/27/18	2.5-4	<0.24	**4.7**	**76**	**0.60**	<0.036	**150**	**33**	**52**	**12**	**0.14**	**1.7**	**160**	**1.1 J**	<0.15	<0.43	**130**	**93**
M12	DG-M12S-3.5-4 (D)	8/27/18	2.5-4	**1.2 J**	**8.9**	**140**	**0.28 J**	<0.035	**140**	**30**	**53**	**8.2**	**0.17**	**0.39 J**	**160**	**0.77 J**	**0.48 J**	**1.8**	**130**	**94**
M13	DG-M13S-0.5-1	8/27/18	0.5-1	**2.6 J**	**1.7 J**	**230**	**0.53**	**0.097 J**	**64**	**34**	**38**	**43**	**0.034**	**1.7**	**54**	**1.4 J**	**0.70 J**	**2.9 J**	**150**	**77**
M13	DG-M13S-3.5-4	8/27/18	1.0-2.5	**2.2 F1**	**110 B F1**	**140 B F1 F2**	**0.13 J**	**0.079 J**	**230**	**29 F1**	**55 F1 F2**	**6.9**	**0.14**	<0.19	**300**	<0.44	**0.41 J**	**1.1 J**	**68**	**68 B**
M14	DG-M14S-0.5-1	8/24/18	0.5-1	**4.2**	**94**	**200**	**0.24 J**	**1.5**	**590 B**	**28**	**120**	**1,200**	**0.56**	**1.8 J**	**96**	**2.0 J**	<0.20	<0.58	**74**	**1,100**
M14	DG-M14S-3.5-4	8/24/18	1.0-2.5	**1.2**	**25**	**100**	**0.25**	**0.37**	**220 B**	**21**	**56**	**270**	**0.22**	**0.70 J**	**230**	**1.4 J**	<0.12	<0.34	**61**	**190**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Historical Sample Results																				
B-10	B-10	12/13/05	1-2	--	**8.4**	**73**	--	**1.2**	**17**	--	--	**460**	**0.36**	--	--	<2	<1	--	--	--
B-10	B-10	1/5/06	1-2	--	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	--
B-11	B-11	12/12/05	1-2	--	**590**	**1,200**	--	**14**	**45**	--	--	**2,000**	**0.25**	--	--	<2	**4.1**	--	--	--
B-12	B-12	12/12/05	1-2	--	**21**	**60**	--	<1	**9.1**	--	--	**15**	<0.05	--	--	<2	<1	--	--	--
B-12	B-12	1/5/06	1-2	--	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	--
B-13	B-13	12/12/05	1-2	--	**790**	**70**	--	**21**	**9.7**	--	--	**1,200**	**0.22**	--	--	<2	**1.9**	--	--	--
B-14	B-14	12/12/05	1-2	--	**28**	**1,500**	--	**3.2**	**34**	--	--	**3,500**	**0.35**	--	--	<2	**1.5**	--	--	--
B-15	B-15	12/12/05	1-2	--	**23**	**150**	--	**1.3**	**30**	--	--	**170**	**0.11**	--	--	<2	<1	--	--	--
B-16	B-16	12/13/05	1-2	--	<1.0	**26**	--	<1	**9.3**	--	--	<1	**0.12**	--	--	<2	<1	--	--	--
B-17	B-17	12/13/05	1-2	--	<1.0	**19**	--	<1	**5.2**	--	--	**13**	**0.21**	--	--	<2	<1	--	--	--
B-17	B-17 (D)	12/13/05	1-2	--	<1.0	**40**	--	<1	**12**	--	--	**90**	**0.14**	--	--	<2	<1	--	--	--
B-18	B-18	12/13/05	1-2	--	<1.0	**23**	--	<1	**4.2**	--	--	**6.5**	**0.054**	--	--	<2	<1	--	--	--
B-20	B-20	12/25/05	1-2	--	**40**	**69**	--	<1	**50**	--	--	**5.3**	**5**	--	--	<2	<1	--	--	--
C-1	C-1	9/1/06	2-3	--	**1.4**	**61**	--	<1.0	**37**	--	**20**	**27**	**0.86**	--	--	<2.0 J	<1.0	--	--	--
C-8	C-8	8/31/06	1.5-2	--	**7.1**	**55 J**	--	<1.0	**14**	--	**180**	**170**	**0.13**	--	--	<2.0 J	<1.0	--	--	--
C-13	C-13	8/31/06	1-2	--	**41**	**62 J**	--	<1.0	**15**	--	**120**	**450**	**0.48**	--	--	<2.0 J	<1.0	--	--	--
C-15	C-15	8/29/06	1-2.5	--	**5.7**	**63**	--	**1.2**	**30**	--	**170**	**220**	**0.11 J**	--	--	<2.0	<1.0	--	--	--
C-21	C-21	8/28/06	1.5-2	--	**61**	**34**	--	<1.0	**3.4 J**	--	**6.9 J**	**6.9**	**0.12**	--	--	<2.0 J	<1.0	--	--	--
C-26	C-26	8/28/06	1.5-2	--	**350**	**200**	--	**1.4**	**39 J**	--	**160 J**	**1,100**	**100**	--	--	<2.0 J	<1.0	--	--	--
EE-2	EE-2	3/1/84	1.5-3	--	**19.1**	**48.3**	--	--	**189**	--	**39.7**	**18**	--	--	--	--	--	--	--	**61.3**
EE-3	EE-3	3/1/84	1.5-3	--	**13.7**	**93**	--	--	**47.8**	--	**42.8**	**73.1**	--	--	--	--	--	--	--	**109**
EE-4	EE-4	3/1/84	1.5-3	--	**15**	**113**	--	--	**30.6**	--	**578**	**1,100**	--	--	--	--	--	--	--	**276**
EE-5	EE-5	3/1/84	1.5-3	--	<5	**50.8**	--	--	**23.1**	--	**1270**	**456**	--	--	--	--	--	--	--	**204**
EE-6	EE-6	3/1/84	1.5-3	--	**17.8**	**32.7**	--	--	<10	--	**111**	**1.31**	--	--	--	--	--	--	--	**61.9**
EE-7	EE-7	3/1/84	1.5-3	--	**23.8**	**154**	--	--	**14.6**	--	**1,930**	**3,910**	--	--	--	--	--	--	--	**2,680**
EE-10	EE-10	3/1/84	1.5-3	--	**14.2**	**87.5**	--	--	**21.3**	--	**139**	**319**	--	--	--	--	--	--	--	**200**
EE-11	EE-11	3/1/84	1.5-3	--	**4.75**	**37.8**	--	--	**11.4**	--	**123**	**0.48**	--	--	--	--	--	--	--	**44.8**
EE-12	EE-12	3/1/84	1.5-3	--	**8.19**	**181**	--	--	**16.8**	--	**143**	**133**	--	--	--	--	--	--	--	**154**
EE-13	EE-13	3/1/84	1.5-3	--	**7.94**	**50.5**	--	--	<10	--	**289**	**79.2**	--	--	--	--	--	--	--	**212**
EE-14	EE-14	3/1/84	1.5-3	--	**17.5**	<20	--	--	<5	--	**87.9**	**1.53**	--	--	--	--	--	--	--	**39.5**
EE-15	EE-15	3/1/84	1.5-3	--	**23.1**	**568**	--	--	**201**	--	**1,350**	**1,240**	--	--	--	--	--	--	--	**5,260**
EE-23	EE-23	3/1/84	1.5-3	--	**14**	**2,530**	--	--	**37.6**	--	**1,860**	**6,265**	--	--	--	--	--	--	--	**1,040**
MB-10	MB-10	1/1/86	2	--	<0.1	**50**	--	--	--	--	**100**	**340**	--	--	--	--	--	--	--	**1,500**
MB-11	MB-11	1/1/86	2	--	**3.1**	**170**	--	--	--	--	**92**	**85**	--	--	--	--	--	--	--	**75**
MB-12	MB-12	1/1/86	2	--	**0.37**	**38**	--	--	--	--	**5.8**	**3.4**	--	--	--	--	--	--	--	**9.1**
MK-2A	MK-2A	1/1/86	0.5-2	--	<0.1	**46**	--	--	--	--	**15**	**6**	--	--	--	--	--	--	--	**70**
MK-3B	MK-3B	1/1/86	0.5	--	**24**	<1	--	--	--	--	**85**	**3.8**	--	--	--	--	--	--	--	**40**
MK-4B	MK-4B	1/1/86	2	--	**120**	**220**	--	--	--	--	**220**	**900**	--	--	--	--	--	--	--	**480**
MK-5B	MK-5B	1/1/86	0.5	--	**2.1**	<1	--	--	--	--	**45**	**75**	--	--	--	--	--	--	--	**120**
MK-6B	MK-6B	1/1/86	2	--	**20**	**35**	--	--	--	--	**25**	**6.9**	--	--	--	--	--	--	--	**50**

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW-3A	MW-3A	3/1/84	0.5	--	<1.0	**45.8**	--	--	**21.1**	--	**122**	<10	--	--	--	--	--	--	--	**64**
MW-4A	MW-4A	3/1/84	0.5	--	**19.8**	**27.5**	--	--	**26.4**	--	**47.2**	**405**	--	--	--	--	--	--	--	**57.2**
MW-6A	MW-6A	3/1/84	1.5	--	**11**	**96.4**	--	--	**23.5**	--	**126**	**331**	--	--	--	--	--	--	--	**87.7**
MW-6B	MW-6B	3/1/84	0.5	--	**1.6**	<20	--	--	**14**	--	**102**	**173**	--	--	--	--	--	--	--	**56**
MW-7A	MW-7A	3/1/84	0.5	--	**1.82**	**53.6**	--	--	<5	--	**224**	**249**	--	--	--	--	--	--	--	**139**
MW-8A	MW-8A	3/1/84	0.5	--	**25.1**	**46.5**	--	--	**13**	--	**114**	**24.7**	--	--	--	--	--	--	--	**62.8**
MW-8B	MW-8B	3/1/84	0.5	--	**3.2**	**21.1**	--	--	<5	--	**295**	**14.7**	--	--	--	--	--	--	--	**179**
NSB-5	NSB-5	4/1/90	2	--	**1**	**34**	<0.1	<0.1	**11**	**8**	**86**	**49**	<0.1	--	**16**	**0.3**	<0.5	--	--	**42**
B-10	B-10	12/13/05	4-5	--	**2.3**	**170**	--	**1**	**130**	--	--	**32**	**0.12**	--	--	<2	<1	--	--	--
B-11	B-11	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-13	B-13	1/5/06	4-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-14	B-14	1/5/06	4-4.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-15	B-15 (D)	1/5/06	4.5-5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B-16	B-16	12/13/05	4-5	--	**3.2**	**100**	--	<1	**33**	--	--	**14**	**0.9**	--	--	<2	<1	--	--	--
B-19	B-19	12/13/05	4-5	--	**8**	**78**	--	<1	**33**	--	--	**110**	**0.064**	--	--	<2	<1	--	--	--
B-19-A	B-19-A	12/25/05	4-5	--	**6.3**	**50**	--	<1	**36**	--	--	**41**	**0.11**	--	--	<2	<1	--	--	--
B-19-A	B-19-A (D)	12/25/05	4-5	--	**7.5**	**71**	--	<1	**36**	--	--	**24**	**0.11**	--	--	<2	<1	--	--	--
B-23	B-23	12/13/05	4-5	--	**24**	**37**	--	<1	**9.3**	--	--	<1	**0.083**	--	--	<2	<1	--	--	--
B-24	B-24	12/14/05	4-5	--	**9.4**	**39**	--	<1	**96**	--	--	**34**	**0.89**	--	--	<2	<1	--	--	--
C-5	C-5	9/1/06	2.5-3.5	--	**7.8**	**77**	--	<1.0	**56**	--	**39**	**70**	**0.28**	--	--	<2.0 J	<1.0	--	--	--
C-14	C-14	8/29/06	3-4	--	**39**	**110**	--	<1.0	**41**	--	**130**	**360**	**0.09 J**	--	--	<2.0	<1.0	--	--	--
C-19	C-19	8/28/06	2.5-3	--	**180**	**180**	--	<1.0	**41 J**	--	**88 J**	**990**	**1.3**	--	--	<2.0 J	<1.0	--	--	--
C-24	C-24	8/29/06	2.5-3	--	**17**	**51**	--	<1.0	**12**	--	**100**	**670**	**0.13 J**	--	--	<2.0	<1.0	--	--	--
C-24	C-24	8/29/06	3.5-4	--	**57**	**3,300**	--	**4**	**49**	--	**360**	**8,000**	**0.47 J**	--	--	<2.0	**4.3**	--	--	--
C-29	C-29	8/29/06	3-3.5	--	**7.6**	**25**	--	<1.0	**6.3**	--	**87**	**29**	<0.050	--	--	<2.0	<1.0	--	--	--
C-31	C-31	8/29/06	3.5-4	--	<1.0	**340**	--	<1.0	**15**	--	**120**	**77**	**0.22 J**	--	--	<2.0	<1.0	--	--	--
C-33	C-33	8/29/06	4-4.5	--	**180**	**68**	--	<1.0	**37**	--	**52**	**23**	**0.08 J**	--	--	<2.0	<1.0	--	--	--
B-11	B-11	12/12/05	5-6	--	**29**	**39**	--	<1	**30**	--	--	**12**	<0.05	--	--	<2	<1	--	--	--
B-12	B-12	12/12/05	5-6	--	**4**	**19**	--	<1	**23**	--	--	**10**	<0.05	--	--	<2	<1	--	--	--
B-13	B-13	12/12/05	5-6	--	**120**	**120**	--	**2.8**	**170**	--	--	**2.4**	**37**	--	--	<2	<1	--	--	--
B-14	B-14	12/12/05	5-6	--	**37**	**37**	--	<1	**28**	--	--	**2.8**	**0.063**	--	--	<2	<1	--	--	--
B-15	B-15	12/12/05	5-6	--	**13**	**180**	--	<1	**60**	--	--	**38**	**0.25**	--	--	<2	<1	--	--	--
B-17	B-17	12/13/05	5-6	--	**4.8**	**100**	--	<1	**74**	--	--	**660**	**1.8**	--	--	<2	<1	--	--	--
B-18	B-18	12/13/05	5-6	--	**4.7**	**29**	--	<1	**30**	--	--	**91**	**0.12**	--	--	<2	<1	--	--	--
B-19-B	B-19-B	12/25/05	9-10	--	**6.9**	**74**	--	<1	**38**	--	--	**54**	**0.11**	--	--	<2	<1	--	--	--
B-19-B	B-19-B (D)	12/25/05	9-10	--	**7.5**	**71**	--	<1	**36**	--	--	**24**	**0.11**	--	--	<2	<1	--	--	--
B-20	B-20	12/25/05	5-6	--	**17**	**41**	--	<1	**34**	--	--	**19**	**0.053**	--	--	<2	<1	--	--	--
B-21	B-21	12/13/05	5-6	--	<1.0	**62**	--	<1	**84**	--	--	<1	**1.1**	--	--	<2	<1	--	--	--
B-22	B-22	12/14/05	5-6	--	**27**	**86**	--	<1	**110**	--	--	**41**	**15**	--	--	<2	<1	--	--	--

Table 2: Metals Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Soil Screening Levels (SSL)				3.1E+01	1.9E+01	1.5E+04	1.5E+01	7.1E+01	--	4.9E+01	3.1E+03	8.0E+01	1.0E+00	3.9E+02	4.9E+02	3.9E+02	3.9E+02	7.8E-01	3.9E+02	2.3E+04
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
C-3	C-3	9/1/06	9-10	--	**1.1**	**72**	--	<1.0	**6.3**	--	**9.7**	**54**	**0.055**	--	--	<2.0 J	<1.0	--	--	--
C-10	C-10	8/31/06	6-7	--	**1.8**	**78 J**	--	<1.0	**60**	--	**13**	**2.6**	<0.050	--	--	<2.0 J	<1.0	--	--	--
C-16	C-16	8/30/06	6-6.5	--	**2.4**	**34**	--	<1.0	**26**	--	**7.6**	**3**	<0.050 J	--	--	<2.0	<1.0	--	--	--
C-20	C-20	8/28/06	10.5-11	--	**160**	**220**	--	**1.7**	**42 J**	--	**220 J**	**730**	**0.64**	--	--	<2.0 J	<1.0	--	--	--
C-22	C-22	8/28/06	7-7.5	--	**20**	**760**	--	**2.6**	**4,400 J**	--	**1,100 J**	**2,700**	**0.29**	--	--	<2.0 J	**6.8**	--	--	--
C-25	C-25	8/28/06	10.5-11	--	**61**	**73**	--	<1.0	**37 J**	--	**69 J**	**71**	**0.78**	--	--	<2.0 J	<1.0	--	--	--
MK-2A	MK-2A	1/1/86	5-6.5	--	**17**	**31**	--	--	--	--	**1.4**	**1**	--	--	--	--	--	--	--	**13**
TPI-CONF-01	TPI-CONF-01	12/1/93	Sidewall	--	**2**	**140**	--	<0.3	**62**	<2	**20**	<10	**0.5**	--	**47**	<0.5	<0.5	--	**51**	**36**
TPI-CONF-02	TPI-CONF-02	12/1/93	Sidewall	--	**1**	**22**	--	<0.3	**48**	**4**	<2	<10	<0.2	--	**8**	<0.5	<0.5	--	**28**	**9**
TPI-CONF-09A	TPI-CONF-09A	12/1/93	Sidewall	--	**4**	**61**	--	<0.3	**13**	<3	**16**	<10	<0.2	--	**10**	<0.5	<0.5	--	<30	**32**

Notes:

a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
1. Metals were analyzed by USEPA Methods 6010B and 7471A.
2. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in bold font indicate a detection above the MDL.
5. Results shaded with gray indicate the MDL exceeded the SSL.
6. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations and Symbols:

"--" - Not Available
"<" - Non-detect result
B - Compound was found in the blank and sample.
(D) - Duplicate sample
F1 - MS and/or MSD Recovery is outside acceptance limits.
F2 - MS/MSD RPD exceeds control limits.
ft bgs - Feet below ground surface
J - Estimated value
MDL - Method Detection Limit
mg/kg - milligram per kilogram
MS - Matrix Spike
MSD - Matrix Spike Duplicate
R - Rejected in validation
RL - Reporting Limit
RPD - Relative Percent Difference
Sidewall - indicates sample was collected from the sidewall of an excavation.
SSL - Soil Screening Level
USEPA - United States Environmental Protection Agency

Table 3: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [4]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				1.1E+03	1.1E+02	1.1E+03	1.1E+04	1.1E+05	2.8E+01	1.1E+03	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06	2.6E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<1.4	<1.8	**2.3 J**	<2.0	<1.3	<3.3	<4.0	3.1	<4.7	<2.6	<2.3	<1.9	<4.1	<1.3	<2.1	<3.3	<1.7	<1.6	**3.5**
A3	DG-A3S-0.5-1	8/21/18	0.5-1	**26**	**32**	**51**	**16 J**	**40**	<14	<16	47.7	**28 J**	<11	**9.4 J**	**14 J**	**20**	**47**	<8.6	**15 J**	**60**	**63**	**620**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<1.4	**2.8 J**	**6.6**	**2.1 J**	**4.4 J**	<3.4	<4.0	5.5	<4.8	<2.7	<2.3	<1.9	<4.1	**4.5 J**	<2.1	**3.5 J**	**13**	**4.7 J**	**6.9**
A3	DG-A3S-9.5-10	8/21/18	9.5-10	**15**	**16**	**28**	**9.6**	**21**	<6.7	<8.1	24.2	**19**	<5.4	**5.7 J**	**6.3 J**	**13**	**27**	<4.2	**13**	**26**	**33**	**6.3**
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<1.5	<1.9	<2.0	<2.0	<1.4	<3.4	<4.1	3.0	<4.9	<2.7	<2.3	<1.9	<4.2	<1.4	<2.1	<3.4	<1.8	<1.7	**0.89 J**
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<1.4	<1.8	<2.0	<2.0	<1.3	<3.3	<4.0	2.9	<4.8	<2.7	<2.3	<1.9	<4.1	<1.3	<2.1	<3.3	<1.7	<1.6	**7.9 B**
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<1.4	<1.8	<2.0	<2.0	<1.3	<3.4	<4.0	3.0	<4.8	<2.7	<2.3	<1.9	<4.1	<1.3	<2.1	<3.4	<1.7	<1.6	**2.0**
A7	DG-A7S-0.5-1	8/23/18	0.5-1	**110**	**220**	**400**	**120**	**140**	<67	**100**	315.8	<95	<53	<46	<38	**150**	**140**	<42	<67	**66 J**	**190**	**280**
A7	DG-A7S-3.5-4	8/23/18	2.5-4	**8.8**	**5.9**	**9.1**	**2.4 J**	**13**	**3.4 J**	<4.1	11.3	**34**	<2.7	<2.3	**3.6 J**	**6.9**	**4.6 J**	**15**	**15**	**54**	**12**	**5.6**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<1.5	**2.2 J**	**15**	**4.1 J**	**8.0**	<3.4	<4.1	5.7	<4.9	<2.7	<2.4	<2.0	<4.2	**11**	<2.2	<3.4	**2.9 J**	**6.1**	**33**
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<1.5	**2.0 J**	**7.2**	**2.1 J**	**4.2 J**	<3.4	<4.1	4.7	<4.9	<2.7	<2.3	<1.9	<4.2	**6.0**	<2.1	**4.3 J**	**3.4 J**	**5.4**	**24**
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<150	**440 J**	**430 J**	**210 J**	**330 J**	<340	<410	683.4	<480	<270	<230	<190	<420	**330 J**	<210	<340	**210 J**	**460 J**	**700**
A8	DG-A8S-3.5-4	8/27/18	2.5-4	**80**	**100**	**140**	**46**	**120**	**23**	**57**	151.3	**200**	<11	**35**	**48**	**77**	**160**	**11 J**	**250**	**200**	**200**	**460**
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<1.4	<1.8	<2.0	<2.0	<1.3	<3.3	<4.0	2.9	**24**	<2.6	<2.3	<1.9	<4.1	<1.3	<2.1	**46**	**2.6 J**	<1.6	**1.2 J**
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<1.4	<1.8	<2.0	<2.0	<1.3	<3.3	<4.0	2.9	<4.7	<2.6	<2.3	<1.9	<4.0	<1.3	<2.1	<3.3	**2.1 J**	<1.6	**2.8**
B1	DG-B1S-0.5-1	8/21/18	0.5-1	**30 J**	**32 J**	**36 J**	**20 J**	**21 J**	<27	<33	54.0	<39	<22	<19	**19 J**	<33	**40**	<17	<27	**29 J**	**49**	**160**
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<1.5	**2.2 J**	**4.6 J**	<2.1	**2.3 J**	<3.5	<4.2	4.7	<5.0	<2.8	<2.4	<2.0	<4.3	**2.2 J**	<2.2	<3.5	**6.7**	**3.2 J**	**9.1**
B2	DG-B2S-19.5-20	8/21/18	19.5-20	**15**	**9.8**	**27**	**8.0**	**19**	<3.4	**5.2**	16.3	<4.9	<2.7	<2.4	**3.7 J**	**8.1**	**23**	<2.2	<3.4	**6.5**	**55**	**44**
B5	DG-B5S-0.5-1	8/23/18	0.5-1	**35**	**51**	**98**	<4.0	**50**	**9.2 J**	**22**	75.8	**13 J**	<5.4	**14**	**17**	**31**	**53 B**	<4.2	**13**	**41**	**94 B**	**130**
B5	DG-B5S-3.5-4	8/23/18	1-2.5	**690**	**770**	**960**	**410**	**770**	**91**	**200**	1,050.9	**70**	**66**	**230**	**220**	**210**	**850**	**88**	**69**	**1,000**	**1,500**	**180**
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<1.4	**1.9 J**	**12**	**2.8 J**	**5.6**	<3.3	<4.0	5.1	<4.7	<2.6	<2.3	**2.1 J**	<4.1	**20**	**3.0 J**	<3.3	**9.9**	**24**	**20**
B9	DG-B9S-0.5-1	8/24/18	0.5-1	**220**	**270**	**360**	**140**	**220**	<66	**82 J**	370.8	**150 J**	<53	<45	**89 J**	**100**	**370**	<41	**99**	**340**	**350**	**440**
B9	DG-B9S-3.5-4	8/24/18	2.5-4	**10**	**14**	**19**	**9.3**	**12**	<3.4	**5.0**	19.2	**5.9 J**	<2.7	**2.9 J**	**2.8 J**	**5.0**	**14**	<2.1	**4.5 J**	**12**	**17**	**14**
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<1.4	**4.5 J**	**7.9**	**3.3 J**	**3.9 J**	<3.3	<4.0	7.2	<4.8	<2.7	<2.3	<1.9	<4.1	**6.8**	<2.1	<3.3	**4.2 J**	**7.3**	**5.6**
B10	DG-B10S-0.5-1	8/24/18	0.5-1	**45**	**45**	**66**	**32**	**53**	**7.1 J**	**19**	65.5	**27**	<5.4	**29**	**44**	**28**	**59**	**5.6 J**	**22**	**67**	**81**	**100**
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	**110**	**220**	**210**	**91**	**82**	<34	**170**	287.0	**59 J**	<27	**89**	**430**	**280**	**120**	<22	**62**	**130**	**220**	**570**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<1.4	**5.9**	**4.1 J**	**2.0 J**	**2.8 J**	<3.3	**14**	9.5	<4.7	**4.8**	**4.0 J**	**9.2**	**21**	**3.5 J**	<2.1	**5.9**	**4.3 J**	**4.9**	**16**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	**43**	**51**	**71**	**26**	**59**	**9.3**	**26**	74.6	**7.1 J**	<2.7	**12**	**7.7**	**35**	**71**	<2.1	**18**	**57**	**120**	**41**
C3	DG-C3S-3.5-4	8/21/18	2.5-4	**100**	**100**	**170**	**50**	**110**	**17**	**32**	147.8	**12 J**	<5.5	**39**	**21**	**41**	**120**	<4.3	**23**	**58**	**170**	**64**
C3	DG-C3S-9.5-10	8/21/18	9.5-10	**20**	**19**	**25**	**8.9 J**	**35**	<13	<16	30.9	<19	<11	<9.2	**16 J**	<16	**49**	**13 J**	<13	**29**	**75**	**31**
C5	DG-C5S-9-9.5	8/23/18	9-9.5	**14**	**8.9**	**18**	<2.0	**17 B**	<3.4	**4.7 J**	14.3	**35**	<2.7	<2.3	**7.3**	**6.2**	**12**	**19**	**20**	**70**	**20**	**14**
C7	DG-C7S-0.5-1	8/24/18	0.5-1	**12**	**15**	**29**	**7.3**	**20**	<3.4	**7.8**	21.7	**12**	<2.7	**5.6**	**12**	**13**	**22**	<2.1	**8.0**	**20**	**31**	**130**
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.4	**2.1 J**	**2.5 J**	<2.0	**1.8 J**	<3.3	<4.0	4.3	<4.7	<2.7	<2.3	**2.2 J**	<4.1	**2.9 J**	<2.1	<3.3	**3.1 J**	**2.7 J**	**13**
C7	DG-C7S-3.5-4	8/24/18	3.5-4	**25**	**27**	**38**	**13**	**29**	**3.9 J**	**9.7**	38.3	**12**	<2.6	**4.7**	**9.8**	**10**	**54**	**2.9 J**	**8.4**	**47**	**67**	**12**
C7	DG-C7S-9.5-10	8/24/18	9.5-10	**9.5**	**10**	**14**	**3.7 J**	**25**	**3.7 J**	<4.0	16.3	**130**	**5.6**	<2.3	**8.5**	**5.6**	**13**	**52**	**49**	**120**	**30**	**8.2**
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<1.4	**3.3 J**	**4.5 J**	**2.3 J**	**2.0 J**	<3.3	<4.0	5.7	<4.7	<2.6	<2.3	<1.9	<4.1	**4.0 J**	<2.1	<3.3	**3.3 J**	**4.5 J**	**260**
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<1.4	**2.8 J**	**4.3 J**	<2.0	**1.7 J**	<3.3	<4.0	5.2	<4.7	<2.6	<2.3	<1.9	<4.1	**2.3 J**	<2.1	<3.3	**1.8 J**	**3.0 J**	**3.5**

Table 3: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [4]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				1.1E+03	1.1E+02	1.1E+03	1.1E+04	1.1E+05	2.8E+01	1.1E+03	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06	2.6E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<1.5	**2.8 J**	**39**	**3.0 J**	**27**	**4.8 J**	<4.1	11.8	<4.9	<2.8	<2.4	<2.0	**6.8**	**11**	<2.2	**8.3**	**70**	**8.1**	**11**
D3	DG-D3S-9.5-10	8/21/18	9.5-10	**260**	**270**	**350**	**140**	**270**	**35**	**87**	376.4	**22 J**	**26**	**45**	**190**	**100**	**440**	**25**	**24 B**	**300**	**560**	**64**
D5	DG-D5S-0.5-1	8/22/18	0.5-1	**38**	**60**	**60**	**33**	**58 B**	<17	<21	79.7	<25	<14	**13 J**	**14 J**	**29**	**55**	<11	<17	**33**	**98**	**370 B**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	**35**	**35**	**54**	<2.0	**41 B**	**4.2 J**	**13**	49.5	<4.8	<2.7	**3.5 J**	**6.2**	**14**	**44**	<2.1	**3.6 J**	**37**	**74**	**11**
D9	DG-D9S-0.5-1	8/24/18	0.5-1	**8.5**	**8.5**	**11**	**5.3**	**7.2**	<3.4	**4.4 J**	12.7	<4.8	<2.7	<2.3	**3.2 J**	**4.3 J**	**12 B**	<2.1	<3.4	**6.3 B**	**11**	**14**
D9	DG-D9S-3.5-4	8/24/18	1-2.5	**150**	**160**	**210**	**77**	**170**	**19**	**50**	220.9	**15**	**8.5**	**6.8**	**49**	**54**	**280**	**9.2**	**12**	**220**	**350**	**53**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<1.4	<1.8	<2.0	<2.0	**1.3 J**	<3.4	<4.0	3.0	<4.8	<2.7	<2.3	<1.9	<4.1	**1.5 J B**	<2.1	<3.4	**3.0 J B**	**1.7 J**	**0.84 J**
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<1.4	**2.1 J**	**2.6 J**	<2.0	**1.7 J**	<3.4	<4.0	4.3	<4.8	<2.7	<2.3	<1.9	<4.1	**2.8 J**	<2.1	<3.4	**2.2 J**	**2.6 J**	**12**
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	**120**	**140**	**240**	**66**	**240**	**26**	**39**	206.8	**320**	**23 J**	**23 J**	**93**	**51**	**190**	**68**	**240**	**440**	**240**	**910**
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	**14**	**11**	**19**	**3.7 J**	**38**	**6.1**	**4.6 J**	20.9	**190**	**5.7**	<2.3	**6.0**	**10**	**13**	**92**	**51**	**150**	**37**	**17**
E3	DG-E3S-9.5-10	8/21/18	9.5-10	**21**	**16**	**33**	**7.2**	**54**	**5.3**	**7.5**	27.6	**6.4 J**	<2.7	**2.5 J**	**3.3 J**	**12**	**22**	<2.1	**13 B**	**44**	**36**	**58**
E5	DG-E5S-9-9.5	8/22/18	9-9.5	**17**	**26**	**35**	**6.8**	**20**	<3.5	**8.4**	33.9	<5.0	<2.8	**6.2**	**3.5 J**	**8.8**	**25**	<2.2	**4.6 J**	**15**	**46**	**1.8 J**
E7	DG-E7S-0.5-1	8/24/18	0.5-1	**6.7**	**8.3**	**12**	**5.3**	**8.2**	<3.4	**6.1**	12.5	<4.9	<2.7	<2.3	**2.8 J**	**22**	**9.9**	<2.1	<3.4	**7.9**	**14**	**28**
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<1.5	**2.0 J**	**2.9 J**	<2.1	**2.3 J**	<3.5	<4.2	4.3	<5.0	<2.8	<2.4	<2.0	<4.3	**3.7 J**	<2.2	**4.0 J**	**3.8 J**	**3.6 J**	**6.1**
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<1.4	<1.8	<2.0	<2.0	<1.4	<3.4	<4.1	3.0	<4.8	<2.7	<2.3	<1.9	<4.2	**1.4 J**	<2.1	<3.4	**2.7 J**	<1.6	**1.7 J**
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<15	**37 J**	**57**	**29 J**	**33 J**	<34	<41	62.8	<49	<27	<23	**140**	**51**	**27 J**	<21	<34	**57**	**36 J**	**130**
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<15	**48 J**	**66**	**33 J**	**38 J**	<34	<41	74.8	<49	<27	**27 J**	**450**	**76**	**38 J**	<22	**41 J**	**64**	**57**	**850 F2**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	**37 J**	**72 J**	**110**	**41 J**	**82 J**	<66	<79	124.1	**180 J**	<53	**63 J**	**82 J**	**120**	**56 J**	<41	**120**	**120**	**89 J**	**270**
E11	DG-E11S-9.5-10	8/27/18	9.5-10	**21**	**23**	**27**	**9.3**	**25**	<3.4	**8.3**	30.4	<4.8	**13**	<2.3	**12**	**9.1**	**57**	**2.8 J**	<3.4	**27**	**98**	**18**
F1	DG-F1S-0.5-1	8/20/18	0.5-1	**37**	**34**	**78**	**21**	**52**	**7.6 J**	**17**	55.1	**100**	<5.5	**20**	**42**	**26**	**81**	**4.5 J**	**92**	**100**	**78**	**120 B**
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<58	**95 J**	**90 J**	<82	<54	<140	<160	185.3	<190	<110	<93	<78	<170	**63 J**	<86	<140	<70	**87 J**	**4.6**
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<1.4	**2.2 J**	**26**	**2.5 J**	**17**	**3.4 J**	<4.0	8.5	<4.7	<2.7	**2.3 J**	**2.1 J**	<4.1	**9.0**	<2.1	**5.3**	**47**	**6.5**	**100**
F3	DG-F3S-0.5-1	8/21/18	0.5-1	**140**	**270**	**320**	**110**	**160**	**44**	**140**	375.3	**28 J**	<11	**75**	**45**	**190**	**210**	<8.6	**38 B**	**120**	**270**	**79**
F3	DG-F3S-3.5-4	8/21/18	1-2.5	**4.7**	**6.1**	**7.5**	**3.4 J**	**3.4 J**	<3.3	**4.2 J**	9.4	<4.7	<2.6	**2.5 J**	**2.0 J**	**6.3**	**5.0**	<2.1	<3.3	**3.6 J**	**6.6**	**5.7**
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<1.5	**3.0 J**	**4.0 J**	**2.3 J**	**1.7 J**	<3.4	<4.1	5.4	<4.8	<2.7	<2.3	<1.9	<4.2	**2.9 J**	<2.1	**4.4 J B**	**2.7 J**	**3.5 J**	**8.7**
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<30	**39 J**	<42	<42	<28	<69	<83	81.5	<99	<56	<48	<40	<85	<28	<44	<69	<36	<34	**68 B**
F5	DG-F5S-3.5-4	8/22/18	2.5-4	**41**	**50**	**81**	<2.0	**64 B**	**5.4**	**21**	69.8	**30**	<2.7	**9.3**	**17**	**24**	**110**	**7.9**	**39**	**110**	**150**	**72 B**
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	**260**	**320**	**520**	<4.0	**330 B**	**44**	**120**	454.4	**53**	**6.0 J**	**59**	**61**	**150**	**370**	**17**	**59**	**260**	**560**	**110 B**
F9	DG-F9S-0.5-1	8/24/18	0.5-1	**24**	**25**	**49**	**10**	**75**	**9.1**	**13**	42.9	**38**	<2.7	**4.5 J**	**10**	**21**	**28**	**3.2 J**	**16**	**63**	**57**	**39**
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<1.4	**1.8 J**	**2.3 J**	<2.0	**1.9 J**	<3.4	<4.0	4.0	<4.8	<2.7	<2.3	<1.9	<4.1	**2.2 J B**	<2.1	<3.4	<1.7	**2.4 J**	**3.5**
F9	DG-F9S-9.5-10	8/24/18	9.5-10	**12**	**11**	**17**	**6.0**	**28**	**3.8 J**	**4.2 J**	18.2	**97**	**4.5 J**	**2.7 J**	**5.3**	**9.3**	**23**	**50**	**28**	**99**	**38**	**36**
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**1,200**	**900**	**1,500**	**460**	**2,400**	**190**	**360**	1,403.0	**960**	**270**	**130**	**1,200**	**380**	**1,200**	**330**	**570**	**2,100**	**1,600**	**1,300**
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<1.5	**2.9 J**	**20**	**3.5 J**	**16**	<3.4	<4.1	6.9	**6.6 J**	<2.7	<2.4	**2.8 J**	<4.2	**12**	**3.2 J**	**12**	**54**	**11**	**17**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	**4.8**	**6.2**	**7.6**	**4.2 J**	**10**	<3.3	**5.3**	9.7	<4.7	<2.7	<2.3	**4.2 J**	**28**	**12**	<2.1	<3.3	**15**	**17**	**66**
G3	DG-G3S-9.5-10	8/21/18	9.5-10	**3.3 J**	**4.5 J**	**35**	**3.3 J**	**32**	**3.8 J**	<4.2	12.4	<5.0	<2.8	<2.4	**2.0 J**	**5.9**	**15**	<2.2	**16 B**	**85**	**12**	**3.9**
G6	DG-G6S-1-2[a]	8/22/18	1-2	**50**	**75**	**100**	**42**	**72 B**	**16 J**	**51**	111.6	**28 J**	<11	**11 J**	**20**	**96**	**96**	<8.6	**29**	**71**	**110**	**83**
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<1.5	**4.0 J**	**4.1 J**	**2.8 J**	**2.8 J**	<3.5	<4.2	6.5	<4.9	<2.8	<2.4	<2.0	<4.2	**3.9 J**	<2.2	<3.5	**2.4 J**	**4.3 J**	**11**

Table 3: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [4]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				1.1E+03	1.1E+02	1.1E+03	1.1E+04	1.1E+05	2.8E+01	1.1E+03	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06	2.6E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
G7	DG-G7S-3.5-4	8/24/18	2.5-4	**300**	**340**	**410**	**190**	**360**	**42**	**98**	465.1	**26**	**48**	**57**	**86**	**100**	**440**	**95**	**24**	**590**	**610**	**47**
G11	DG-G11S-0.5-1	8/27/18	0.5-1	**29**	**41**	**62**	**20**	**40**	**5.5**	**15**	57.3	**6.5 J**	<2.7	**5.6**	**6.6**	**17**	**47**	<2.2	**4.5 J**	**29**	**84**	**19**
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<1.5	<1.9	**2.8 J**	<2.1	**1.4 J**	<3.5	<4.2	3.3	<5.0	<2.8	<2.4	<2.0	<4.3	**1.7 J**	<2.2	<3.5	<1.8	**2.3 J**	**2.1**
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<7.2	**9.9 J**	**19 J**	<10	**11 J**	<17	<20	21.7	<24	<13	<12	<9.6	<21	**21 J**	<11	<17	**21 J**	**17 J**	**100**
H1	DG-H1S-0.5-1	8/20/18	0.5-1	**27**	**31**	**47**	**17**	**33**	**6.1**	**18**	46.5	**9.8**	<2.7	**4.9**	**9.3**	**24**	**46**	<2.1	**10**	**28**	**54**	**33 B**
H1	DG-H1S-3.5-4	8/20/18	2.5-4	**2.8 J**	**3.9 J**	**11**	**2.6 J**	**7.0**	<3.4	<4.1	7.2	<4.9	<2.8	<2.4	**2.7 J**	**4.6 J**	**6.5**	<2.2	**5.0**	**19**	**8.0**	**5.5 B**
H3	DG-H3S-0.5-1	8/21/18	0.5-1	**18**	**27**	**44**	**14**	**27**	**5.8**	**17**	40.9	**22**	<2.8	**10**	**9.6**	**20**	**27**	**3.8 J**	**23 B**	**24**	**31**	**31**
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<1.5	**2.3 J**	**3.0 J**	<2.1	<1.4	<3.4	<4.1	4.6	<4.9	<2.7	<2.4	<2.0	<4.2	**1.9 J**	<2.2	<3.4	**1.8 J**	**2.3 J**	**31**
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<2.9	**6.0 J**	**9.2 J**	**4.2 J**	**3.3 J**	<6.9	<8.3	11.0	<9.8	<5.5	<4.7	<3.9	<8.5	**6.6 J**	<4.3	<6.9	**6.8 J**	**9.9**	**24**
H5	DG-H5S-0.5-1	8/22/18	0.5-1	**3,800**	**6,900**	**7,400**	**3,700**	**4,500 B**	**910**	**2,500**	9,221.5	**94 J**	**33 J**	**2,000**	**500**	**2,800**	**2,600**	**39 J**	**310**	**1,100**	**6,600**	**240 B**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	**290**	**280**	**400**	<2.0	**260 B**	**39**	**100**	398.3	**8.2 J**	**11**	**16**	**61**	**100**	**360**	**13**	**29**	**260**	**590**	**18 B**
H6	DG-H6S-0.5-1	8/23/18	0.5-1	**29**	**51**	**69**	<4.0	**39**	**9.1 J**	**20**	72.0	<9.4	<5.3	**5.6 J**	**8.1 J**	**24**	**30 B**	<4.2	**8.6 J**	**24**	**49 B**	**540**
H6	DG-H6S-3.5-4	8/23/18	1-2.5	**14**	**16**	**27**	<2.0	**17**	**3.5 J**	**7.2**	24.3	**11**	<2.7	**2.6 J**	**4.4 J**	**7.6**	**20 B**	<2.1	**9.8**	**19**	**24 B**	**110**
H9	DG-H9S-0.5-1	8/27/18	0.5-1	**16**	**16**	**31**	**14**	**17**	<7.0	<8.3	24.8	**10 J**	<5.6	**7.2 J**	**10**	**9.0 J**	**20**	<4.4	<7.0	**22**	**25**	**68**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<1.4	**2.7 J**	**3.2 J**	**2.0 J**	**2.7 J**	<3.3	<4.0	5.0	<4.8	<2.7	<2.3	<1.9	<4.1	**4.0 J**	<2.1	<3.3	**3.6 J**	**4.4 J**	**5.0**
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<1.4	<1.8	**2.2 J**	<2.0	**1.3 J**	<3.3	<4.0	3.1	<4.8	<2.7	<2.3	<1.9	<4.1	**2.1 J**	<2.1	<3.3	**2.8 J**	**1.7 J**	**4.6**
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<1.4	**2.6 J**	**3.4 J**	**2.0 J**	**3.2 J**	<3.4	<4.0	4.9	<4.8	<2.7	<2.3	**2.4 J**	<4.1	**5.1**	<2.1	<3.4	**9.5**	**6.6**	**8.5**
I3	DG-I3S-0.5-1	8/22/18	0.5-1	**21**	**26**	**45**	**16**	**26**	<6.8	**13**	37.5	**13 J**	<5.4	**9.3 J**	**7.1 J**	**16**	**33**	<4.3	**78 B**	**22**	**33**	**13**
I3	DG-I3S-3.5-4	8/22/18	1-2.5	**25**	**26**	**43**	**17 J**	**21**	<14	<16	40.8	<20	<11	**13 J**	**10 J**	**18 J**	**32**	<8.6	<14	**20**	**34**	**21**
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**49**	**77**	**110**	**39**	**85**	**16 J**	**48**	114.2	<20	<11	**33**	**75**	**58**	**86**	<8.7	**14 J**	**55**	**110**	**47**
I7	DG-I7S-3.5-4	8/24/18	2.5-4	**6.1**	**9.3**	**11**	**5.0**	**6.7**	<3.4	**4.6 J**	13.2	<4.8	<2.7	**3.3 J**	**3.3 J**	**5.2**	**7.9**	<2.1	<3.4	**5.4**	**11**	**10**
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	**150**	**260**	**340**	**160**	**220**	**24**	**90**	343.8	**29**	<5.4	**76**	**31**	**97**	**270**	**9.1 J**	**59**	**210**	**510**	**39**
I9	DG-I9S-0.5-1	8/24/18	0.5-1	**2,800**	**950**	**1,500**	**720**	**2,200**	<330	<400	1,574.4	**18,000**	**18,000**	**620**	**7,000**	<410	**17,000**	**13,000**	**57,000**	**37,000**	**11,000**	**2,100**
I11	DG-I11S-0.5-1	8/27/18	0.5-1	**17**	**24**	**39**	**16**	**33**	**8.5 J**	**18**	40.1	<9.6	<5.4	**6.0 J**	**24**	**25**	**26**	<4.2	**7.0 J**	**20**	**42**	**59**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<12	<15	<16	<16	<11	<27	<32	24.1	<38	<21	<18	<15	<33	<11	<17	<27	<14	<13	**340**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<37	<47	<51	<51	<34	<86	<100	76.2	<120	<69	<59	<49	<110	<34	<54	<86	<44	<42	**1,200**
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<15	<19	**22 J**	<21	<14	<35	<41	32.1	<49	<28	<24	<20	<42	**19 J**	<22	<35	<18	<17	**110**
J1	DG-J1S-0.5-1	8/20/18	0.5-1	**5,300**	**5,000**	**5,800**	**1,900**	**4,900**	**930**	**2,300**	7,293.9	**810**	**1,000**	**1,600**	**3,200**	**2,900**	**9,000**	**1,700**	**1,000**	**10,000**	**11,000**	**680 B**
J1	DG-J1S-3.5-4	8/20/18	2.5-4	**28**	**29**	**64**	**13**	**50**	**7.8**	**16**	47.8	**5.0 J**	<2.7	**8.0**	**11**	**21**	**47**	**4.8**	**12**	**82**	**50**	**6.9 B**
J5	DG-J5S-0.5-1	8/22/18	0.5-1	**350**	**570**	**930**	<10	**450 B**	**66**	**310**	795.5	**38 J**	**16 J**	**29**	**64**	**1,600**	**590**	**15 J**	**26**	**280**	**990**	**200 B**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	**220**	**330**	**410**	**170**	**310 B**	**42**	**150**	452.0	**31 J**	<14	**57**	**73**	**190**	**420**	**11 J**	**46**	**260**	**580**	**190 B**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	**4.4 J**	**5.7**	**39**	<2.0	**31 B**	**3.6 J**	**5.3**	14.2	**7.0 J**	<2.7	<2.3	**2.6 J**	**6.5**	**13**	**4.1 J**	**16**	**47**	**16**	**5.5 B**
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<110	**200 J**	**210 J**	<160	<110	<270	<320	378.4	<380	<210	<180	<150	<330	**120 J**	<170	<270	<140	**180 J**	**810**
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<120	**170 J**	**170 J**	<160	<110	<270	<330	345.4	<390	<220	<190	<150	<330	<110	<170	<270	<140	<130	**620**
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<5.8	**12 J**	**20**	<8.1	**13 J**	<13	<16	21.6	<19	<11	<9.2	<7.7	<17	**11 J**	<8.5	<13	**31**	**17 J**	**46**
K3	DG-K3S-0.5-1	8/22/18	0.5-1	**43**	**60**	**96**	**36**	**68**	**9.5**	**25**	86.3	**14**	**5.1**	**8.0**	**15**	**30**	**100**	**4.9**	**16 B**	**110**	**110**	**49**
K3	DG-K3S-3.5-4	8/22/18	2.5-4	**21**	**16**	**21**	**9.7**	**19**	**4.5 J**	**8.2**	25.6	**4.9 J**	<2.7	**4.3 J**	**5.9**	**11**	**28**	**2.2 J**	**53 B**	**17**	**31**	**3.7**

Table 3: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene Equivalent Total PAHs [4]	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	TPH-Diesel (C10-C28)
Soil Screening Levels (SSL)				1.1E+03	1.1E+02	1.1E+03	1.1E+04	1.1E+05	2.8E+01	1.1E+03	9.0E+02	1.9E+05	3.3E+06	5.9E+04	1.7E+07	2.5E+03	2.4E+06	2.3E+06	2.0E+03	6.9E+04	1.8E+06	2.6E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<58	**89 J**	**170 J**	<81	<54	<140	<160	187.3	<190	<110	<93	<78	<170	**57 J B**	<85	<140	**71 J B**	**110 J**	**1,700**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<1.5	**2.4 J**	**3.6 J**	<2.1	**2.4 J**	<3.4	<4.1	4.8	<4.9	<2.7	<2.4	<2.0	<4.2	**3.1 J B**	<2.2	<3.4	**3.5 J B**	**3.8 J**	**15**
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	**5.0**	**6.1**	**6.6**	**3.3 J**	**4.9**	<3.4	<4.1	9.2	<4.8	<2.7	**2.7 J**	**1.9 J**	<4.2	**7.0 B**	<2.1	<3.4	**6.6 B**	**9.6**	**50**
K8	DG-K8S-1-2[b]	8/22/18	1-2	<1.5	**4.2 J**	**4.6 J**	**2.6 J**	**3.4 J**	<3.5	<4.1	6.7	<4.9	<2.8	<2.4	**2.3 J**	**7.4**	**4.6 J B**	<2.2	<3.5	**5.9**	**6.3 B**	**6.6 B**
K11	DG-K11S-0.5-1	8/27/18	0.5-1	**16**	**21**	**33 F1**	**14 F1**	**25**	<3.4	**8.7 F1**	28.6	**6.4 J**	<2.7	**3.2 J**	**5.8**	**9.4 F1**	**24**	<2.2	**4.5 J**	**19**	**29**	**59**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	**15**	**14**	**23**	**6.3**	**32**	**3.7 J**	**4.3 J**	22.0	**110**	**3.9 J**	**2.7 J**	**12**	**6.6**	**15**	**30**	**46**	**130**	**32**	**13**
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	**21**	**23**	**42**	**9.6**	**43**	**5.4**	**9.3**	35.8	**120**	**4.4 J**	<2.3	**5.0**	**13**	**25**	**34**	**40**	**120**	**50**	**34**
K11	DG-K11S-9.5-10	8/27/18	9.5-10	**22**	**21**	**33**	**5.6**	**61**	**6.6**	**4.8 J**	33.7	**410**	**12**	**2.3 J**	**8.8**	**9.3**	**24**	**120**	**140**	**300**	**62**	**23**
L1	DG-L1S-0.5-1	8/20/18	0.5-1	**47**	**49**	**91**	**29**	**52**	<17	<20	72.6	**40 J**	<13	**14 J**	**26**	**24**	**80**	<11	**26**	**69**	**90**	**84 B**
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	**17**	**20**	**35**	**7.5**	**26**	**5.1**	**11**	31.5	**32**	<2.7	**6.4**	**6.5**	**17**	**23**	**2.1 J**	**30**	**41**	**37**	**38 B**
L5	DG-L5S-0.5-1	8/22/18	0.5-1	**81**	**120**	**200**	**74**	**130**	**31**	**95**	189.5	**72**	<11	**40**	**76**	**150**	**140**	<8.5	**65 B**	**96**	**150**	**210**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	**88**	**120**	**210**	<4.0	**120 B**	**31**	**86**	189.5	**24**	**6.3 J**	**18**	**34**	**110**	**140**	**6.4 J**	**21**	**81**	**180**	**120**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	**33**	**37**	**84**	<2.0	**59 B**	**9.7**	**21**	60.6	**14**	<2.7	**12**	**13**	**22**	**63**	**3.0 J**	**38**	**55**	**81**	**26**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	**8.0**	**9.1**	**13**	**6.4**	**11**	<3.4	**4.5 J**	13.4	<4.9	<2.7	<2.3	**3.5 J**	**5.3**	**13**	<2.1	**3.5 J**	**13**	**16**	**760**
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	**13**	**18**	**29**	**12**	**17**	<7.0	**9.7 J**	26.8	<10	<5.6	<4.8	<4.0	**11**	**22**	<4.4	<7.0	**19**	**27**	**760**
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	**3.4 J**	**7.5**	**27**	**5.8**	**21**	<3.3	**4.7 J**	12.7	**4.8 J**	<2.7	**2.9 J**	**2.8 J**	**5.3**	**12**	**2.2 J**	**19**	**38**	**16**	**3.2**
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<15	**37 J**	**49 J**	**28 J F1**	**29 J**	<35	<42	62.6	<50	<28	**34 J**	**20 J**	**50 F1**	**32 J B**	<22	<35	**19 J B**	**45 J**	**430**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	**300**	**280**	**250**	**100**	**460**	<70	<84	375.7	**140 J**	**150**	**90 J**	**310**	<86	**390**	**160**	**100**	**140**	**990**	**7,000**
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<58	**150 J**	**120 J**	<81	**96 J**	<130	<160	238.4	<190	<110	**100 J**	**82 J**	<170	**100 J**	<85	<130	<69	**300**	**2,200**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	**3.6 J**	**3.5 J**	**5.5**	**2.8 J**	**3.1 J**	<3.3	<4.0	6.3	**11**	<2.6	**2.4 J**	**4.0 J**	**5.0**	**3.8 J**	<2.1	**10 B**	**5.6**	**4.3 J**	**21**
M3	DG-M3S-3.5-4	8/22/18	2.5-4	**1.8 J**	**2.6 J**	**8.3**	**2.8 J**	**7.0**	<3.4	<4.1	5.6	**15**	<2.8	**2.7 J**	**3.1 J**	<4.2	**8.5**	<2.2	**60 B**	**35**	**5.9**	**40**
M3	DG-M3S-7.5-8	8/22/18	7.5-8	**2.7 J**	**4.0 J**	**48**	**3.5 J**	**47**	**5.3**	**4.5 J**	14.9	**11**	<2.7	**3.0 J**	**2.7 J**	**7.1**	**19**	**3.5 J**	**77 B**	**130**	**12**	**5.2**
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<56	<72	<79	<79	<53	<130	<160	116.2	<190	<110	<90	<75	<160	<53	<83	<130	<68	<64	**1,600**
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<1.5	<1.9	<2.0	<2.0	<1.4	<3.4	<4.1	3.0	<4.9	<2.7	<2.3	<1.9	<4.2	**1.7 J**	<2.1	<3.4	<1.8	**2.0 J**	**8.3**
M11	DG-M11S-0.5-1	8/27/18	0.5-1	**5.5**	**7.5**	**13**	**4.5 J**	**8.0**	<3.5	**4.6 J**	11.6	<5.0	<2.8	<2.4	<2.0	**5.5**	**13**	<2.2	<3.5	**9.6**	**16**	**36**
M11	DG-M11S-3.5-4	8/27/18	2.5-4	**3.7 J**	**5.5**	**57**	**7.6**	**48**	**3.9 J**	**4.6 J**	16.1	<4.8	<2.7	**2.3 J**	**3.7 J**	**5.4**	**21**	<2.1	**14**	**110**	**17**	**8.9**

Table 3: Polynuclear Aromatic Hydrocarbons and Total Petroleum Hydrocarbons as Diesel Concentrations in Soil
UPC OU-SM
Brisbane, California

Notes:

a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
1. PAHs analyzed by USEPA Method 8270C SIM
2. TPH-d analyzed by USEPA Method 8015B
3. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
The SSL for benzo(a)pyrene toxicity equivalents is the 95th percentile ambient concentration in northern California (DTSC, 2009a).
4. Total PAHs calculated based on the PEA Guidance Manual, Potency Equivalecy Factors for PAHs (DTSC, 2015) - Table 2-4.
5. Non-detect results are presented with "<" followed by the MDL.
6. Results in bold font indicate a detection above the MDL.
7. Results shaded with gray indicate the MDL exceeded the SSL.
8. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations and Symbols:

"--" = not available
"<" = non-detect result
µg/kg = microgram per kilogram
B = compound was found in the blank and sample
(D) = duplicate sample
DTSC = California Department of Toxic Substances Control
ft bgs = feet below ground surface
J = estimated value
MDL = method detection limit
PAHs = polynuclear aromatic hydrocarbons
SIM = selective ion monitoring
RL = reporting Limit
SSL = soil screening level
TPH = total petroleum hydrocarbon
USEPA = United States Environmental Protection Agency

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	5.7E+02	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<2.9	<2.0	<2.0	<2.4	<2.7	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.4	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.59	<0.40	<0.39	<0.48	<0.53	<0.39	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<12	<8.4	<8.2	<9.9	<11	<8.0	<7.2	<64	<8.8	<12	<6.4	<9.7	<7.6	<9.2	<13	<6.6	<13	<9.2
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	**0.52 J p**	<0.35	**14 J**	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<1.2	<0.83	<0.81	<0.99	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.97	<0.75	<0.91	<1.2	<0.65	<1.2	<0.91
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<0.81	<0.79	<0.97	<1.1	**12**	<0.70	**82**	<0.85	<1.1	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	**8.4 p**
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<0.60	<0.42	<0.41	<0.49	<0.54	<0.40	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	5.7E+02	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<1.2	**1.5 J**	**2.1 J p**	<0.97	<1.1	<0.78	<0.70	<6.2	<0.85	<1.1	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	**0.93 J**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.61	<0.42	<0.41	<0.50	<0.55	**0.59 J p**	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.60	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<1.2	<0.80	<0.78	<0.96	<1.1	<0.77	<0.69	<6.1	<0.84	<1.1	<0.61	<0.94	<0.73	<0.88	<1.2	<0.63	<1.2	<0.88
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<1.2	<0.82	<0.80	<0.98	<1.1	<0.78	<0.70	<6.3	<0.86	<1.2	<0.63	<0.96	<0.74	<0.90	<1.2	<0.65	<1.2	<0.90
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<1.2	<0.81	<0.79	<0.97	<1.1	<0.77	<0.70	<6.2	<0.85	**1.4 J**	<0.62	<0.95	<0.74	<0.89	<1.2	<0.64	<1.2	<0.89
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<1.2	<0.83	<0.81	<0.99	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.97	<0.75	<0.91	<1.2	<0.65	<1.2	<0.91
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.59	**0.72 J**	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<3.0	<2.1	<2.0	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.57	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.41	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	<0.43
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.60	<0.42	<0.41	<0.50	<0.54	<0.40	<0.36	<3.2	<0.44	<0.58	<0.32	<0.49	<0.38	<0.46	<0.62	<0.33	<0.62	<0.46
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
F11	DG-F11S-3.5-4	8/24/18	2.5-4	**38**	<4.1	<4.0	<4.9	<5.4	**780 p**	<3.5	**3,900**	<4.3	<5.8	<3.1	<4.8	<3.7	<4.5	<6.2	<3.2	<6.2	**940**
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	5.7E+02	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
G6	DG-G6S-1-2[a]	8/22/18	1-2	**0.90 J p**	**0.76 J**	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	**0.41 J p**	<0.35	**6.5 J**	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	<0.43
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.60	<0.31	<0.60	<0.43
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.59	**24**	**73**	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.58	<0.40	**1.2 J**	<0.48	<0.53	<0.38	<0.34	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
H6	DG-H6S-0.5-1	8/23/18	0.5-1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H6	DG-H6S-3.5-4	8/23/18	1-2.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.58	<0.40	<0.39	<0.47	<0.52	**0.77 J p**	<0.34	**14 J**	<0.41	<0.56	<0.30	<0.46	<0.36	<0.43	<0.59	<0.31	<0.59	**1.9 p**
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.43	<0.60	<0.31	<0.60	<0.43
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
I7	DG-I7S-0.5-1	8/24/18	0.5-1	**0.65 J p**	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<5.9	<4.1	<4.0	<4.8	<5.3	<3.9	<3.5	<31	<4.3	<5.7	<3.1	<4.7	<3.7	<4.5	<6.1	<3.2	<6.1	<4.5
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	**1.8 J p**	<0.35	**16 J**	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	**1.8 J**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<1.2	<0.83	<0.81	<0.98	<1.1	<0.79	<0.71	<6.3	<0.87	<1.2	<0.63	<0.96	<0.75	<0.91	<1.2	<0.65	<1.2	**1.3 J**
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<2.9	<2.0	<2.0	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<5.8	<4.0	<3.9	<4.7	<5.2	<3.8	<3.4	<30	<4.2	<5.6	<3.0	<4.6	<3.6	<4.4	<6.0	<3.1	<6.0	<4.4
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<1.2	<0.82	<0.80	<0.97	<1.1	<0.78	<0.70	<6.2	<0.86	<1.2	<0.62	<0.96	<0.74	<0.90	<1.2	<0.64	<1.2	<0.90
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<3.0	**2.8 J**	**3.0 J**	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<3.0	<2.0	<2.0	<2.4	<2.7	<1.9	<1.7	<16	<2.1	<2.9	<1.6	<2.4	<1.8	<2.2	<3.1	<1.6	<3.1	<2.2

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls
Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aldrin	alpha-BHC	alpha-Chlordane	beta-BHC	Chlordane	delta-BHC	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulfate	Endrin	Endrin aldehyde	Endrin ketone	gamma-BHC (Lindane)	gamma-Chlordane
Soil Screening Levels (SSL)				1.9E+03	2.0E+03	1.9E+03	3.9E+01	8.6E+01	1.7E+03	3.0E+02	1.7E+03	--	3.4E+01	--	--	3.8E+05	1.9E+04	--	--	5.7E+02	1.7E+03
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.58	<0.40	<0.39	<0.48	<0.52	<0.38	<0.34	<3.1	<0.42	<0.56	<0.31	<0.47	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<3.0	<2.1	**5.1 J**	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
K8	DG-K8S-1-2	8/22/18	1-2	<0.61	<0.42	<0.41	<0.50	<0.55	<0.40	<0.36	<3.2	<0.44	<0.59	<0.32	<0.49	<0.38	<0.46	<0.63	<0.33	<0.63	<0.46
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.60	<0.42	**2.2 p**	<0.49	<0.54	**0.94 J**	<0.36	<3.2	<0.44	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	**1.0 J p**
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	**0.96 J**	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.59	<0.41	<0.40	<0.48	<0.53	**0.57 J p**	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.38	<0.45	<0.62	<0.33	<0.62	<0.45
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<5.9	<4.0	<3.9	<4.8	<5.3	<3.8	<3.5	<31	<4.2	<5.7	<3.1	<4.7	<3.6	<4.4	<6.0	<3.2	<6.0	<4.4
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.36	<3.2	<0.43	<0.58	<0.32	<0.48	<0.37	<0.45	<0.62	<0.33	<0.62	<0.45
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.59	<0.40	**0.41 J**	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.59	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<1.2	<0.80	<0.78	<0.96	<1.1	**3.5 J p**	<0.69	<6.1	<0.84	<1.1	<0.61	<0.94	<0.73	<0.88	<1.2	<0.63	<1.2	**3.6 J**
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<3.0	<2.1	<2.0	<2.5	<2.7	<2.0	<1.8	<16	<2.2	<2.9	<1.6	<2.4	<1.9	<2.3	<3.1	<1.6	<3.1	<2.3
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<2.9	<2.0	<1.9	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.60	<0.41	<0.40	<0.49	<0.54	<0.39	<0.35	<3.1	<0.43	<0.58	<0.31	<0.48	<0.37	<0.45	<0.62	<0.32	<0.62	<0.45
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.59	<0.41	<0.40	<0.48	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.58	<0.40	<0.39	<0.47	<0.52	<0.38	<0.34	<3.0	<0.42	<0.56	<0.30	<0.46	<0.36	<0.44	<0.60	<0.31	<0.60	<0.44
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<2.9	<2.0	<1.9	<2.4	<2.6	<1.9	<1.7	<15	<2.1	<2.8	<1.5	<2.3	<1.8	<2.2	<3.0	<1.6	<3.0	<2.2
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.59	<0.40	<0.39	<0.48	<0.53	<0.38	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.36	<0.44	<0.60	<0.32	<0.60	<0.44
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.59	<0.40	**0.41 J p**	<0.48	<0.53	<0.39	<0.35	<3.1	<0.42	<0.57	<0.31	<0.47	<0.37	<0.44	<0.61	<0.32	<0.61	<0.44
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.59	<0.41	<0.40	<0.49	<0.53	<0.39	<0.35	<3.1	<0.43	<0.57	<0.31	<0.48	<0.37	<0.45	<0.61	<0.32	<0.61	<0.45

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<19	<25	<24	**87 p**
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.44	<0.33	<0.64	<6.5	<21	<23	<22	<19	<23	<22	<21
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.44	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	**32 J**	**42 J**
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.44	<0.33	<0.64	<6.5	<21	<23	<22	<19	<23	<22	<21
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<9.2	<7.0	<14	<140	<21	<23	<22	<18	<23	<22	<21
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.91	<0.69	<1.3	<14	<21	<23	<22	<18	<23	<22	<21
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.46	<0.35	<0.68	<6.8	<23	<25	<24	<20	<25	<24	<23
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.89	<0.68	<1.3	<13	<21	<23	<22	<19	<23	<22	<21
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.45	<0.35	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<25	<23	<19	<25	<23	<22

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<19	<23	<22	<21
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.89	<0.68	<1.3	<13	<22	<24	<23	<19	<24	**60**	**37 J**
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.46	<0.35	<0.68	<6.8	<220	<240	<230	<190	<240	<230	<220
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	<22
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<19	<23	<22	<21
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	--	--	--	--	<23	<25	<24	<20	<25	<24	<23
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.45	<0.34	<0.67	<6.7	<21	<23	<22	<19	<23	<22	<21
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.46	<0.35	<0.67	<6.8	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.88	<0.67	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.90	<0.68	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.89	<0.68	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.44	<0.33	<0.65	<6.5	<23	<25	<24	<20	<25	<24	<23
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.91	<0.69	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.45	<0.34	<0.67	<6.7	<22	<23	<23	<19	<23	<23	<22
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<2.3	<1.7	<3.4	<34	<23	<25	<24	<20	<25	<24	<23
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.46	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.46	<0.35	<0.67	<6.7	<330	<360	<340	<280	<360	<340	<330
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
F11	DG-F11S-3.5-4	8/24/18	2.5-4	<4.5	<3.4	<6.6	<66	<110	<120	<120	<97	<120	<120	<110
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.46	<0.35	<0.68	<6.8	<22	<24	<23	<19	<24	<23	<22

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
G6	DG-G6S-1-2[a]	8/22/18	1-2	<0.44	<0.34	<0.65	<6.5	<22	<25	<23	<19	<25	<23	<22
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<450	<490	<470	<390	<490	<470	<450
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<110	<120	<120	<97	<120	<120	<110
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<21	<23	<22	<19	<23	<22	<21
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<22	<24	<23	<19	<24	<23	**24 J**
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H6	DG-H6S-0.5-1	8/23/18	0.5-1	--	--	--	--	<23	<25	<24	<20	<25	<24	<23
H6	DG-H6S-3.5-4	8/23/18	1-2.5	--	--	--	--	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.43	<0.33	<0.64	<6.4	<22	<24	<23	<19	<24	<23	<22
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.46	<0.35	<0.68	<6.8	<21	<23	<22	<18	<23	<22	<21
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.44	<0.33	<0.64	<6.4	<21	<23	<22	<18	<23	<22	<21
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<4.5	<3.4	<6.6	<66	<22	<24	<23	<19	<24	<23	<22
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	**42 J p**
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.91	<0.69	<1.3	<13	<23	<25	<24	<20	<25	<24	<23
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	<23	<22
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<4.4	**11 J**	<6.4	<64	<23	<25	<24	<20	<25	<24	<23
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.90	<0.68	<1.3	<13	<22	<24	<23	<19	<24	**590**	**420**
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<20	<25	<24	**38 J**
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<2.3	<1.7	<3.4	<34	<21	<23	<22	<18	<23	<22	<21
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<2.2	<1.7	<3.3	<33	<22	<24	<23	<19	<24	<23	<22

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene	PCB-1016 (Aroclor 1016)	PCB-1221 (Aroclor 1221)	PCB-1232 (Aroclor 1232)	PCB-1242 (Aroclor 1242)	PCB-1248 (Aroclor 1248)	PCB-1254 (Aroclor 1254)	PCB-1260 (Aroclor 1260)
Soil Screening Levels (SSL)				1.3E+02	7.0E+01	3.2E+05	4.9E+02	4.1E+03	2.0E+02	1.7E+02	2.3E+02	2.3E+02	2.4E+02	2.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.44	<0.33	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<2.3	<1.7	<3.4	<34	<22	<24	<23	<19	<24	<23	**38 J**
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.46	<0.35	<0.68	<6.8	<21	<23	<22	<19	<23	<22	<21
K8	DG-K8S-1-2	8/22/18	1-2	<0.46	<0.35	<0.68	<6.8	<22	<24	<23	<19	<24	<23	<22
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<23	<25	<24	<20	<25	<24	<23
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.45	<0.35	<0.67	<6.7	<23	<25	<24	<20	<25	<24	<23
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<4.4	<3.4	<6.5	<65	<420	<460	<440	<370	<460	<440	**13,000**
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.44	<0.34	<0.65	<6.6	<110	<120	<110	<93	<120	<110	**3,000**
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.45	<0.35	<0.67	<6.7	<22	<24	<23	<19	<24	<23	**44 J**
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.44	<0.34	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.45	<0.34	<0.66	<6.6	<21	<23	<22	<18	<23	<22	<21
L13	DG-L13S-0.5-1	8/24/18	0.5-1	<0.88	<0.67	<1.3	<13	<22	<24	<23	<19	<24	<23	<22
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<2.3	<1.7	<3.3	<34	<22	<24	<23	<19	<24	<23	<22
L13	DG-L13S-3.5-4 (D)	8/24/18	1.0-2.5	<2.2	<1.7	<3.2	<32	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.45	<0.34	<0.67	<6.7	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.44	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.44	<0.33	<0.65	<6.5	<21	<23	<22	<18	<23	<22	<21
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<2.2	<1.7	<3.2	<32	<22	<24	<23	<19	<24	<23	<22
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.44	<0.34	<0.65	<6.5	<22	<24	<23	<19	<24	<23	<22
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.44	<0.34	**0.75 J**	<6.6	<23	<25	<24	<20	<25	<24	<23
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.45	<0.34	<0.66	<6.6	<22	<24	<23	<19	<24	<23	<22

Table 4: Organochlorine Pesticides and Polychlorinated Biphenyls Concentrations in Soil
UPC OU-SM
Brisbane, California

Notes:
a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
1. Organochlorine pesticides were analyzed by USEPA Method 8081A.
2. PCBs were analyzed by USEPA Method 8082.
3. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
4. Non-detect results are presented with "<" followed by the MDL.
5. Results in bold font indicate a detection above the MDL.
6. Results shaded with gray indicate the MDL exceeded the SSL.
7. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations:
"--" = not available
"<" = non-detect result
(D) = duplicate sample
ft bgs = feet below ground surface
J = estimated value
MDL = method detection limit
p = The relative percent difference between the primary and confirmation column/detector is >40%. The lower value has been reported.
PCB = polychlorinated biphenyl
RL = reporting limit
SSL = soil screening level
µg/kg = microgram per kilogram

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	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	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.0E+02	4.0E+07	1.1E+03	3.6E+03	2.3E+05	--	6.3E+04	1.5E+00	2.4E+04	3.0E+05	5.3E+00	3.6E+01	1.8E+06	4.6E+02	2.5E+03	2.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.57	<0.46	<0.56	<1.6	<0.52	<0.51	<0.46	<0.52	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47	<0.49
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56	<0.58
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.52	<0.41	<0.51	<1.4	<0.48	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43	<0.44
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.55	<0.44	<0.54	<1.5	<0.51	<0.49	<0.45	<0.50	<0.54	<0.56	<0.51	<1.2	<1.2	<1.0	<0.49	<0.55	<0.46	<0.47
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.52	<0.41	<0.51	<1.4	<0.47	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43	<0.44
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.60	<0.49	<0.60	<1.7	<0.56	<0.54	**1.8 J ***	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.60	<0.50	<0.52
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.52	<0.42	<0.52	<1.4	<0.48	<0.47	<0.43	<0.48	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43	<0.45
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.56	<0.51	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.51	<0.53
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.56	<0.45	<0.55	<1.5	<0.51	<0.50	<0.45	<0.50	<0.54	<0.56	<0.52	<1.2	<1.2	<1.0	<0.50	<0.56	<0.46	<0.47
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.60	<0.48	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.56	<1.3	<1.4	<1.1	<0.54	<0.60	<0.50	<0.52
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.56	<0.45	<0.56	<1.5	<0.52	<0.50	<0.46	<0.51	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.50	<0.56	<0.47	<0.48
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.78	<0.62	<0.77	<2.1	<0.72	<0.70	<0.63	<0.71	<0.76	<0.79	<0.73	<1.7	<1.7	<1.5	<0.70	<0.78	<0.64	<0.66
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.65	<0.52	<0.64	<1.8	<0.59	<0.58	<0.53	<0.59	<0.63	<0.65	<0.60	<1.4	<1.4	<1.2	<0.58	<0.65	<0.53	<0.55
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.49	<0.39	<0.48	<1.3	<0.45	<0.43	<0.40	<0.44	<0.47	<0.49	<0.45	<1.0	<1.1	<0.91	<0.43	<0.49	<0.40	<0.42
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.52	<0.41	<0.51	<1.4	<0.48	<0.46	<0.42	<0.47	<0.50	<0.52	<0.48	<1.1	<1.2	<0.97	<0.46	<0.52	<0.43	<0.44
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49	<0.50
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.71	<0.57	<0.70	<2.0	<0.66	<0.64	<0.58	<0.65	<0.69	<0.72	<0.67	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59	<0.61
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.58 J	<0.47	<0.58	<1.6	<0.54	<0.52	<0.48	<0.53	<0.57 J	<0.59 J	<0.55 J	<1.3 J	<1.3 J	<1.1	<0.52 J	<0.58	<0.48	<0.50 J
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	**0.68 J**	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.51	<0.52
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.57	<0.46	<0.57	<1.6	<0.53	<0.51	<0.47	<0.52	<0.56	<0.58	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47	<0.49
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.53	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.48	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.53	<0.44	<0.46
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.72	<0.58	<0.71	<2.0	<0.67	<0.65	<0.59	<0.66	<0.70	<0.73	<0.68	<1.6	<1.6	<1.4	<0.65	<0.72	<0.60	<0.62
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.75	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62	<0.64
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51	<0.52
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.71	<0.57	<0.70	<1.9	<0.66	<0.64	<0.58	<0.65	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59	<0.61
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.76	<0.61	<0.75	<2.1	<0.70	<0.68	<0.62	<0.69	<0.74	<0.77	<0.71	<1.6	<1.7	<1.4	<0.68	<0.76	<0.63	<0.65
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.61	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51	<0.53
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.81 R	<0.65 R	<0.80 R	<2.2 R	<0.74 R	<0.72 R	<0.66 R	<0.73 R	<0.79 R	<0.82 R	<0.75 R	<1.7 R	<1.8 R	<1.5	<0.72 R	<0.81 R	<0.67 R	<0.69 R
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.83	<0.66	<0.82 R	<2.3	<0.76	<0.74	<0.67	<0.75	<0.80 R	<0.84 R	<0.77 R	<1.8 R	<1.8 R	<1.6	<0.74 R	<0.83	<0.68	<0.71 R
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.57	<0.45	<0.56	<1.5	<0.52	<0.51	<0.46	<0.51	<0.55	<0.57	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47	<0.48
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.53	<0.42	<0.52	<1.4	<0.49	<0.47	<0.46	<0.48	<0.52	<0.54	<0.49	<1.1	<1.2	<1.0	<0.47	<0.53	<0.44	<0.45
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56	<0.58
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<0.99	<1.2	<3.4	<1.1	<1.1	<1.0	<1.1	<1.2	<1.3	<1.2	<2.7	<2.8	<2.3	<1.1	<1.2	<1.0	<1.1
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.54	<0.43	<0.53	<1.5	<0.50	<0.48	<0.44	<0.49	<0.53	<0.55	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.45	<0.46

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	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	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.0E+02	4.0E+07	1.1E+03	3.6E+03	2.3E+05	--	6.3E+04	1.5E+00	2.4E+04	3.0E+05	5.3E+00	3.6E+01	1.8E+06	4.6E+02	2.5E+03	2.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.58	<0.65	<0.70	<0.73	<0.67	<1.5	<1.6	<1.3	<0.64	<0.72	<0.59	<0.61
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.61	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.61	<0.51	<0.53
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.67	<0.53	<0.66	<1.8	<0.61	<0.60	<0.54	<0.60	<0.65	<0.67	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55	<0.57
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.64	<0.52	<0.63	<1.8	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53	<0.55
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.73	<0.58	<0.72	<2.0	<0.67	<0.65	<0.59	<0.66	<0.71	<0.73	<0.68	<1.6	<1.6	<1.4	<0.65	<0.73	<0.60	<0.62
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.55	<0.62	<0.66	<0.69	<0.63	<1.5	<1.5	<1.3	<0.61	<0.68	<0.56	<0.58
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.59	<0.65	<0.70	<0.73	<0.67	<1.6	<1.6	<1.4	<0.64	<0.72	<0.60	<0.62
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.52	<0.56	<0.58	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48	<0.49
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53	<0.55
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.62	<0.50	<0.61	<1.7	<0.57	<0.56	<0.51	<0.56	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.52	<0.53
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<0.52	<0.42	<0.52	<1.4	<0.48	<0.47	<0.43	<0.48	<0.51	<0.53	<0.49	<1.1	<1.2	<0.99	<0.47	<0.52	<0.43	<0.45
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<0.71	<0.57	<0.70	<1.9	<0.65	<0.63	<0.58	<0.64	<0.69	<0.71	<0.66	<1.5	<1.6	<1.3	<0.63	<0.71	<0.58	<0.60
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<0.55 R	<0.45	<0.55 R	<1.5	<0.51	<0.50	<0.45	<0.50	<0.54 R	<0.56 R	<0.52 R	<1.2 R	<1.2 R	<1.0	<0.50 R	<0.55	<0.46	<0.47 R
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50	<0.52
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.56	<0.45	<0.55	<1.5	<0.52	<0.50	<0.46	<0.51	<0.54	<0.57	<0.52	<1.2	<1.3	<1.1	<0.50	<0.56	<0.46	<0.48
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.81	<0.65	<0.80	<2.2	<0.75	<0.73	<0.66	<0.74	<0.79	<0.82	<0.76	<1.8	<1.8	<1.5	<0.73	<0.81	<0.67	<0.70
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.72	<0.58	<0.71	<2.0	<0.66	<0.65	<0.59	<0.65	<0.70	<0.73	<0.67	<1.6	<1.6	<1.4	<0.65	<0.72	<0.60	<0.62
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.57	<0.63	<0.67	<0.70	<0.65	<1.5	<1.6	<1.3	<0.62	<0.69	<0.57	<0.59
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51	<0.53
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.62	<0.49	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.62	<0.57	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51	<0.53
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.91	<0.73	<0.90	<2.5	<0.84	<0.82	<0.74	<0.83	<0.89	<0.92	<0.85	<2.0	<2.0	<1.7	<0.82	<0.91	<0.76	<0.78
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.71	<0.57	<0.70	<2.0	<0.66	<0.64	<0.58	<0.65	<0.70	<0.72	<0.67	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59	<0.61
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.53	<0.56	<0.59	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48	<0.50
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57	<0.59	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49	<0.50
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.59	<0.47	<0.58 R	<1.6	<0.54	<0.53	<0.48	<0.53	<0.57 R	<0.59 R	<0.55 R	<1.3 R	<1.3 R	<1.1	<0.53 R	<0.59	<0.49	<0.50 R
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.56	<0.45	<0.55	<1.5	<0.51	<0.50	<0.45	<0.51	<0.54	<0.56	<0.52	<1.2	<1.2	<1.0	<0.50	<0.56	<0.46	<0.48
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.62	<0.50	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.62	<0.52	<0.53
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.76	<0.61	<0.75	<2.1	<0.70	<0.68	<0.62	<0.69	<0.74	<0.77	<0.71	<1.6	<1.7	<1.4	<0.68	<0.76	<0.63	<0.65
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<0.81	<0.65	<0.80	<2.2	<0.75	<0.73	<0.66	<0.74	<0.79	<0.83	<0.76	<1.8	<1.8	<1.5	<0.73	<0.81	<0.68	<0.70
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.88	<0.71	<0.87	<2.4	<0.81	<0.79	<0.72	<0.80	<0.86	<0.90	<0.83	<1.9	<2.0	<1.7	<0.79	<0.88	<0.73	<0.76
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.52	<0.42	<0.51	<1.4	<0.48	<0.47	<0.42	<0.47	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43	<0.44
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50	<0.52
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.56	<0.62	<0.66	<0.69	<0.64	<1.5	<1.5	<1.3	<0.61	<0.68	<0.57	<0.58
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.78	<0.63	<0.77	<2.1	<0.72	<0.70	<0.64	<0.71	<0.76	<0.79	<0.73	<1.7	<1.8	<1.5	<0.70	<0.78	<0.65	<0.67

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	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	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.0E+02	4.0E+07	1.1E+03	3.6E+03	2.3E+05	--	6.3E+04	1.5E+00	2.4E+04	3.0E+05	5.3E+00	3.6E+01	1.8E+06	4.6E+02	2.5E+03	2.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<0.59	<0.48	<0.59	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49	<0.51
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.54	<0.61	<0.65	<0.68	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55	<0.57
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.68	<0.54	<0.67	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.68	<0.56	<0.58
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.70	<0.56	<0.69	<1.9	<0.65	<0.63	<0.57	<0.64	<0.69	<0.71	<0.66	<1.5	<1.6	<1.3	<0.63	<0.70	<0.58	<0.60
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.64	<0.59	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53	<0.54
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.53	<0.43	<0.52	<1.5	<0.49	<0.48	<0.43	<0.48	<0.52	<0.54	<0.50	<1.1	<1.2	<1.0	<0.48	<0.53	<0.44	<0.45
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.72	<0.58	<0.71	<2.0	<0.66	<0.64	<0.59	<0.65	<0.70	<0.73	<0.67	<1.5	<1.6	<1.4	<0.64	<0.72	<0.60	<0.61
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.56	<0.63	<0.67	<0.70	<0.65	<1.5	<1.5	<1.3	<0.62	<0.69	<0.57	<0.59
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.50	<0.52
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.60	<0.48	<0.59	<1.6	<0.55	<0.54	<0.49	<0.55	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.54	<0.60	<0.50	<0.51
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53	<0.55
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.65	<0.52	<0.64	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54	<0.56
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.61	<0.49	<0.60	<1.7	<0.56	<0.55	<0.50	<0.55	<0.59	<0.62	<0.57	<1.3	<1.4	<1.1	<0.55	<0.61	<0.51	<0.52
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.54	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.49	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.44	<0.46
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.50	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51	<0.53
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.48	<0.38	<0.47	<1.3	<0.44	<0.43	<0.39	<0.43	<0.46	<0.48	<0.44	<1.0	<1.1	<0.89	<0.43	<0.48	<0.39	<0.41
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.63	<1.4	<1.5	<1.3	<0.60	<0.67	<0.56	<0.57
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<0.58	<0.47	<0.57	<1.6	<0.54	<0.52	<0.47	<0.53	<0.57	<0.59	<0.54	<1.3	<1.3	<1.1	<0.52	<0.58	<0.48	<0.50
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53	<0.55
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.59	<0.47	<0.58	<1.6	<0.54	<0.53	<0.48	<0.54	<0.57	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49	<0.50
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.60	<0.48	<0.59	<1.6	<0.55	<0.54	<0.49	<0.54	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.54	<0.60	<0.50	<0.51
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.59	<0.48	<0.59	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.56	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49	<0.51
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.71	<0.57	<0.70	<1.9	<0.65	<0.64	<0.58	<0.64	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.64	<0.71	<0.59	<0.61
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.63	<0.51	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.64	<0.59	<1.4	<1.4	<1.2	<0.56	<0.63	<0.52	<0.54
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.66	<0.68	<0.63	<1.5	<1.5	<1.3	<0.60	<0.67	<0.56	<0.58
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.62	<0.50	<0.61	<1.7	<0.57	<0.55	<0.51	<0.56	<0.60	<0.63	<0.58	<1.3	<1.4	<1.2	<0.55	<0.62	<0.51	<0.53
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.57	<0.63	<0.68	<0.70	<0.65	<1.5	<1.6	<1.3	<0.62	<0.69	<0.57	<0.59
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<390	<620	<560	<2,400	<420	<390	<410	<390	<850	<590	<630	<1,800	<690	<1,600	<690	<390	<390	<390
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.65	<0.52	<0.64	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54	<0.56
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.67	<0.54	<0.66	<1.8	<0.62	<0.60	<0.55	<0.61	<0.65	<0.68	<0.62	<1.4	<1.5	<1.3	<0.60	<0.67	<0.55	<0.57
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<0.58	<0.47	<0.58	<1.6	<0.54	<0.52	<0.48	<0.53	<0.57	<0.59	<0.55	<1.3	<1.3	<1.1	<0.52	<0.58	<0.48	<0.50
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<0.95	<0.76	<0.94	<2.6	<0.87	<0.85	<0.77	<0.86	<0.92	<0.96	<0.89	<2.0	<2.1	<1.8	<0.85	<0.95	<0.79	<0.81
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.73	<0.59	<0.72	<2.0	<0.67	<0.65	<0.60	<0.66	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.65	<0.73	<0.60	<0.62
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.66	<0.53	<0.65	<1.8	<0.60	<0.59	<0.54	<0.60	<0.64	<0.67	<0.61	<1.4	<1.5	<1.2	<0.59	<0.66	<0.54	<0.56

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	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	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene
Soil Screening Levels (SSL)				2.0E+03	1.7E+06	6.0E+02	4.0E+07	1.1E+03	3.6E+03	2.3E+05	--	6.3E+04	1.5E+00	2.4E+04	3.0E+05	5.3E+00	3.6E+01	1.8E+06	4.6E+02	2.5E+03	2.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.54	<0.43	<0.53	<1.5	<0.49	<0.48	<0.44	<0.49	<0.52	<0.54	<0.50	<1.2	<1.2	<1.0	<0.48	<0.54	<0.44	<0.46
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.59	<0.48	<0.58	<1.6	<0.55	<0.53	<0.48	<0.54	<0.58	<0.60	<0.55	<1.3	<1.3	<1.1	<0.53	<0.59	<0.49	<0.51
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.52	<0.42	<0.51	<1.4	<0.48	<0.47	<0.43	<0.47	<0.51	<0.53	<0.49	<1.1	<1.2	<0.98	<0.47	<0.52	<0.43	<0.45
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.85	<0.68	<0.84	<2.3	<0.78	<0.76	<0.69	<0.77	<0.83	<0.86	<0.79	<1.8	<1.9	<1.6	<0.76	<0.85	<0.71	<0.73
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<0.73	<0.59	<0.72	<2.0	<0.68	<0.66	<0.60	<0.67	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.66	<0.73	<0.61	<0.63
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.71	<0.57	<0.70	<1.9	<0.65	<0.63	<0.58	<0.64	<0.69	<0.72	<0.66	<1.5	<1.6	<1.3	<0.63	<0.71	<0.59	<0.60
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.61	<0.49	<0.60	<1.7	<0.56	<0.54	<0.49	<0.55	<0.59	<0.61	<0.57	<1.3	<1.4	<1.1	<0.54	<0.61	<0.50	<0.52
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.58	<0.46	<0.57	<1.6	<0.53	<0.52	<0.47	<0.52	<0.56	<0.58	<0.54	<1.2	<1.3	<1.1	<0.52	<0.58	<0.48	<0.49
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<0.66	<0.53	<0.65	<1.8	<0.61	<0.59	<0.54	<0.60	<0.64	<0.67	<0.62	<1.4	<1.5	<1.2	<0.59	<0.66	<0.55	<0.57
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.54	<0.44	<0.54	<1.5	<0.50	<0.49	<0.44	<0.49	<0.53	<0.55	<0.51	<1.2	<1.2	<1.0	<0.49	<0.54	<0.45	<0.46
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.55	<0.44	<0.54	<1.5	<0.50	<0.49	<0.45	<0.50	<0.53	<0.55	<0.51	<1.2	<1.2	<1.0	<0.49	<0.55	<0.45	**0.59 J**
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<0.74	<0.59	<0.73	<2.0	<0.68	<0.66	<0.60	<0.67	<0.72	<0.75	<0.69	<1.6	<1.7	<1.4	<0.66	<0.74	<0.61	<0.63
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.65	<0.52	<0.65	<1.8	<0.60	<0.58	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.58	<0.65	<0.54	<0.56
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.66	<0.53	<0.65	<1.8	<0.61	<0.59	<0.54	<0.60	<0.64	<0.67	<0.62	<1.4	<1.5	<1.2	<0.59	<0.66	<0.55	<0.57
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62	<0.64
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.64	<0.51	<0.63	<1.8	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53	<0.55
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.32	<0.26	<0.31	<0.87	<0.29	<0.29	<0.26	<0.29	<0.31	<0.32	<0.30	<0.69	<0.71	<0.60	<0.29	<0.32	<0.26	<0.27
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.34	<0.28	<0.34	<0.94	<0.32	<0.31	<0.28	<0.31	<0.33	<0.35	<0.32	<0.74	<0.77	<0.65	<0.31	<0.34	<0.28	<0.29
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.63	<0.50	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.63	<0.58	<1.3	<1.4	<1.2	<0.56	<0.63	<0.52	<0.53
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.60	<0.48	<0.59	<1.6	<0.55	<0.53	<0.49	<0.54	<0.58	<0.61	<0.56	<1.3	<1.3	<1.1	<0.53	<0.60	<0.50	<0.51
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.64	<0.52	<0.64	<1.8	<0.59	<0.58	<0.53	<0.59	<0.63	<0.65	<0.60	<1.4	<1.4	<1.2	<0.58	<0.64	<0.53	<0.55
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.91	<0.73	<0.89	<2.5	<0.83	<0.81	<0.74	<0.82	<0.88	<0.92	<0.85	<2.0	<2.0	<1.7	<0.81	<0.91	<0.75	<0.78
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.68	<0.55	<0.67	<1.9	<0.63	<0.61	<0.56	<0.62	<0.67	<0.69	<0.64	<1.5	<1.5	<1.3	<0.61	<0.68	<0.57	<0.58
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.73	<0.59	<0.72	<2.0	<0.67	<0.66	<0.60	<0.66	<0.71	<0.74	<0.68	<1.6	<1.6	<1.4	<0.66	<0.73	<0.61	<0.63
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<0.75	<0.61	<0.74	<2.1	<0.69	<0.67	<0.62	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62	<0.64
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<0.63	<0.51	<0.62	<1.7	<0.58	<0.57	<0.52	<0.57	<0.62	<0.64	<0.59	<1.4	<1.4	<1.2	<0.57	<0.63	<0.52	<0.54
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.69	<0.56	<0.68	<1.9	<0.64	<0.62	<0.56	<0.63	<0.67	<0.70	<0.65	<1.5	<1.5	<1.3	<0.62	<0.69	<0.57	<0.59
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.65	<0.53	<0.65	<1.8	<0.60	<0.59	<0.53	<0.59	<0.64	<0.66	<0.61	<1.4	<1.5	<1.2	<0.59	<0.65	<0.54	<0.56
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.89	<0.71	<0.88	<2.4	<0.82	<0.80	<0.73	<0.81	<0.87	<0.90	<0.83	<1.9	<2.0	<1.7	<0.80	<0.89	<0.74	<0.76
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.68	<0.54	<0.67	<1.9	<0.62	<0.61	<0.55	<0.61	<0.66	<0.69	<0.63	<1.5	<1.5	<1.3	<0.61	<0.68	<0.56	<0.58
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<0.63	<0.51	<0.62	<1.7	<0.58	<0.56	<0.51	<0.57	<0.61	<0.64	<0.59	<1.4	<1.4	<1.2	<0.56	<0.63	<0.52	<0.54
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.57	<0.46	<0.56	<1.6	<0.52	<0.51	<0.46	<0.52	<0.55	<0.58	<0.53	<1.2	<1.3	<1.1	<0.51	<0.57	<0.47	<0.49
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.64	<0.51	<0.63	<1.7	<0.59	<0.57	<0.52	<0.58	<0.62	<0.65	<0.60	<1.4	<1.4	<1.2	<0.57	<0.64	<0.53	<0.55
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.75	<0.60	<0.74	<2.0	<0.69	<0.67	<0.61	<0.68	<0.73	<0.76	<0.70	<1.6	<1.7	<1.4	<0.67	<0.75	<0.62	<0.64

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
Soil Screening Levels (SSL)				--	4.1E+05	2.6E+03	--	2.7E+07	4.7E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	2.9E+02	1.9E+04	6.8E+03	7.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.54	<0.54	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**42**	<0.49	<0.59	<0.54	<0.54	<1.5	<0.59	<1.5
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	<34	<0.58	<0.70	<0.64	<0.64	<1.8	<0.70	<1.8
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	<26	<0.44	<0.54	<0.49	<0.49	<1.4	<0.54	<1.4
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.52	<0.53	<0.51	<1.4	<15	<0.47	<7.2	<0.49	<1.8	<7.2	**39**	<0.47	<0.57	<0.52	<0.52	<1.4	<0.57	<1.4
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	<26	<0.44	<0.54	<0.49	<0.49	<1.4	<0.54	<1.4
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.57	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	**55 ***	<0.52	<0.63	<0.57	<0.57	<1.6	<0.63	<1.6
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.50	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	**31 J**	<0.45	<0.54	<0.50	<0.50	<1.4	<0.54	<1.4
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.0	<8.2	<31	<0.53	<0.65	<0.59	<0.59	<1.6	<0.65	<1.6
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.53	<0.53	<0.52	<1.5	<15	<0.47	<7.3	<0.50	<1.8	<7.3	**28 J**	<0.47	<0.58	<0.53	<0.53	<1.5	<0.58	<1.5
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.57	<0.58	<0.56	<1.6	<17	<0.52	<7.9	<0.54	<2.0	<7.9	**33 J**	<0.52	<0.63	<0.57	<0.57	<1.6	<0.63	**3.0 J ***
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.53	<0.54	<0.53	<1.5	<16	<0.48	<7.4	<0.50	<1.9	<7.4	**52**	<0.48	<0.59	<0.53	<0.53	<1.5	<0.59	**2.0 J**
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.74	<0.75	<0.73	<2.0	<21	<0.66	<10	<0.70	<2.6	<10	**80**	<0.66	<0.81	<0.74	<0.74	<2.0	<0.81	<2.0
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.5	<0.58	<2.1	<8.5	**43**	<0.55	<0.67	<0.61	<0.61	<1.7	<0.67	<1.7
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.46	<0.47	<0.45	<1.3	<13	<0.42	<6.4	<0.43	<1.6	<6.4	**46**	<0.42	<0.50	<0.46	<0.46	<1.3	<0.50	<1.3
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.49	<0.50	<0.48	<1.4	<14	<0.44	<6.8	<0.46	<1.7	<6.8	**35**	<0.44	<0.54	<0.49	<0.49	<1.4	<0.54	<1.4
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.56	<0.57	<0.55	<1.5	<16	<0.50	<7.7	<0.53	<1.9	<7.7	<29	<0.50	<0.61	<0.56	<0.56	<1.5	<0.61	<1.5
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.4	<0.64	<2.3	<9.4	<36	<0.61	<0.74	<0.68	<0.68	<1.9	<0.74	<1.9
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.55 J	<0.56	<0.55 J	<1.5	<16	<0.50 J	<7.7	<0.52 J	<1.9 J	<7.7	**52**	<0.50	<0.61 J	<0.55	<0.55	<1.5	<0.61	<1.5
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**35 J**	<0.52	<0.63	<0.58	<0.58	<1.6	<0.63	<1.6
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.54	<0.55	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**40**	<0.49	<0.60	<0.54	<0.54	<1.5	<0.60	<1.5
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.51	<0.51	<0.50	<1.4	<15	<0.46	<7.0	<0.48	<1.8	<7.0	**52 ***	<0.46	<0.55	<0.51	<0.51	<1.4	<0.55	<1.4
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.69	<0.69	<1.9	<0.75	<1.9
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	<37	<0.64	<0.77	<0.71	<0.71	<2.0	<0.77	<2.0
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**79**	<0.52	<0.64	<0.58	<0.58	<1.6	<0.64	<1.6
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.67	<0.68	<0.66	<1.9	<20	<0.61	<9.4	<0.64	<2.3	<9.4	<36	<0.61	<0.74	<0.67	<0.67	<1.9	<0.74	<1.9
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.72	<0.73	<0.71	<2.0	<21	<0.65	<10	<0.68	<2.5	<10	<38	<0.65	<0.79	<0.72	<0.72	<2.0	<0.79	<2.0
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**52**	<0.53	<0.64	<0.58	<0.58	<1.6	<0.64	<1.6
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.77 R	<0.78 R	<0.75 R	<2.1 R	<22 R	<0.69 R	<11 R	<0.72 R	<2.7 R	<11 R	**76 ***	**0.86 J ***	<0.84 R	<0.77	<0.77	<2.1 R	<0.84 R	<2.1 R
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.78 R	<0.79	<0.77 R	<2.2	<23	<0.71 R	<11	<0.74 R	<2.7 R	<11	**44 J ***	**1.6 J ***	<0.86 R	<0.78	<0.78	<2.2	<0.86	<2.2
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.54	<0.54	<0.53	<1.5	<16	<0.48	<7.4	<0.51	<1.9	<7.4	<28	<0.48	<0.59	<0.54	<0.54	<1.5	<0.59	**5.7**
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.50	<0.51	<0.49	<1.4	<15	<0.45	<7.0	<0.47	<1.7	<7.0	<26	<0.45	<0.55	<0.50	<0.50	<1.4	<0.55	<1.4
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.8	<0.60	<2.2	<8.8	<34	<0.58	<0.70	<0.64	<0.64	<1.8	<0.70	<1.8
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<1.2	<1.2	<3.2	<34	<1.1	<16	<1.1	<4.1	<16	<62	<1.1	<1.3	<1.2	<1.2	<3.2	<1.3	<3.2
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.51	<0.52	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**43**	<0.46	<0.56	<0.51	<0.51	<1.4	<0.56	<1.4

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
Soil Screening Levels (SSL)				--	4.1E+05	2.6E+03	--	2.7E+07	4.7E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	2.9E+02	1.9E+04	6.8E+03	7.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.4	<0.64	<2.4	<9.4	<36	<0.61	<0.75	<0.68	<0.68	<1.9	<0.75	<1.9
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	<31	<0.53	<0.64	<0.58	<0.58	<1.6	<0.64	<1.6
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8	<0.69	<1.8
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.67	<0.61	<0.61	<1.7	<0.67	<1.7
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.69	<0.69	<1.9	<0.75	<1.9
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.61	<2.2	<8.9	**39 J**	<0.58	<0.71	<0.64	<0.64	<1.8	<0.71	<1.8
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.68	<0.69	<0.67	<1.9	<20	<0.62	<9.5	<0.64	<2.4	<9.5	<36	<0.62	<0.75	<0.68	<0.68	<1.9	<0.75	<1.9
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.55	<0.55	<0.54	<1.5	<16	<0.49	<7.6	<0.52	<1.9	<7.6	**49**	<0.49	<0.60	<0.55	<0.55	<1.5	<0.60	<1.5
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.61	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	**55**	<0.55	<0.66	<0.61	<0.61	<1.7	<0.66	<1.7
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.0	<8.2	**40 J**	<0.53	<0.65	<0.59	<0.59	<1.6	<0.65	<1.6
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<0.50	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	**29 J**	<0.45	<0.55	<0.50	<0.50	<1.4	<0.55	<1.4
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<0.67	<0.68	<0.66	<1.9	<19	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.73	<0.67	<0.67	<1.9	<0.73	<1.9
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<0.53 R	<0.53	<0.52 R	<1.5	<15	<0.47 R	<7.3	<0.50 R	<1.8 R	<7.3	<28	<0.47	<0.58 R	<0.53	<0.53	<1.5	<0.58	<1.5
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.58	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.58	<0.58	<1.6	<0.63	<1.6
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.53	<0.54	<0.52	<1.5	<15	<0.48	<7.4	<0.50	<1.8	<7.4	**64**	<0.48	<0.58	<0.53	<0.53	<1.5	<0.58	<1.5
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.77	<0.78	<0.76	<2.1	<22	<0.70	<11	<0.73	<2.7	<11	<41	<0.70	<0.85	<0.77	<0.77	<2.1	<0.85	<2.1
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.68	<0.69	<0.67	<1.9	<20	<0.62	<9.5	<0.65	<2.4	<9.5	<36	<0.62	<0.75	<0.68	<0.68	<1.9	<0.75	<1.9
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.66	<0.67	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	<35	<0.59	<0.72	<0.66	<0.66	<1.8	<0.72	<1.8
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**57**	<0.53	<0.64	<0.59	<0.59	<1.6	<0.64	<1.6
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.58	<0.59	<0.57	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**45**	<0.53	<0.64	<0.58	<0.58	<1.6	<0.64	<1.6
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.86	<0.88	<0.85	<2.4	**79**	<0.78	**16 J**	<0.82	<3.0	<12	**490**	<0.78	<0.95	<0.86	<0.86	<2.4	<0.95	<2.4
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.68	<0.69	<0.67	<1.9	**34 J**	<0.61	<9.4	<0.64	<2.3	<9.4	**140**	<0.61	<0.74	<0.68	<0.68	<1.9	<0.74	<1.9
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.55	<0.56	<0.54	<1.5	<16	<0.50	<7.6	<0.52	<1.9	<7.6	<29	<0.50	<0.60	<0.55	<0.55	<1.5	<0.60	<1.5
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.56	<0.56	<0.55	<1.5	<16	<0.50	<7.7	<0.53	<1.9	<7.7	**29 J**	<0.50	<0.61	<0.56	<0.56	<1.5	<0.61	<1.5
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.56 R	<0.56	<0.55 R	<1.5	<16	<0.50 R	<7.7	<0.53 R	<1.9 R	<7.7	**33 J**	<0.50	<0.61 R	<0.56	<0.56	<1.5	<0.61	<1.5
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.53	<0.53	<0.52	<1.5	<15	<0.48	<7.3	<0.50	<1.8	<7.3	<28	<0.48	<0.58	<0.53	<0.53	<1.5	<0.58	<1.5
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.1	<8.2	<31	<0.53	<0.65	<0.59	<0.59	<1.6	<0.65	<1.6
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.72	<0.73	<0.71	<2.0	<21	<0.65	<10	<0.68	<2.5	<10	<38	<0.65	<0.79	<0.72	<0.72	<2.0	<0.79	<2.0
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<0.77	<0.78	<0.76	<2.1	<23	<0.70	<11	<0.73	<2.7	<11	<41	<0.70	<0.85	<0.77	<0.77	<2.1	<0.85	<2.1
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.84	<0.85	<0.83	<2.3	<24	<0.76	<12	<0.79	<2.9	<12	**58 ***	<0.76	<0.92	<0.84	<0.84	<2.3	<0.92	<2.3
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.49	<0.50	<0.49	<1.4	<14	<0.44	<6.8	<0.47	<1.7	<6.8	**85**	<0.44	<0.54	<0.49	<0.49	<1.4	<0.54	<1.4
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.57	<0.58	<0.57	<1.6	<17	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.57	<0.57	<1.6	<0.63	<1.6
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.65	<0.66	<0.64	<1.8	<19	<0.58	<9.0	<0.61	<2.2	<9.0	<34	<0.58	<0.71	<0.65	<0.65	<1.8	<0.71	<1.8
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.74	<0.75	<0.73	<2.1	**29 J**	<0.67	<10	<0.70	<2.6	<10	**160**	<0.67	<0.81	<0.74	<0.74	<2.1	<0.81	<2.1

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
Soil Screening Levels (SSL)				--	4.1E+05	2.6E+03	--	2.7E+07	4.7E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	2.9E+02	1.9E+04	6.8E+03	7.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<0.56	<0.57	<0.55	<1.6	<16	<0.51	<7.8	<0.53	<2.0	<7.8	<30	<0.51	<0.62	<0.56	<0.56	<1.6	<0.62	<1.6
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8	<0.69	<1.8
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	**61**	<0.58	<0.70	<0.64	<0.64	<1.8	<0.70	<1.8
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.67	<0.68	<0.66	<1.9	<19	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.73	<0.67	<0.67	<1.9	<0.73	<1.9
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.60	<0.61	<0.59	<1.7	<18	<0.54	<8.4	<0.57	<2.1	<8.4	<32	<0.54	<0.66	<0.60	<0.60	<1.7	<0.66	<1.7
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.50	<0.51	<0.50	<1.4	<15	<0.45	<7.0	<0.48	<1.7	<7.0	<27	<0.45	<0.55	<0.50	<0.50	<1.4	<0.55	<1.4
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.68	<0.69	<0.67	<1.9	<20	<0.61	<9.5	<0.64	<2.4	<9.5	<36	<0.61	<0.75	<0.68	<0.68	<1.9	<0.75	<1.9
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.66	<0.66	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	**52**	<0.59	<0.72	<0.66	<0.66	<1.8	<0.72	<1.8
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	**59**	<0.52	<0.63	<0.58	<0.58	<1.6	<0.63	<1.6
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.57	<0.58	<0.56	<1.6	<17	<0.51	<7.9	<0.54	<2.0	<7.9	<30	<0.51	<0.62	<0.57	<0.57	<1.6	<0.62	<1.6
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7	<0.66	<1.7
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.1	<8.6	**57**	<0.56	<0.68	<0.62	<0.62	<1.7	<0.68	<1.7
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.58	<0.59	<0.57	<1.6	<17	<0.52	<8.0	<0.55	<2.0	<8.0	<31	<0.52	<0.63	<0.58	<0.58	<1.6	<0.63	<1.6
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.51	<0.51	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**66**	<0.46	<0.56	<0.51	<0.51	<1.4	<0.56	**14**
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	**36 J**	<0.53	<0.64	<0.59	<0.59	<1.6	<0.64	<1.6
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.45	<0.46	<0.44	<1.3	<13	<0.41	<6.3	<0.43	<1.6	<6.3	**24 J**	<0.41	<0.49	<0.45	<0.45	<1.3	<0.49	<1.3
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<0.64	<0.64	<0.63	<1.8	<19	<0.57	<8.8	<0.60	<2.2	<8.8	<34	<0.57	<0.70	<0.64	<0.64	<1.8	<0.70	<1.8
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<0.55	<0.56	<0.54	<1.5	<16	<0.50	<7.7	<0.52	<1.9	<7.7	**43 H**	<0.50	<0.60	<0.55	<0.55	<1.5	<0.60	<1.5
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7	<0.66	<1.7
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.56	<0.57	<0.55	<1.6	<16	<0.50	<7.8	<0.53	<1.9	<7.8	<30	<0.50	<0.61	<0.56	<0.56	<1.6	<0.61	<1.6
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.57	<0.58	<0.56	<1.6	<17	<0.51	<7.9	<0.54	<2.0	<7.9	**32 J ***	<0.51	<0.62	<0.57	<0.57	<1.6	<0.62	<1.6
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.56	<0.57	<0.56	<1.6	<16	<0.51	<7.8	<0.53	<2.0	<7.8	**38 J**	<0.51	<0.62	<0.56	<0.56	<1.6	<0.62	<1.6
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.67	<0.68	<0.66	<1.9	**35 J**	<0.61	<9.3	<0.64	<2.3	<9.3	**70**	<0.61	<0.74	<0.67	<0.67	<1.9	<0.74	<1.9
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.60	<0.61	<0.59	<1.7	<17	<0.54	<8.3	<0.56	<2.1	<8.3	**48**	<0.54	<0.66	<0.60	<0.60	<1.7	<0.66	<1.7
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.60	<2.2	<8.9	**37 J**	<0.58	<0.70	<0.64	<0.64	<1.8	<0.70	<1.8
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.59	<0.59	<0.58	<1.6	<17	<0.53	<8.1	<0.55	<2.0	<8.1	<31	<0.53	<0.64	<0.59	<0.59	<1.6	<0.64	<1.6
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.66	<0.67	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	<35	<0.59	<0.72	<0.66	<0.66	<1.8	<0.72	<1.8
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<400	<450	<810	<390	<24,000	<390	<11,000	<390	<2,900	<11,000	<28,000	<390	<460	<440	<440	<410	<560	<530
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.1	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7	<0.68	<1.7
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.63	<0.64	<0.62	<1.8	<18	<0.57	<8.8	<0.60	<2.2	<8.8	<33	<0.57	<0.69	<0.63	<0.63	<1.8	<0.69	<1.8
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<0.55	<0.56	<0.55	<1.5	<16	<0.50	<7.7	<0.52	<1.9	<7.7	**30 J**	<0.50	<0.61	<0.55	<0.55	<1.5	<0.61	<1.5
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<0.90	<0.91	<0.89	<2.5	<26	<0.81	<12	<0.85	<3.1	<12	**160 ***	<0.81	<0.99	<0.90	<0.90	<2.5	<0.99	**4.3 J ***
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.69	<0.70	<0.68	<1.9	<20	<0.62	<9.6	<0.65	<2.4	<9.6	<36	<0.62	<0.76	<0.69	<0.69	<1.9	<0.76	<1.9
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.59	<2.2	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7	<0.68	<1.7

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	2-Butanone	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide
Soil Screening Levels (SSL)				--	4.1E+05	2.6E+03	--	2.7E+07	4.7E+05	2.0E+05	4.4E+05	--	3.3E+07	--	3.3E+02	2.9E+05	1.5E+05	2.9E+02	1.9E+04	6.8E+03	7.7E+05
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.51	<0.52	<0.50	<1.4	<15	<0.46	<7.1	<0.48	<1.8	<7.1	**56**	<0.46	<0.56	<0.51	<0.51	<1.4	<0.56	<1.4
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.56	<0.57	<0.55	<1.6	<16	<0.51	<7.8	<0.53	<1.9	<7.8	<30	<0.51	<0.62	<0.56	<0.56	<1.6	<0.62	<1.6
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.49	<0.50	<0.49	<1.4	<14	<0.45	<6.9	<0.47	<1.7	<6.9	<26	<0.45	<0.54	<0.49	<0.49	<1.4	<0.54	<1.4
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.81	<0.82	<0.79	<2.2	<24	<0.73	<11	<0.76	<2.8	<11	**49 J**	<0.73	<0.88	<0.81	<0.81	<2.2	<0.88	<2.2
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<0.69	<0.70	<0.68	<1.9	<20	<0.63	<9.6	<0.66	<2.4	<9.6	<37	<0.63	<0.76	<0.69	<0.69	<1.9	<0.76	<1.9
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.67	<0.68	<0.66	<1.9	<20	<0.60	<9.3	<0.63	<2.3	<9.3	<35	<0.60	<0.74	<0.67	<0.67	<1.9	<0.74	<1.9
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.57	<0.58	<0.57	<1.6	**28 J**	<0.52	<8.0	<0.54	<2.0	<8.0	<30	<0.52	<0.63	<0.57	<0.57	<1.6	<0.63	<1.6
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.55	<0.55	<0.54	<1.5	<16	<0.49	<7.6	<0.52	<1.9	<7.6	**42 ***	<0.49	<0.60	<0.55	<0.55	<1.5	<0.60	<1.5
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<0.63	<0.64	<0.62	<1.7	<18	<0.57	<8.7	<0.59	<2.2	<8.7	<33	<0.57	<0.69	<0.63	<0.63	<1.7	<0.69	<1.7
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.51	<0.52	<0.51	<1.4	<15	<0.46	<7.1	<0.49	<1.8	<7.1	**80**	<0.46	<0.56	<0.51	<0.51	<1.4	<0.56	<1.4
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.52	<0.52	<0.51	<1.4	<15	<0.47	<7.2	<0.49	**5.0**	<7.2	**68**	<0.47	<0.57	<0.52	<0.52	<1.4	<0.57	<1.4
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<0.70	<0.71	<0.69	<1.9	<20	<0.63	<9.7	<0.66	<2.4	<9.7	<37	<0.63	<0.77	<0.70	<0.70	<1.9	<0.77	<1.9
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.58	<2.2	<8.6	<33	<0.56	<0.68	<0.62	<0.62	<1.7	<0.68	<1.7
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.63	<0.63	<0.62	<1.7	<18	<0.57	<8.7	<0.59	<2.2	<8.7	<33	<0.57	<0.69	<0.63	<0.63	<1.7	<0.69	<1.7
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	<37	<0.64	<0.78	<0.71	<0.71	<2.0	<0.78	<2.0
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.61	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	**44**	<0.55	<0.66	<0.61	<0.61	<1.7	<0.66	<1.7
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.30	<0.31	<0.30	<0.84	<8.8	<0.27	<4.2	<0.29	<1.0	<4.2	<16	<0.27	<0.33	<0.30	<0.30	<0.84	<0.33	<0.84
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.33	<0.33	<0.32	<0.90	<9.5	<0.29	<4.5	<0.31	<1.1	<4.5	<17	<0.29	<0.36	<0.33	<0.33	<0.90	<0.36	<0.90
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.59	<0.60	<0.58	<1.6	<17	<0.53	<8.2	<0.56	<2.1	<8.2	**33 J**	<0.53	<0.65	<0.59	<0.59	<1.6	<0.65	<1.6
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.57	<0.57	<0.56	<1.6	<17	<0.51	<7.9	<0.53	<2.0	<7.9	**56**	<0.51	<0.62	<0.57	<0.57	<1.6	<0.62	<1.6
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.61	<0.62	<0.60	<1.7	<18	<0.55	<8.5	<0.58	<2.1	<8.5	**46**	<0.55	<0.67	<0.61	<0.61	<1.7	<0.67	<1.7
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.86	<0.87	<0.85	<2.4	<25	<0.78	<12	<0.81	<3.0	<12	<45	<0.78	<0.94	<0.86	<0.86	<2.4	<0.94	<2.4
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.65	<0.66	<0.64	<1.8	<19	<0.58	<9.0	<0.61	<2.2	<9.0	**54**	<0.58	<0.71	<0.65	<0.65	<1.8	<0.71	<1.8
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.69	<0.70	<0.68	<1.9	<20	<0.63	<9.6	<0.66	<2.4	<9.6	<37	<0.63	<0.76	<0.69	<0.69	<1.9	<0.76	<1.9
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.9	<0.67	<2.5	<9.9	<38	<0.64	<0.78	<0.71	<0.71	<2.0	<0.78	<2.0
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<0.60	<0.61	<0.59	<1.7	<17	<0.54	<8.3	<0.57	<2.1	<8.3	<32	<0.54	<0.66	<0.60	<0.60	<1.7	<0.66	<1.7
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.66	<0.66	<0.65	<1.8	<19	<0.59	<9.1	<0.62	<2.3	<9.1	**50**	<0.59	<0.72	<0.66	<0.66	<1.8	<0.72	<1.8
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.62	<0.63	<0.61	<1.7	<18	<0.56	<8.6	<0.59	<2.2	<8.6	**68**	<0.56	<0.68	<0.62	<0.62	<1.7	<0.68	<1.7
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.84	<0.86	<0.83	<2.3	<25	<0.76	<12	<0.80	<2.9	<12	**63**	<0.76	<0.93	<0.84	<0.84	<2.3	<0.93	<2.3
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.64	<0.65	<0.63	<1.8	<19	<0.58	<8.9	<0.61	<2.2	<8.9	**49**	<0.58	<0.70	<0.64	<0.64	<1.8	<0.70	<1.8
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<0.60	<0.60	<0.59	<1.7	<17	<0.54	<8.3	<0.56	<2.1	<8.3	<31	<0.54	<0.65	<0.60	<0.60	<1.7	<0.65	<1.7
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.54	<0.55	<0.53	<1.5	<16	<0.49	<7.5	<0.51	<1.9	<7.5	**45**	<0.49	<0.59	<0.54	<0.54	<1.5	<0.59	<1.5
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.60	<0.61	<0.60	<1.7	<18	<0.55	<8.4	<0.57	<2.1	<8.4	<32	<0.55	<0.66	<0.60	<0.60	<1.7	<0.66	<1.7
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.71	<0.72	<0.70	<2.0	<21	<0.64	<9.8	<0.67	<2.5	<9.8	**45 J**	<0.64	<0.78	<0.71	<0.71	<2.0	<0.78	<2.0

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene
Soil Screening Levels (SSL)				9.8E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.4E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.8E+03	4.7E+04	3.8E+03	3.9E+06	3.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.46	<0.52	<0.42	<0.49	<0.59	<0.51	<0.52	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.90	<1.1	<0.75	<0.49
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1	<1.3	<0.89	<0.58
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.42	<0.47	<0.38	<0.45	<0.54	<0.46	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.82	<1.0	<0.68	<0.45
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.45	<0.50	<0.41	<0.48	<0.57	<0.49	<0.50	<0.51	<0.62	<0.57	<0.54	<0.65	<0.49	<4.1	<0.87	<1.1	<0.72	<0.48
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.42	<0.47	<0.38	<0.45	<0.54	<0.46	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.81	<1.0	<0.68	<0.45
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.49	<0.55	<0.45	<0.53	<0.63	**120 ***	<0.55	<0.57	<0.68	<0.63	<0.60	<0.72	<0.54	<4.5	<0.95	<1.2	<0.80	<0.53
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.43	<0.48	<0.39	<0.45	<0.54	**35**	<0.48	<0.49	<0.59	<0.54	<0.52	<0.62	<0.47	<3.9	<0.83	<1.0	<0.69	<0.45
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<0.51	<0.56	<0.46	<0.54	<0.65	<0.56	<0.56	<0.58	<0.70	<0.65	<0.61	<0.73	<0.56	<4.6	<0.98	<1.3	<0.82	<0.54
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.45	<0.50	<0.41	<0.48	<0.58	<0.50	<0.50	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88	<1.1	<0.73	<0.48
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.49	<0.55	<0.44	<0.52	<0.63	**18**	<0.55	<0.56	<0.68	<0.63	<0.60	<0.71	<0.54	<4.4	<0.95	<1.2	<0.79	<0.52
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.46	<0.51	<0.42	<0.49	<0.59	**12**	<0.51	<0.53	<0.64	<0.59	<0.56	<0.67	<0.50	<4.2	<0.89	<1.1	<0.74	<0.49
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.63	<0.71	<0.57	<0.67	<0.81	<0.70	<0.71	<0.73	<0.88	<0.81	<0.77	<0.92	<0.70	<5.7	<1.2	<1.5	<1.0	<0.67
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.53	<0.59	<0.48	<0.56	<0.67	<0.58	<0.59	<0.60	<0.73	<0.67	<0.64	<0.76	<0.58	<4.8	<1.0	<1.3	<0.85	<0.56
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.40	<0.44	<0.36	<0.42	<0.50	**2.1 J**	<0.44	<0.45	<0.55	<0.50	<0.48	<0.58	<0.43	<3.6	<0.77	<0.96	<0.64	<0.42
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.42	<0.47	<0.38	<0.45	<0.54	**1.4 J**	<0.47	<0.48	<0.58	<0.54	<0.51	<0.61	<0.46	<3.8	<0.81	<1.0	<0.68	<0.45
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.67	<0.61	<0.58	<0.70	<0.53	<4.3	<0.93	<1.2	<0.77	<0.51
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.58	<0.65	<0.53	<0.62	<0.74	<0.64	<0.65	<0.67	<0.81	<0.74	<0.70	<0.84	<0.64	<5.3	<1.1	<1.4	<0.94	<0.62
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.48	<0.53	<0.43	<0.51	<0.61	<0.52	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.52	<4.3	<0.92	<1.2 J	<0.77 J	<0.51 J
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96	<1.2	<0.80	<0.53
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.47	<0.52	<0.42	<0.50	<0.60	**2.3 J**	<0.52	<0.53	<0.65	<0.60	<0.57	<0.68	<0.51	<4.2	<0.90	<1.1	<0.75	<0.50
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.44	<0.48	<0.39	<0.46	<0.55	<0.48	<0.48	<0.50	<0.60	<0.55	<0.53	<0.63	<0.48	<3.9	<0.84	<1.1	<0.70	<0.46
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.59	<0.66	<0.53	<0.63	<0.75	<0.65	<0.66	<0.68	<0.82	<0.75	<0.71	<0.86	<0.65	<5.3	<1.1	<1.4	<0.95	<0.63
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.61	<0.68	<0.55	<0.65	<0.77	<0.67	<0.68	<0.70	<0.84	<0.77	<0.74	<0.88	<0.67	<5.5	<1.2	<1.5	<0.98	<0.65
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.69	<0.64	<0.60	<0.72	<0.55	<4.5	<0.97	<1.2	<0.80	<0.53
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.58	<0.65	<0.52	<0.62	<0.74	<0.64	<0.65	<0.66	<0.81	<0.74	<0.70	<0.84	<0.64	<5.2	<1.1	<1.4	<0.94	<0.62
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.62	<0.69	<0.56	<0.66	<0.79	<0.68	<0.69	<0.71	<0.86	<0.79	<0.75	<0.90	<0.68	<5.6	<1.2	<1.5	<1.0	<0.66
B10	DG-B10S-3.5-4	8/24/18	2.5-4	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	**1.9 J**	<4.5	<0.97	<1.2	**0.86 J**	**1.6 J**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.66 R	<0.73 R	<0.60 R	<0.70 R	<0.84 R	<0.72 R	<0.73 R	<0.75 R	<0.91 R	<0.84 R	<0.80 R	<0.96 R	<0.72 R	<6.0 R	<1.3 R	<1.6 R	<1.1 R	<0.70 R
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.67	<0.75	<0.61	<0.72	<0.86	**1.4 J ***	<0.75	<0.77	<0.93	<0.86	<0.82	<0.98 R	<0.74	<6.1	<1.3	<1.6 R	<1.1 R	<0.72 R
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.46	<0.51	<0.42	<0.49	<0.59	<0.51	<0.51	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.89	<1.1	<0.74	<0.49
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.43	<0.48	<0.39	<0.46	<0.55	**87**	<0.48	<0.49	<0.60	<0.55	<0.52	<0.63	<0.47	<3.9	<0.84	<1.0	<0.70	<0.46
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1	<1.3	<0.88	<0.58
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.0	<1.1	<0.91	<1.1	<1.3	<1.1	<1.1	<1.2	<1.4	<1.3	<1.2	<1.5	<1.1	<9.1	<1.9	<2.4	<1.6	<1.1
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.64	<0.48	<4.0	<0.85	<1.1	<0.71	<0.47

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene
Soil Screening Levels (SSL)				9.8E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.4E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.8E+03	4.7E+04	3.8E+03	3.9E+06	3.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.58	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1	<1.4	<0.94	<0.62
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	<0.55	<4.5	<0.97	<1.2	<0.81	<0.53
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.54	<0.60	<0.49	<0.58	<0.69	<0.60	<0.60	<0.62	<0.75	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1	<1.3	<0.88	<0.58
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.52	<0.58	<0.47	<0.56	<0.67	<0.57	<0.58	<0.60	<0.73	<0.67	<0.63	<0.76	<0.57	<4.7	<1.0	<1.3	<0.84	<0.56
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.59	<0.66	<0.53	<0.63	<0.75	<0.65	<0.66	<0.68	<0.82	<0.75	<0.72	<0.86	<0.65	<5.3	<1.1	<1.4	<0.95	<0.63
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.55	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.63	<0.77	<0.71	<0.67	<0.80	<0.61	<5.0	<1.1	<1.3	<0.89	<0.59
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.59	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1	<1.4	<0.95	<0.62
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.47	<0.52	<0.43	<0.50	<0.60	<0.52	<0.52	<0.54	<0.65	<0.60	<0.57	<0.68	<0.52	<4.3	<0.91	<1.1	<0.76	<0.50
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0	<1.3	<0.84	<0.55
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.51	<0.56	<0.46	<0.54	<0.65	<0.56	<0.56	<0.58	<0.70	<0.65	<0.61	<0.74	<0.56	<4.6	<0.98	<1.2	<0.82	<0.54
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<0.43	<0.48	<0.39	<0.46	<0.55	<0.47	<0.48	<0.49	<0.59	<0.55	<0.52	<0.62	<0.47	<3.9	<0.83	<1.0	<0.69	<0.46
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<0.58	<0.64	<0.52	<0.61	<0.73	<0.63	<0.64	<0.66	<0.80	<0.73	<0.70	<0.83	<0.63	<5.2	<1.1	<1.4	<0.93	<0.61
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<0.45	<0.50	<0.41	<0.48	<0.58	<0.50	<0.50	<0.52	<0.63	<0.58	<0.55	<0.66 R	<0.50	<4.1	<0.88	<1.1 R	<0.73 R	<0.48 R
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.50	<0.55	<0.45	<0.53	<0.63	**1.9 J**	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96	<1.2	<0.80	<0.53
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.46	<0.51	<0.41	<0.49	<0.58	**5.7**	<0.51	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88	<1.1	<0.74	<0.49
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.66	<0.74	<0.60	<0.71	<0.85	<0.73	<0.74	<0.76	<0.92	<0.85	<0.80	<0.96	<0.73	<6.0	<1.3	<1.6	<1.1	<0.71
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.59	<0.65	<0.53	<0.63	<0.75	<0.65	<0.65	<0.67	<0.82	<0.75	<0.71	<0.85	<0.65	<5.3	<1.1	<1.4	<0.95	<0.63
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.57	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1	<1.4	<0.91	<0.60
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.50	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98	<1.2	<0.81	<0.54
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.50	<0.56	<0.45	<0.53	<0.64	<0.55	<0.56	<0.57	<0.70	<0.64	<0.61	<0.73	<0.55	<4.5	<0.97	<1.2	<0.81	<0.53
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.74	<0.83	<0.67	<0.79	<0.95	<0.82	<0.83	<0.85	<1.0	<0.95	<0.90	<1.1	<0.82	<6.7	<1.4	<1.8	<1.2	<0.79
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.58	<0.65	<0.53	<0.62	<0.74	<0.64	<0.65	<0.67	<0.81	<0.74	<0.70	<0.85	<0.64	<5.3	<1.1	<1.4	<0.94	<0.62
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.47	<0.53	<0.43	<0.50	<0.60	<0.52	<0.53	<0.54	<0.66	<0.60	<0.57	<0.69	<0.52	<4.3	<0.91	<1.1	<0.76	<0.50
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.53	<4.3	<0.93	<1.2	<0.77	<0.51
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.48	<0.53	<0.43	<0.51	<0.61	<0.53	<0.53	<0.55	<0.66	<0.61	<0.58	<0.70 R	<0.53	<4.3	<0.93	<1.2 R	<0.77 R	<0.51 R
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.45	<0.51	<0.41	<0.48	<0.58	<0.50	<0.51	<0.52	<0.63	<0.58	<0.55	<0.66	<0.50	<4.1	<0.88	<1.1	<0.73	<0.48
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.51	<0.57	<0.46	<0.54	<0.65	<0.56	<0.57	<0.58	<0.71	<0.65	<0.62	<0.74	<0.56	<4.6	<0.99	<1.2	<0.82	<0.54
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.62	<0.69	<0.56	<0.66	<0.79	<0.68	<0.69	<0.71	<0.86	<0.79	<0.75	<0.90	<0.68	<5.6	<1.2	<1.5	<1.0	<0.66
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<0.66	<0.74	<0.60	<0.71	<0.85	<0.73	<0.74	<0.76	<0.92	<0.85	<0.80	<0.96	<0.73	<6.0	<1.3	<1.6	<1.1	<0.71
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.72	<0.80	<0.65	<0.77	<0.92	<0.79	<0.80	<0.83	<1.0	<0.92	<0.87	<1.0	<0.79	<6.5	<1.4	<1.7	<1.2	<0.77
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.42	<0.47	<0.38	<0.45	<0.54	**0.76 J**	<0.47	<0.49	<0.59	<0.54	<0.51	<0.62	<0.47	<3.8	<0.82	<1.0	<0.68	<0.45
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.49	<0.55	<0.45	<0.53	<0.63	<0.54	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96	<1.2	<0.80	<0.53
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.56	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.64	<0.77	<0.71	<0.67	<0.81	<0.61	<5.0	<1.1	<1.3	<0.90	<0.59
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.64	<0.71	<0.58	<0.68	<0.81	<0.70	<0.71	<0.73	<0.89	<0.81	<0.77	<0.93	<0.70	<5.8	<1.2	<1.5	<1.0	<0.68

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene
Soil Screening Levels (SSL)				9.8E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.4E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.8E+03	4.7E+04	3.8E+03	3.9E+06	3.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<0.48	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.55	<0.67	<0.62	<0.59	<0.70	<0.53	<4.4	<0.94	<1.2	<0.78	<0.52
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<0.54	<0.61	<0.49	<0.58	<0.69	<0.60	<0.61	<0.62	<0.76	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1	<1.3	<0.88	<0.58
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.55	<0.61	<0.50	<0.59	<0.70	**3.0 J**	<0.61	<0.63	<0.76	<0.70	<0.67	<0.80	<0.60	<5.0	<1.1	<1.3	<0.89	<0.59
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.57	<0.64	<0.52	<0.61	<0.73	<0.63	<0.64	<0.66	<0.80	<0.73	<0.69	<0.83	<0.63	<5.2	<1.1	<1.4	<0.93	<0.61
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.59	<0.72	<0.66	<0.63	<0.75	<0.57	<4.7	<1.0	<1.3	<0.84	<0.55
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.43	<0.48	<0.39	<0.46	<0.55	**2.8 J**	<0.48	<0.50	<0.60	<0.55	<0.52	<0.63	<0.48	<3.9	<0.84	<1.0	<0.70	<0.46
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.59	<0.65	<0.53	<0.62	<0.75	<0.64	<0.65	<0.67	<0.81	<0.75	<0.71	<0.85	<0.64	<5.3	<1.1	<1.4	<0.95	<0.62
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.56	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1	<1.4	<0.91	<0.60
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96	<1.2	<0.80	<0.53
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.49	<0.55	<0.44	<0.52	<0.62	<0.54	<0.55	<0.56	<0.68	<0.62	<0.59	<0.71	<0.54	<4.4	<0.95	<1.2	<0.79	<0.52
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.75	<0.57	<4.7	<1.0	<1.3	<0.84	<0.55
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.64	<0.77	<0.58	<4.8	<1.0	<1.3	<0.86	<0.57
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.50	<0.55	<0.45	<0.53	<0.63	<0.55	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.55	<4.5	<0.96	<1.2	<0.80	<0.53
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.44	<0.49	<0.39	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.63	<0.48	<3.9	<0.85	<1.1	<0.71	<0.47
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.50	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98	<1.2	<0.81	<0.54
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.39	<0.43	<0.35	<0.41	<0.49	<0.43	<0.43	<0.44	<0.54	<0.49	<0.47	<0.56	<0.43	<3.5	<0.75	<0.94	<0.63	<0.41
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<0.55	<0.61	<0.49	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.79	<0.60	<4.9	<1.1	<1.3	<0.88	<0.58
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<0.47	<0.53	<0.43	<0.51	<0.60	<0.52	<0.53	<0.54	<0.66	<0.60	<0.57	<0.69	<0.52	<4.3	<0.92	<1.1	<0.77	<0.51
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0	<1.3	<0.84	<0.55
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.48	<0.54	<0.44	<0.51	<0.61	<0.53	<0.54	<0.55	<0.67	<0.61	<0.58	<0.70	<0.53	<4.4	<0.93	<1.2	<0.78	<0.51
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.49	<0.54	<0.44	<0.52	<0.62	<0.54	<0.54	<0.56	<0.68	<0.62	<0.59	<0.71	<0.54	<4.4	<0.95	<1.2	<0.79	<0.52
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.48	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.56	<0.67	<0.62	<0.59	<0.70	<0.53	<4.4	<0.94	<1.2	<0.78	<0.52
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.58	<0.64	<0.52	<0.62	<0.74	<0.64	<0.64	<0.66	<0.80	<0.74	<0.70	<0.84	<0.64	<5.2	<1.1	<1.4	<0.93	<0.62
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.51	<0.57	<0.46	<0.55	<0.66	<0.56	<0.57	<0.59	<0.71	<0.66	<0.62	<0.75	<0.56	<4.6	<1.0	<1.2	<0.83	<0.55
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.55	<0.61	<0.50	<0.58	<0.70	<0.60	<0.61	<0.63	<0.76	<0.70	<0.66	<0.80	<0.60	<5.0	<1.1	<1.3	<0.89	<0.58
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.51	<0.56	<0.46	<0.54	<0.64	<0.55	<0.56	<0.58	<0.70	<0.64	<0.61	<0.73	<0.55	<4.6	<0.98	<1.2	<0.81	<0.54
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.57	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1	<1.4	<0.91	<0.60
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<520	<400	<520	<390	<560	<420	<390	<390	<400	<910	<860	<680	<600	<3,400	<1,400	**26,000**	<1,100	<420
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.64	<0.77	<0.58	<4.8	<1.0	<1.3	<0.86	<0.57
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.55	<0.61	<0.49	<0.58	<0.69	<0.60	<0.61	<0.62	<0.76	<0.69	<0.66	<0.79	<0.60	<4.9	<1.1	<1.3	<0.88	<0.58
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<0.48	<0.53	<0.43	<0.51	<0.61	<0.52	<0.53	<0.55	<0.66	<0.61	<0.58	<0.69	<0.52	<4.3	<0.92	<1.2	<0.77	<0.51
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<0.77	<0.86	<0.70	<0.82	<0.99	<0.85	<0.86	<0.89	<1.1	<0.99	<0.94	<1.1	<0.85	<7.0	<1.5	<1.9	<1.2	<0.82
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.60	<0.66	<0.54	<0.63	<0.76	<0.65	<0.66	<0.68	<0.83	<0.76	<0.72	<0.86	<0.65	<5.4	<1.2	<1.4	<0.96	<0.63
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.54	<0.60	<0.48	<0.57	<0.68	<0.59	<0.60	<0.61	<0.74	<0.68	<0.65	<0.78	<0.59	<4.8	<1.0	<1.3	<0.86	<0.57

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	Carbon tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene
Soil Screening Levels (SSL)				9.8E+01	2.8E+05	1.4E+07	3.2E+02	1.1E+05	1.8E+04	--	9.4E+02	2.4E+04	8.7E+04	5.8E+03	1.2E+03	1.9E+06	1.8E+03	4.7E+04	3.8E+03	3.9E+06	3.8E+06
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.44	<0.49	<0.40	<0.47	<0.56	<0.48	<0.49	<0.50	<0.61	<0.56	<0.53	<0.64	<0.48	<4.0	<0.85	<1.1	<0.71	<0.47
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.48	<0.54	<0.44	<0.51	<0.62	<0.53	<0.54	<0.55	<0.67	<0.62	<0.58	<0.70	<0.53	<4.4	<0.94	<1.2	<0.78	<0.51
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.43	<0.47	<0.38	<0.45	<0.54	**5.4**	<0.47	<0.49	<0.59	<0.54	<0.51	<0.62	<0.47	<3.8	<0.82	<1.0	<0.69	<0.45
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.69	<0.77	<0.63	<0.74	<0.88	<0.76	<0.77	<0.79	<0.96	<0.88	<0.84	<1.0	<0.76	<6.3	<1.3	<1.7	<1.1	<0.74
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<0.60	<0.67	<0.54	<0.64	<0.76	<0.66	<0.67	<0.68	<0.83	<0.76	<0.72	<0.87	<0.66	<5.4	<1.2	<1.4	<0.96	<0.64
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.58	<0.64	<0.52	<0.61	<0.74	<0.63	<0.64	<0.66	<0.80	<0.74	<0.70	<0.84	<0.63	<5.2	<1.1	<1.4	<0.93	<0.61
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.49	<0.55	<0.45	<0.53	<0.63	<0.54	<0.55	<0.57	<0.69	<0.63	<0.60	<0.72	<0.54	<4.5	<0.96	<1.2	<0.80	<0.53
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.47	<0.52	<0.43	<0.50	<0.60	<0.52	<0.52	<0.54	<0.65	<0.60	<0.57	<0.68	<0.52	<4.3	<0.91	<1.1	<0.76	<0.50
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<0.54	<0.60	<0.49	<0.57	<0.69	<0.59	<0.60	<0.62	<0.75	<0.69	<0.65	<0.78	<0.59	<4.9	<1.0	<1.3	<0.87	<0.57
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.44	<0.49	<0.40	<0.47	<0.56	<0.49	<0.49	<0.51	<0.61	<0.56	<0.54	<0.64	<0.49	<4.0	<0.86	<1.1	<0.71	<0.47
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	<0.45	<0.50	<0.40	<0.47	<0.57	<0.49	<0.50	<0.51	<0.62	<0.57	<0.54	<0.65	<0.49	<4.0	<0.86	<1.1	**0.73 J**	**0.63 J**
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<0.60	<0.67	<0.54	<0.64	<0.77	<0.66	<0.67	<0.69	<0.84	<0.77	<0.73	<0.88	<0.66	<5.4	<1.2	<1.5	<0.97	<0.64
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.53	<0.59	<0.48	<0.57	<0.68	<0.58	<0.59	<0.61	<0.74	<0.68	<0.65	<0.77	<0.58	<4.8	<1.0	<1.3	<0.86	<0.57
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.54	<0.60	<0.49	<0.57	<0.69	<0.59	<0.60	<0.62	<0.75	<0.69	<0.65	<0.78	<0.59	<4.9	<1.0	<1.3	<0.87	<0.57
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.61	<0.68	<0.55	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.88	<0.67	<5.5	<1.2	<1.5	<0.98	<0.65
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.52	<0.58	<0.47	<0.56	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0	<1.3	<0.84	<0.56
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.26	<0.29	<0.23	<0.28	<0.33	<0.29	<0.29	<0.30	<0.36	<0.33	<0.31	<0.38	<0.29	<2.3	<0.50	<0.63	<0.42	<0.28
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.28	<0.31	<0.25	<0.30	<0.36	<0.31	<0.31	<0.32	<0.39	<0.36	<0.34	<0.41	<0.31	<2.5	<0.54	<0.68	<0.45	<0.30
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.51	<0.57	<0.46	<0.54	<0.65	<0.56	<0.57	<0.58	<0.71	<0.65	<0.62	<0.74	<0.56	<4.6	<0.99	<1.2	<0.82	<0.54
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.49	<0.54	<0.44	<0.52	<0.62	<0.53	<0.54	<0.56	<0.68	<0.62	<0.59	<0.71	<0.53	<4.4	<0.94	<1.2	<0.79	<0.52
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.53	<0.59	<0.47	<0.56	<0.67	<0.58	<0.59	<0.60	<0.73	<0.67	<0.64	<0.76	<0.58	<4.7	<1.0	<1.3	<0.85	<0.56
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.74	<0.82	<0.67	<0.79	<0.94	<0.81	<0.82	<0.85	<1.0	<0.94	<0.89	<1.1	<0.81	<6.7	<1.4	<1.8	<1.2	<0.79
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.56	<0.62	<0.50	<0.59	<0.71	<0.61	<0.62	<0.64	<0.77	<0.71	<0.67	<0.81	<0.61	<5.0	<1.1	<1.3	<0.90	<0.59
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.60	<0.66	<0.54	<0.64	<0.76	<0.66	<0.66	<0.68	<0.83	<0.76	<0.72	<0.87	<0.66	<5.4	<1.2	<1.5	<0.96	<0.64
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<0.62	<0.68	<0.56	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.89	<0.67	<5.6	<1.2	<1.5	<0.99	<0.65
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<0.52	<0.57	<0.47	<0.55	<0.66	<0.57	<0.57	<0.59	<0.71	<0.66	<0.62	<0.75	<0.57	<4.7	<1.0	<1.2	<0.83	<0.55
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.56	<0.63	<0.51	<0.60	<0.72	<0.62	<0.63	<0.65	<0.78	<0.72	<0.68	<0.82	<0.62	<5.1	<1.1	<1.4	<0.91	<0.60
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.53	<0.59	<0.48	<0.57	<0.68	<0.59	<0.59	<0.61	<0.74	<0.68	<0.65	<0.77	<0.59	<4.8	<1.0	<1.3	<0.86	<0.57
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.73	<0.81	<0.66	<0.77	<0.93	<0.80	<0.81	<0.83	<1.0	<0.93	<0.88	<1.1	<0.80	<6.6	<1.4	<1.8	<1.2	<0.77
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.55	<0.61	<0.50	<0.59	<0.70	**2.7 J**	<0.61	<0.63	<0.77	<0.70	<0.67	<0.80	<0.61	<5.0	<1.1	<1.3	<0.89	<0.59
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<0.51	<0.57	<0.46	<0.55	<0.65	<0.56	<0.57	<0.59	<0.71	<0.65	<0.62	<0.75	<0.56	<4.6	<0.99	<1.2	<0.83	<0.55
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.46	<0.52	<0.42	<0.49	<0.59	<0.51	<0.52	<0.53	<0.64	<0.59	<0.56	<0.67	<0.51	<4.2	<0.90	<1.1	<0.75	<0.49
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.52	<0.58	<0.47	<0.55	<0.66	<0.57	<0.58	<0.60	<0.72	<0.66	<0.63	<0.76	<0.57	<4.7	<1.0	<1.3	<0.84	<0.55
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.61	<0.68	<0.55	<0.65	<0.78	<0.67	<0.68	<0.70	<0.85	<0.78	<0.74	<0.89	<0.67	<5.5	<1.2	<1.5	<0.98	<0.65

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	1.3E+05	--	9.4E+02	1.2E+06	9.1E+05	8.2E+00	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
A2	DG-A2S-19.5-20	8/21/18	19.5-20	<0.54	<0.47	<0.54	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.54	<0.91	<0.075
A3	DG-A3S-0.5-1	8/21/18	0.5-1	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
A3	DG-A3S-3.5-4	8/21/18	2.5-4	<0.49	<0.43	<0.50	<0.46	<0.48	<0.51	<0.46	<0.43	<0.38	<3.4	<0.50	<0.83	<0.068
A3	DG-A3S-9.5-10	8/21/18	9.5-10	<0.52	<0.46	<0.53	<0.49	<0.51	<0.54	<0.49	<0.46	<0.41	<3.6	<0.53	<0.88	<0.072
A4	DG-A4S-19.5-20	8/22/18	19.5-20	<0.49	<0.43	<0.50	<0.45	<0.48	<0.51	<0.45	<0.43	<0.38	<3.4	<0.50	<0.83	<0.068
A5	DG-A5S-19.5-20	8/23/18	19.5-20	<0.57	<0.50	<0.58	<0.53	<0.57	**15 ***	<0.53	**38 ***	<0.45	<4.0	<0.58	<0.97	**0.14 J ***
A6	DG-A6S-19.5-20	8/22/18	19.5-20	<0.50	<0.43	<0.50	<0.46	<0.49	**0.96 J**	<0.46	**0.53 J**	<0.39	<3.4	<0.50	<0.84	<0.069
A7	DG-A7S-0.5-1	8/23/18	0.5-1	<0.59	<0.51	<0.60	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.60	<1.0	<0.082
A7	DG-A7S-3.5-4	8/23/18	2.5-4	<0.53	<0.46	<0.53	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	<0.53	<0.89	<0.073
A7	DG-A7S-10-10.5	8/23/18	10-10.5	<0.57	<0.50	<0.58	<0.53	<0.56	**1.9 J**	<0.53	<0.50	<0.44	<4.0	**1.1 J**	<0.97	<0.079
A7	DG-A7S-10-10.5 (D)	8/23/18	10-10.5	<0.53	<0.47	<0.54	<0.50	<0.53	**1.1 J**	<0.50	<0.47	<0.42	<3.7	<0.54	<0.90	<0.074
A8	DG-A8S-0.5-1	8/27/18	0.5-1	<0.74	<0.64	<0.75	<0.68	<0.73	<0.77	<0.68	<0.64	<0.57	<5.1	<0.75	<1.2	<0.10
A8	DG-A8S-3.5-4	8/27/18	2.5-4	<0.61	<0.53	<0.62	<0.57	<0.60	<0.64	<0.57	<0.53	<0.48	<4.2	<0.62	<1.0	<0.085
A8	DG-A8S-17-17.5	8/27/18	17-17.5	<0.46	<0.40	<0.47	<0.43	<0.45	<0.48	<0.43	**10**	<0.36	<3.2	<0.47	<0.78	<0.064
A8	DG-A8S-17-17.5 (D)	8/27/18	17-17.5	<0.49	<0.43	<0.50	<0.45	<0.48	<0.51	<0.45	**6.7**	<0.38	<3.4	<0.50	<0.83	<0.068
B1	DG-B1S-0.5-1	8/21/18	0.5-1	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.43	<3.9	<0.57	<0.94	<0.077
B1	DG-B1S-3.5-4	8/21/18	3.5-4	<0.68	<0.59	<0.69	<0.63	<0.67	<0.70	<0.63	<0.59	<0.53	<4.7	<0.69	<1.1	<0.094
B2	DG-B2S-19.5-20	8/21/18	19.5-20	<0.55 J	<0.48	<0.56 J	<0.51	<0.55	<0.58	<0.51	<0.48	<0.43	<3.8	<0.56	<0.94	<0.077
B5	DG-B5S-0.5-1	8/23/18	0.5-1	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	**1.1 J**	<0.45	<4.0	<0.59	<0.98	<0.08
B5	DG-B5S-3.5-4	8/23/18	1-2.5	<0.54	<0.47	<0.55	**9.1**	<0.53	<0.57	<0.50	**76**	<0.42	<3.8	<0.55	<0.92	**0.076 J**
B7	DG-B7S-14.5-15	8/23/18	14.5-15	<0.51	<0.44	<0.51	<0.47	<0.50	<0.53	<0.47	<0.44	<0.39	<3.5	<0.51	<0.86	<0.07
B9	DG-B9S-0.5-1	8/24/18	0.5-1	<0.69	<0.60	<0.70	<0.64	<0.68	<0.71	<0.64	<0.60	<0.53	<4.8	<0.70	<1.2	<0.095
B9	DG-B9S-3.5-4	8/24/18	2.5-4	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2	<0.098
B9	DG-B9S-9.5-10	8/24/18	9.5-10	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	<0.51	<0.45	<4.0	<0.59	<0.98	<0.08
B10	DG-B10S-0.5-1	8/24/18	0.5-1	<0.67	<0.59	<0.68	<0.63	<0.66	<0.70	<0.63	<0.59	<0.52	<4.7	<0.68	<1.1	<0.094
B10	DG-B10S-0.5-1 (D)	8/24/18	0.5-1	<0.72	<0.63	<0.73	<0.67	<0.71	<0.75	<0.67	<0.63	<0.56	<5.0	<0.73	<1.2	<0.10
B10	DG-B10S-3.5-4	8/24/18	2.5-4	**1.1 J**	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	**1.1 J**	**0.88**
C3	DG-C3S-0.5-1	8/21/18	0.5-1	<0.77 R	<0.67 R	<0.78 R	<0.71 R	**1.7 J ***	<0.80 R	<0.71 R	**18 ***	<0.60 R	<5.3 R	<0.78 R	<1.3 R	<0.11
C3	DG-C3S-3.5-4	8/21/18	2.5-4	<0.78 R	<0.68	<0.79 R	<0.73	**1.6 J ***	<0.82	<0.73	**22 ***	<0.61	<5.4	<0.79	<1.3	<0.11
C3	DG-C3S-9.5-10	8/21/18	9.5-10	<0.54	<0.47	<0.54	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.54	<0.91	<0.074
C5	DG-C5S-9-9.5	8/23/18	9-9.5	<0.50	<0.44	<0.51	<0.47	<0.49	**1.7 J**	<0.47	**120**	<0.39	<3.5	<0.51	<0.85	**0.15 J**
C7	DG-C7S-0.5-1	8/24/18	0.5-1	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1	<0.088
C7	DG-C7S-0.5-1 (D)	8/24/18	0.5-1	<1.2	<1.0	<1.2	<1.1	<1.2	<1.2	<1.1	<1.0	<0.91	<8.1	<1.2	<2.0	<0.16
C7	DG-C7S-3.5-4	8/24/18	3.5-4	<0.51	<0.45	<0.52	<0.48	<0.50	<0.53	<0.48	<0.45	<0.40	<3.6	<0.52	<0.87	<0.071

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	1.3E+05	--	9.4E+02	1.2E+06	9.1E+05	8.2E+00	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
C7	DG-C7S-9.5-10	8/24/18	9.5-10	<0.68	<0.59	<0.69	<0.63	<0.67	<0.71	<0.63	<0.59	<0.53	<4.7	<0.69	<1.2	<0.094
D1	DG-D1S-0.5-1	8/20/18	0.5-1	<0.58	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	<0.99	<0.081
D1	DG-D1S-3.5-4	8/20/18	2.5-4	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1	<0.088
D1	DG-D1S-9.5-10	8/20/18	9.5-10	<0.61	<0.53	<0.62	<0.57	<0.60	<0.63	<0.57	<0.53	<0.47	<4.2	<0.62	<1.0	<0.084
D3	DG-D3S-9.5-10	8/21/18	9.5-10	<0.69	<0.60	<0.70	<0.64	<0.68	<0.72	<0.64	<0.60	<0.53	<4.8	<0.70	<1.2	<0.095
D5	DG-D5S-0.5-1	8/22/18	0.5-1	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	**0.57 J**	<0.50	<4.5	<0.65	<1.1	<0.089
D5	DG-D5S-3.5-4	8/22/18	2.5-4	<0.68	<0.60	<0.69	<0.63	<0.67	<0.71	<0.63	<0.60	<0.53	<4.7 R	<0.69	<1.2	<0.095
D9	DG-D9S-0.5-1	8/24/18	0.5-1	<0.55	<0.48	<0.55	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.55	<0.93	<0.076
D9	DG-D9S-3.5-4	8/24/18	1-2.5	<0.61	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	**0.19 J**
D9	DG-D9S-9.5-10	8/24/18	9.5-10	<0.59	<0.52	<0.60	<0.55	<0.58	<0.61	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.082
DE8-9	DG-DE8-9S-0.5-1	8/24/18	0.5-1	<0.50	<0.43	<0.50	<0.46	**0.49 J**	<0.52	<0.46	<0.43	<0.39	<3.5	<0.50	<0.84	<0.069
DE8-9	DG-DE8-9S-3.5-4	8/24/18	2.5-4	<0.67	<0.58	<0.68	<0.62	<0.66	<0.70	<0.62	<0.58	<0.52	<4.6	<0.68	<1.1	<0.093
DE8-9	DG-DE8-9S-9.5-10	8/24/18	9.5-10	<0.53 R	<0.46	<0.53 R	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.6	<0.53	<0.89	<0.073
E3	DG-E3S-9.5-10	8/21/18	9.5-10	<0.58	<0.50	<0.58	<0.54	<0.57	<0.60	<0.54	**0.52 J**	<0.45	<4.0	<0.58	<0.98	<0.08
E5	DG-E5S-9-9.5	8/22/18	9-9.5	<0.53	<0.46	<0.54	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	**0.85 J**	<0.90	<0.074
E7	DG-E7S-0.5-1	8/24/18	0.5-1	<0.77	<0.67	<0.78	<0.72	<0.76	<0.80	<0.72	<0.67	<0.60	<5.3	<0.78	<1.3	<0.11
E7	DG-E7S-3.5-4	8/24/18	2.5-4	<0.68	<0.60	<0.69	<0.64	<0.67	<0.71	<0.64	<0.60	<0.53	<4.7	<0.69	<1.2	<0.095
E7	DG-E7S-9.5-10	8/24/18	9.5-10	<0.66	<0.57	<0.67	<0.61	**0.75 J**	<0.68	<0.61	<0.57	<0.51	<4.6	<0.67	<1.1	<0.091
E11	DG-E11S-0.5-1	8/27/18	0.5-1	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.59	<0.99	<0.081
E11	DG-E11S-0.5-1 (D)	8/27/18	0.5-1	<0.58	<0.51	<0.59	<0.54	<0.57	<0.61	<0.54	<0.51	<0.45	<4.0	<0.59	<0.99	**0.12 J**
E11	DG-E11S-3.5-4	8/27/18	2.5-4	<0.86	<0.76	<0.88	<0.80	<0.85	<0.90	<0.80	<0.76	<0.67	<6.0	<0.88	<1.5	<0.12
E11	DG-E11S-9.5-10	8/27/18	9.5-10	<0.68	<0.59	<0.69	<0.63	<0.67	<0.70	<0.63	<0.59	<0.53	<4.7	<0.69	<1.1	<0.094
F1	DG-F1S-0.5-1	8/20/18	0.5-1	<0.55	<0.48	<0.56	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.56	<0.93	<0.076
F1	DG-F1S-3.5-4	8/20/18	2.5-4	<0.56	<0.49	<0.56	<0.52	<0.55	<0.58	<0.52	<0.49	<0.43	<3.9	<0.56	<0.94	<0.077
F1	DG-F1S-9.5-10	8/20/18	9.5-10	<0.56 R	<0.49	<0.56 R	<0.52	<0.55	<0.58	<0.52	**0.96 J**	<0.43	<3.9	<0.56	<0.94	<0.077
F3	DG-F3S-0.5-1	8/21/18	0.5-1	<0.53	<0.46	<0.53	<0.49	<0.52	<0.55	<0.49	<0.46	<0.41	<3.7	<0.53	<0.89	<0.073
F3	DG-F3S-3.5-4	8/21/18	1-2.5	<0.59	<0.52	<0.60	<0.55	<0.58	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.082
F3	DG-F3S-9.5-10	8/21/18	9.5-10	<0.72	<0.63	<0.73	<0.67	<0.71	<0.75	<0.67	<0.63	<0.56	<5.0	<0.73	<1.2	<0.10
F5	DG-F5S-0.5-1	8/22/18	0.5-1	<0.77	<0.68	<0.78	<0.72	<0.76	<0.80	<0.72	<0.68	<0.60	<5.4	<0.78	<1.3	<0.11
F5	DG-F5S-3.5-4	8/22/18	2.5-4	<0.84	<0.73	<0.85	<0.78	<0.83	<0.87	<0.78	<0.73	<0.65	<5.8	<0.85	<1.4	<0.12
F5	DG-F5S-3.5-4 (D)	8/22/18	2.5-4	<0.49	<0.43	<0.50	<0.46	<0.49	<0.51	<0.46	<0.43	<0.38	<3.4	**0.88 J**	<0.84	<0.068
F9	DG-F9S-0.5-1	8/24/18	0.5-1	<0.57	<0.50	<0.58	<0.53	<0.57	<0.60	<0.53	<0.50	<0.45	<4.0	<0.58	<0.97	<0.08
F9	DG-F9S-3.5-4	8/24/18	2.5-4	<0.65	<0.57	<0.66	<0.60	<0.64	<0.67	<0.60	<0.57	<0.50	<4.5	<0.66	<1.1	<0.09
F9	DG-F9S-9.5-10	8/24/18	9.5-10	<0.74	<0.65	<0.75	<0.69	<0.73	<0.77	<0.69	<0.65	<0.58	<5.2	<0.75	<1.3	<0.10

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	1.3E+05	--	9.4E+02	1.2E+06	9.1E+05	8.2E+00	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
FG910	DG-FG910S-3.5-4	8/27/18	1-2.5	<0.56	<0.49	<0.57	<0.52	<0.55	<0.59	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
FG910	DG-FG910S-0.5-1	8/27/18	0.5-1	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1	<0.088
G3	DG-G3S-9.5-10	8/21/18	9.5-10	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
G6	DG-G6S-1-2[a,c]	8/22/18	1-2	<0.67	<0.58	<0.68	<0.62	<0.66	<0.69	<0.62	<0.58	<0.52	<4.6	<0.68	<1.1	<0.093
G7	DG-G7S-0.5-1	8/24/18	0.5-1	<0.60	<0.53	<0.61	<0.56	**0.81 J**	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
G7	DG-G7S-3.5-4	8/24/18	2.5-4	<0.50	<0.44	<0.51	**1.8 J**	<0.50	<0.52	<0.47	**31**	<0.39	<3.5	<0.51	<0.85	<0.07
G11	DG-G11S-0.5-1	8/27/18	0.5-1	<0.68	<0.60	<0.69	<0.63	<0.67	<0.71	<0.63	<0.60	<0.53	<4.7	<0.69	<1.2	<0.095
G11	DG-G11S-3.5-4	8/27/18	2.5-4	<0.66	<0.57	<0.66	<0.61	<0.65	<0.68	<0.61	<0.57	<0.51	<4.6	<0.66	<1.1	<0.091
G11	DG-G11S-9.5-10	8/27/18	9.5-10	<0.58	<0.50	<0.59	<0.54	<0.57	<0.60	<0.54	<0.50	<0.45	<4.0	<0.59	<0.98	<0.08
H1	DG-H1S-0.5-1	8/20/18	0.5-1	<0.57	<0.50	<0.58	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<4.0	<0.58	<0.96	<0.079
H1	DG-H1S-3.5-4	8/20/18	2.5-4	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
H3	DG-H3S-0.5-1	8/21/18	0.5-1	<0.62	<0.54	<0.63	<0.58	<0.61	<0.64	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0	<0.086
H3	DG-H3S-3.5-4	8/21/18	2.5-4	<0.58	<0.51	<0.59	<0.54	<0.57	<0.60	<0.54	<0.51	<0.45	<4.0	<0.59	<0.98	<0.08
H3	DG-H3S-9.5-10	8/21/18	9.5-10	<0.51	<0.44	<0.51	<0.47	<0.50	<0.53	<0.47	<0.44	<0.39	<3.5	<0.51	<0.86	<0.071
H5	DG-H5S-0.5-1	8/22/18	0.5-1	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	<0.51	<0.46	<4.1	<0.59	<0.99	<0.081
H5	DG-H5S-3.5-4	8/22/18	2.5-4	<0.45	<0.39	<0.46	<0.42	<0.44	<0.47	<0.42	<0.39	<0.35	<3.1	<0.46	<0.76	<0.063
H6	DG-H6S-0.5-1	8/23/18	0.5-1	<0.64	<0.56	<0.64	<0.59	<0.63	<0.66	<0.59	<0.56	<0.49	<4.4	<0.64	<1.1	<0.088
H6	DG-H6S-3.5-4	8/23/18	1-2.5	<0.55	<0.48	<0.56	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.56	<0.93	<0.077
H9	DG-H9S-0.5-1	8/27/18	0.5-1	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
H9	DG-H9S-3.5-4	8/27/18	2.5-4	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
H9	DG-H9S-3.5-4 (D)	8/27/18	2.5-4	<0.57	<0.50	<0.58	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<3.9	<0.58	<0.96	<0.079
H9	DG-H9S-9.5-10	8/27/18	9.5-10	<0.56	<0.49	<0.57	<0.52	<0.56	<0.59	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
I3	DG-I3S-0.5-1	8/22/18	0.5-1	<0.67	<0.59	<0.68	<0.63	<0.66	<0.70	<0.63	<0.59	<0.52	<4.7	<0.68	<1.1	<0.093
I3	DG-I3S-3.5-4	8/22/18	1-2.5	<0.60	<0.52	<0.61	<0.56	<0.59	<0.62	<0.56	<0.52	<0.46	<4.1	<0.61	<1.0	<0.083
I7	DG-I7S-0.5-1	8/24/18	0.5-1	<0.64	<0.56	<0.65	<0.59	<0.63	<0.66	<0.59	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
I7	DG-I7S-3.5-4	8/24/18	2.5-4	<0.59	<0.51	<0.59	<0.55	<0.58	<0.61	<0.55	**0.97 J**	<0.46	<4.1	<0.59	<0.99	<0.081
I7	DG-I7S-3.5-4 (D)	8/24/18	2.5-4	<0.66	<0.57	<0.67	<0.61	**0.69 J**	<0.68	<0.61	**2.5 J**	<0.51	<4.6	<0.67	<1.1	<0.091
I9	DG-I9S-0.5-1	8/24/18	0.5-1	<490	<390	<390	<500	<810	<620	<390	<390	<640	<1,300	<610	<1,400	<110
I11	DG-I11S-0.5-1	8/27/18	0.5-1	<0.62	<0.54	<0.63	<0.58	<0.61	<0.64	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0	<0.086
I11	DG-I11S-3.5-4	8/27/18	2.5-4	<0.63	<0.55	<0.64	<0.59	<0.62	<0.66	<0.59	<0.55	<0.49	<4.4	<0.64	<1.1	<0.088
I11	DG-I11S-3.5-4 (D)	8/27/18	2.5-4	<0.55	<0.48	<0.56	<0.52	<0.55	<0.58	<0.52	<0.48	<0.43	<3.8	<0.56	<0.94	<0.077
I11	DG-I11S-9.5-10	8/27/18	9.5-10	<0.90	<0.79	<0.91	<0.84	<0.89	<0.94	<0.84	<0.79	<0.70	<6.2	<0.91	<1.5	<0.12
J1	DG-J1S-0.5-1	8/20/18	0.5-1	<0.69	<0.60	<0.70	<0.64	<0.68	<0.72	<0.64	<0.60	<0.54	<4.8	<0.70	<1.2	<0.096
J1	DG-J1S-3.5-4	8/20/18	2.5-4	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.1	<0.086

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Depth Range (ft bgs)	sec-Butylbenzene	Styrene	tert-Butylbenzene	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-g (C4-C12)
Soil Screening Levels (SSL)				2.2E+06	6.0E+06	2.2E+06	5.9E+02	1.1E+06	1.3E+05	--	9.4E+02	1.2E+06	9.1E+05	8.2E+00	5.8E+05	7.4E+02
Units				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	mg/kg
J5	DG-J5S-0.5-1	8/22/18	0.5-1	<0.51	<0.44	<0.52	<0.47	<0.50	<0.53	<0.47	<0.44	<0.40	<3.5	<0.52	<0.86	<0.071
J5	DG-J5S-3.5-4	8/22/18	2.5-4	<0.56	<0.49	<0.57	<0.52	<0.55	<0.58	<0.52	<0.49	<0.44	<3.9	<0.57	<0.95	<0.078
J5	DG-J5S-7-7.5	8/22/18	7-7.5	<0.49	<0.43	<0.50	<0.46	<0.49	<0.51	<0.46	<0.43	<0.38	<3.4	<0.50	<0.84	<0.069
J9	DG-J9S-0.5-1	9/26/18	0.5-1	<0.81	<0.71	<0.82	<0.75	<0.79	<0.84	<0.75	<0.71	<0.63	<5.6	<0.82	<1.4	<0.11
J9	DG-J9S-0.5-1 (D)	9/26/18	0.5-1	<0.69	<0.61	<0.70	<0.65	<0.68	<0.72	<0.65	<0.61	<0.54	<4.8	<0.70	<1.2	<0.096
J9	DG-J9S-3.5-4	9/26/18	3.5-4	<0.67	<0.59	<0.68	<0.62	<0.66	<0.70	<0.62	<0.59	<0.52	<4.7	<0.68	<1.1	<0.093
K3	DG-K3S-0.5-1	8/22/18	0.5-1	<0.57	<0.50	<0.58	<0.53	<0.57	<0.60	<0.53	<0.50	<0.45	<4.0	<0.58	<0.97	<0.08
K3	DG-K3S-3.5-4	8/22/18	2.5-4	<0.55	<0.48	<0.55	<0.51	<0.54	<0.57	<0.51	<0.48	<0.43	<3.8	<0.55	<0.93	<0.076
K7	DG-K7S-0.5-1	8/24/18	0.5-1	<0.63	<0.55	<0.64	<0.58	<0.62	<0.65	<0.58	<0.55	<0.49	<4.4	<0.64	<1.1	<0.087
K7	DG-K7S-3.5-4	8/24/18	2.5-4	<0.51	<0.45	<0.52	<0.55	<0.51	<0.54	<0.48	<0.45	<0.40	<3.6	<0.52	<0.87	<0.071
K7	DG-K7S-3.5-4 (D)	8/24/18	2.5-4	**0.80 J**	<0.45	**0.67 J**	<0.48	**0.52 J**	<0.54	<0.48	<0.45	<0.40	<3.6	<0.52	<0.88	<0.072
K8	DG-K8S-1-2[b,c]	8/22/18	1-2	<0.70	<0.61	<0.71	<0.65	<0.69	<0.73	<0.65	<0.61	<0.54	<4.9	<0.71	<1.2	<0.097
K11	DG-K11S-0.5-1	8/27/18	0.5-1	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.0	<0.086
K11	DG-K11S-3.5-4	8/27/18	1.0-2.5	<0.63	<0.55	<0.63	<0.58	<0.62	<0.65	<0.58	<0.55	<0.49	<4.3	<0.63	<1.1	<0.087
K11	DG-K11S-3.5-4 (D)	8/27/18	1.0-2.5	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2	<0.098
K11	DG-K11S-9.5-10	8/27/18	9.5-10	<0.61	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
L1	DG-L1S-0.5-1	8/20/18	0.5-1	<0.30	<0.26	<0.31	<0.28	<0.30	<0.31	<0.28	<0.26	<0.23	<2.1	<0.31	<0.51	<0.042
L1	DG-L1S-3.5-4	8/20/18	1.0-2.5	<0.33	<0.28	<0.33	<0.30	<0.32	<0.34	<0.30	<0.28	<0.25	<2.3	<0.33	<0.55	<0.045
L5	DG-L5S-0.5-1	8/22/18	0.5-1	<0.59	<0.52	<0.60	<0.55	<0.58	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.082
L5	DG-L5S-0.5-1 (D)	8/22/18	0.5-1	<0.57	<0.50	<0.57	<0.53	<0.56	<0.59	<0.53	<0.50	<0.44	<3.9	<0.57	<0.96	<0.079
L5	DG-L5S-3.5-4	8/22/18	2.5-4	<0.61	<0.53	<0.62	<0.57	<0.60	<0.64	<0.57	<0.53	<0.47	<4.2	<0.62	<1.0	<0.085
L9	DG-L9S-0.5-1	8/27/18	0.5-1	<0.86	<0.75	<0.87	<0.80	<0.85	<0.89	<0.80	<0.75	<0.67	<6.0	<0.87	<1.5	<0.12
L9	DG-L9S-0.5-1 (D)	8/27/18	0.5-1	<0.65	<0.57	<0.66	<0.60	<0.64	<0.67	<0.60	<0.57	<0.50	<4.5	<0.66	<1.1	<0.09
L9	DG-L9S-3.5-4	8/27/18	1.0-2.5	<0.69	<0.61	<0.70	<0.65	<0.68	<0.72	<0.65	<0.61	<0.54	<4.8	<0.70	<1.2	<0.10
L13	DG-L13S-0.5-1[c]	8/24/18	0.5-1	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.56	<5.0	<0.72	<1.2	<0.099
L13	DG-L13S-3.5-4	8/24/18	1.0-2.5	<0.60	<0.52	<0.61	<0.56	<0.59	<0.62	<0.56	<0.52	<0.47	<4.2	<0.61	<1.0	<0.083
L13	DG-L13S-3.5-4 (D)[c]	8/24/18	1.0-2.5	<0.66	<0.57	<0.66	<0.66	<0.65	<0.68	<0.61	<0.57	<0.51	<4.5	<0.66	<1.1	**0.18 J**
M3	DG-M3S-0.5-1	8/22/18	0.5-1	<0.62	<0.54	<0.63	<0.58	<0.61	<0.65	<0.58	<0.54	<0.48	<4.3	<0.63	<1.1	<0.086
M3	DG-M3S-3.5-4	8/22/18	2.5-4	<0.84	<0.74	<0.86	<0.78	<0.83	<0.88	<0.78	<0.74	<0.66	<5.9	<0.86	<1.4	<0.12
M3	DG-M3S-7.5-8	8/22/18	7.5-8	<0.64	<0.56	<0.65	<0.60	<0.63	<0.67	<0.60	<0.56	<0.50	<4.4	<0.65	<1.1	<0.089
M7	DG-M7S-0.5-1	8/24/18	0.5-1	<0.60	<0.52	<0.60	<0.55	**0.71 J**	<0.62	<0.55	<0.52	<0.46	<4.1	<0.60	<1.0	<0.083
M7	DG-M7S-3.5-4	8/24/18	3.5-4	<0.54	<0.47	<0.55	<0.50	<0.53	<0.56	<0.50	<0.47	<0.42	<3.7	<0.55	<0.91	<0.075
M11	DG-M11S-0.5-1	8/27/18	0.5-1	<0.60	<0.53	<0.61	<0.56	<0.60	<0.63	<0.56	<0.53	<0.47	<4.2	<0.61	<1.0	<0.084
M11	DG-M11S-3.5-4	8/27/18	2.5-4	<0.71	<0.62	<0.72	<0.66	<0.70	<0.74	<0.66	<0.62	<0.55	<4.9	<0.72	<1.2	<0.098

Table 5: Volatile Organic Compounds and Total Petroleum Hydrocarbons as Gasoline Concentrations in Soil
UPC OU-SM
Brisbane, California

Notes:
a. Sample DG-G6S-1-2 was named DG-G6S-MS/MDS on the chain-of-custody and in laboratory report 720-88126-1. The sample was renamed to indicate the sample depth interval.
b. Sample DG-K8S-1-2 was named DG-K8S-MS/MDS on the chain-of-custody and in l; µg/kg
c. Sample analyzed by 5030B/8260B.
1. VOCs were analyzed by USEPA Method 8260B.
2. SSLs are from, in order of hierarchy, DTSC (April 2019), USEPA (April 2019), or San Francisco Regional Water Quality Control Board (January 2019).
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in **bold** font indicate a detection above the MDL.
5. Results shaded with gray indicate the MDL exceeded the SSL.
6. Results highlighted with yellow indicate the result exceeds the SSL.

Abbreviations:
"--" = not available
"<" = non-detect result
"*" = ISTD response ore retention time outside acceptable limits or LCS/LCSD is outside of acceptance limits
µg/kg = microgram per kilogram
(D) = duplicate sample
ft bgs = feet below ground surface
H = sample was prepared or analyzed beyond the specified holding time
J = estimated value
MDL = method detection limit
mg/kg = milligram per kilogram
R = rejected in validation
RL = reporting limit
SSL = soil screening level
USEPA = United States Environmental Protection Agency
VOCs = volatile organic compounds

Table 6: Groundwater Elevations in Fill Zone, August 2018

UPC OU-SM

Brisbane, California

Well	Date	Top of Well Casing Elevation (ft MSL)	Depth to Groundwater Below Top of Casing (ft)	Groundwater Elevation (ft MSL)
GWE-1[1]	8/30/2018	9.92	4.90	5.02
GWE-2[2]	8/30/2018	7.16	2.60	4.56
GWE-3	8/14/2018	8.58	3.46	5.12
GWE-4	8/14/2018	8.08	3.02	5.06
MK-2A	8/14/2018	12.96	4.62	8.34
MK-4A	8/14/2018	17.46	12.32	5.14
MK-5AR	8/14/2018	10.74	5.84	4.90
MK-6A	8/14/2018	17.28	12.34	4.94
MW-3A[3]	8/14/2018	11.95	NM	--
MW-4A	8/14/2018	12.82	6.92	5.90
MW-6AR	8/14/2018	13.02	8.17	4.85
MW-7A	8/14/2018	11.19	5.91	5.28
MW-8A	8/14/2018	10.62	5.51	5.11
SW-18UA[4]	--	9.29	NM	--

Notes:

1. GWE-1 could not be gauged on 14 August 2018 due to dirt in well casing. The dirt was removed and the well was gauged on 30 August 2018.
2. GWE-2 could not be located during the 14 August 2018 gauging event. The well was located and gauged on 30 August 2018.
3. MW-3A was reportedly dry with an obstruction at 4.69 ft below top of casing.
4. SW-18UA could not be located during the third quarter monitoring event.

-- = Not Calculated/Not Applicable
ft = Feet
MSL = Mean Sea Level
NM = Not Measured

Table 7: Dissolved Metals Concentrations in Fill Groundwater

UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Groundwater Screening Level (GSL)			6.0E+02	1.0E+03	1.0E+05	4.0E+02	5.0E+02	5.0E+03	1.0E+03	6.0E+02	3.1E+02	8.1E+02	9.4E+01	1.0E+04	8.2E+02	5.0E+03	1.9E+01	2.0E+02	5.0E+03	8.1E+03
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<2.7	<2.6	**150**	**0.50 J**	<1.3	<1.5	<3.7 R	**4.9**	**1.5 J**	<2.3	<0.10	**3.5 J**	**5.5 J**	<7.1	**17**	<3.5	**1.1 J**	**48 F1**
B4	DG-B4W	8/23/18	**38**	**14**	**600**	<0.33	<1.3	**1.6 J**	<3.7	**3.5**	**20**	**10**	<0.10	**9.0 J**	**4.6 J**	<7.1	<1.2	<3.5	**1.9 J**	**150**
B5	DG-B5W	8/23/18	<2.7	**8.4 J**	**320**	<0.33	<1.3	<1.5	<3.7	**2.9**	**3.0 J**	**7.9**	<0.10	**4.3 J**	**4.7 J**	<7.1	<1.2	<3.5	**0.91 J**	**69**
B9	DG-B9W	8/24/18	**3.5 J**	**34 J**	**470**	<0.33	<1.3	**3.7 J**	<3.7 R	**4.0**	**12 J**	**3.2 J**	<0.10	**7.4 J**	**6.0 J**	<7.1	**10**	<3.5	<0.70	**96**
C3	DG-C3W	8/22/18	**12**	**7.1 J**	**270**	**0.42 J B**	<1.3	<1.5	<3.7	**4.7**	**12 J**	**21**	<0.10	**7.7 J**	**6.0 J**	<7.1	<1.2	<3.5	<0.70	**90**
C7	DG-C7W	8/24/18	<2.7	**5.8 J**	**720**	<0.33	<1.3	**15**	<3.7 R	**2.1**	**2.4 J**	<2.3	<0.10	**3.8 J**	**4.4 J**	<7.1	**15**	<3.5	**2.3 J**	**52**
D1	DG-D1W	8/21/18	<2.7	**25**	**140**	**0.34 J**	<1.3	<1.5	<3.7	**2.4**	**4.5 J**	**6.0**	<0.10	**4.2 J**	**2.7 J**	<7.1	<1.2	<3.5	<0.70	**41**
D5	DG-D5W	8/23/18	<2.7	**14**	**480**	**0.34 J B**	<1.3	<1.5	<3.7	**1.9 J**	**2.5 J**	**15**	<0.10	**5.7 J**	**4.9 J**	<7.1	<1.2	<3.5	<0.70	**34**
D9	DG-D9W	8/24/18	<2.7	**18**	**280**	<0.33	<1.3	**2.4 J**	<3.7 R	<1.2	**2.6 J**	<2.3	<0.10	**2.8 J**	**3.0 J**	<7.1	**12**	<3.5	**0.73 J**	**17 J**
DE8-9	DG-DE8-9W	8/24/18	<2.7	**29**	**150**	<0.33	<1.3	**2.0 J**	<3.7 R	**1.5 J**	**4.0 J**	<2.3	<0.10	**5.5 J**	**4.3 J**	<7.1	**11**	<3.5	<0.70	**23**
E7	DG-E7W	8/24/18	**2.7 J**	<2.6	**500**	<0.33	<1.3	**2.1 J**	<3.7 R	**2.4**	**6.4 J**	**2.8 J**	**0.25 F1 F2**	**5.6 J**	**6.1 J**	<7.1	**15**	<3.5	**0.97 J**	**36**
E11	DG-E11W	8/27/18	<2.7	**14**	**430**	**0.56 J**	<1.3	**2.0 J**	**8.4 J**	**1.6 J**	<1.5	**7.9**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	**1.4 J**	<9.6
E11	DG-E11W (D)	8/27/18	<2.7	**13**	**360**	<0.33	<1.3	**1.6 J**	**6.3 J**	**3.3**	**2.6 J**	**9.9**	<0.10	**3.6 J**	**1.0 J**	<7.1	<1.2	<3.5	**1.2 J**	**13 J**
F1	DG-F1W	8/21/18	<2.7	**20**	**79**	**0.53 J**	<1.3	<1.5	<3.7	**3.6**	**2.8 J**	**6.2**	<0.10	**4.5 J**	**2.4 J**	<7.1	<1.2	<3.5	<0.70	**26**
F3	DG-F3W	8/22/18	**3.4 J**	**190**	**200**	**0.69 J B**	<1.3	<1.5	<3.7	**1.9 J**	**3.9 J**	**11**	<0.10	**5.9 J**	**2.9 J**	<7.1	<1.2	<3.5	**0.97 J**	**36**
F9	DG-F9W	8/24/18	<2.7	**37**	**180**	<0.33	<1.3	**2.4 J**	<3.7 R	**5.0**	**3.9 J**	<2.3	<0.10	**7.2 J**	**6.9 J**	<7.1	**14**	<3.5	<0.70	**26**
FG9-10	DG-FG9-10W	8/27/18	<2.7	**5.9 J**	**430**	<0.33	<1.3	<1.5	<3.7	<1.2	**2.2 J**	**11**	<0.10	**3.7 J**	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
G7	DG-G7W	8/24/18	<2.7	**20**	**1,400**	<0.33	<13	**2.4 J**	<3.7 R	**15 J**	**5.7 J**	**30 J**	<0.10	**12**	**7.4 J**	<7.1	**20**	<35	<0.70	<96
G11	DG-G11W	8/27/18	<2.7	**25**	**910**	<0.33	<1.3	**7.0 J**	<3.7	**10**	**11 J**	**14**	<0.10	**7.1 J**	**10**	<7.1	<1.2	<3.5	**4.0 J**	**27**
H1	DG-H1W	8/21/18	<2.7	**19**	**97**	**0.34 J**	<1.3	<1.5	<3.7	**3.6**	**3.4 J**	**4.9 J**	<0.10	**4.5 J**	**2.8 J**	<7.1	<1.2	<3.5	<0.70	**30**
H5	DG-H5W	8/23/18	<2.7	**28**	**260**	**0.62 J B**	<1.3	**4.0 J**	<3.7	**2.3**	**4.8 J**	**8.3**	<0.10	**4.3 J**	**3.2 J**	<7.1	<1.2	<3.5	<0.70	**77**
H6	DG-H6W	8/23/18	<2.7	**44**	**240**	<0.33	<1.3	**1.9 J**	<3.7	**1.5 J**	**1.5 J**	**12**	<0.10	**4.4 J**	**1.9 J**	<7.1	<1.2	<3.5	**1.7 J**	**39**
H9	DG-H9W	8/27/18	<2.7	**3.0 J**	**790**	<0.33	<1.3	<1.5	<3.7	**1.2 J**	**3.7 J**	**11**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	**0.95 J**	<9.6
I3	DG-I3W	8/23/18	**2.8 J**	**84**	**72**	**0.89 J B**	<1.3	<1.5	<3.7	<1.2	**3.2 J**	**8.6**	<0.10	**6.3 J**	**1.8 J**	<7.1	<1.2	<3.5	**2.0 J**	**25**
I7	DG-I7W	8/24/18	<2.7	**31**	**120**	<0.33	<1.3	**27**	<3.7 R	**2.0**	**3.0 J**	<2.3	<0.10	**5.3 J**	**9.6 J**	<7.1	**15**	<3.5	<0.70	<9.6
I7	DG-I7W (D)	8/24/18	<2.7	**31**	**110**	<0.33	<1.3	**1.5 J**	<3.7	**1.3 J**	**1.6 J**	**9.4**	<0.10	**3.8 J**	**2.0 J**	<7.1	<1.2	<3.5	<0.70	<9.6
I11	DG-I11W	8/27/18	<2.7	**17**	**1,100**	**0.64 J B**	<1.3	**3.3 J**	**4.3 J**	**6.8**	**24**	**21**	<0.10	**10**	**3.0 J**	<7.1	<1.2	<3.5	**0.91 J**	**61**
J5	DG-J5W	8/23/18	<2.7	**42**	**240**	**3.0 B**	<1.3	**1.7 J**	<3.7	**1.3 J**	**4.2 J**	**9.2**	<0.10	**5.8 J**	**1.6 J**	<7.1	<1.2	<3.5	**1.3 J**	**53**
J9	DG-J9W	9/26/18	<2.7	**6.8 J**	**35**	<0.33	<1.3	<1.5	<3.7	**2.1**	<1.5	**4.7 J**	<0.10	**5.1 J**	**1.7 J**	<7.1	<1.2	<3.5	**1.4 J**	<9.6
K3	DG-K3W	8/23/18	<2.7	**63**	**130**	<0.33	<1.3	<1.5	<3.7	**1.2 J**	**4.2 J**	**9.6**	<0.10	**4.9 J**	**1.6 J**	<7.1	<1.2	<3.5	**0.97 J**	**50**
K11	DG-K11W	8/27/18	<2.7	**28**	**240**	<0.33	<1.3	<1.5	<3.7	**1.3 J**	**2.7 J**	**9.5**	<0.10	**2.4 J**	<0.80	<7.1	<1.2	<3.5	**1.7 J**	<9.6
L1	DG-L1W	8/21/18	<2.7	**15**	**210**	**0.50 J**	<1.3	<1.5	<3.7	**9.5**	**9.0 J**	**7.6**	<0.10	**4.8 J**	**6.7 J**	<7.1	<1.2	<3.5	<0.70	**64**
L5	DG-L5W	8/23/18	**6.6 J**	**3.2 J**	**360**	**1.0 J B**	<1.3	<1.5	<3.7	**3.0**	**160**	**15**	<0.10	**10**	**8.5 J**	<7.1	<1.2	<3.5	<0.70	**180**
L5	DG-L5W (D)	8/23/18	**7.8 J**	**3.7 J**	**360**	<0.33	<1.3	**1.9 J**	<3.7	**3.0**	**150**	**15**	<0.10	**10**	**7.8 J**	<7.1	<1.2	<3.5	<0.70	**170**
L9	DG-L9W	8/27/18	<2.7	**9.0 J**	**50**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**6.3**	<0.10	**6.5 J**	<0.80	<7.1	<1.2	<3.5	**0.89 J**	<9.6
L9	DG-L9W (D)	8/27/18	<2.7	**8.2 J**	**50**	**0.97 J**	<1.3	<1.5	<3.7	<1.2	**1.8 J**	**7.0**	<0.10	**9.8 J**	<0.80	<7.1	<1.2	<3.5	**1.0 J**	<9.6
M3	DG-M3W	8/23/18	**3.6 J**	**31**	**89**	**1.1 J B**	<1.3	<1.5	<3.7	<1.2	**4.4 J**	**8.1**	<0.10	**5.4 J**	**1.5 J**	<7.1	<1.2	<3.5	**1.0 J**	**37**
M7	DG-M7W	8/24/18	<2.7	**13**	**520**	<0.33	<1.3	**3.4 J**	<3.7 R	**9.6**	**11 J**	**2.3 J**	<0.10	**9.0 J**	**14**	<7.1	**12**	<3.5	**2.0 J**	**56**

Table 7: Dissolved Metals Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium, Hexavalent	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Groundwater Screening Level (GSL)			6.0E+02	1.0E+03	1.0E+05	4.0E+02	5.0E+02	5.0E+03	1.0E+03	6.0E+02	3.1E+02	8.1E+02	9.4E+01	1.0E+04	8.2E+02	5.0E+03	1.9E+01	2.0E+02	5.0E+03	8.1E+03
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
M11	DG-M11W	8/27/18	<2.7	**2.7 J**	**63**	<0.33	<1.3	**5.9 J**	<3.7	**1.4 J**	**2.2 J**	**4.1 J**	<0.10	<2.3	**1.9 J**	<7.1	<1.2	<3.5	**9.6 J**	**11 J**
GWE-1	GWE-1	8/30/18	<2.7	**10**	**220**	<0.33	<1.3	**1.8 J**	<3.7	<1.2	**1.9 J**	**8.6**	<0.10	<2.3	**5.9 J**	<7.1	<1.2	<3.5	**1.4 J**	<9.6
GWE-2	GWE-2	8/30/18	<2.7	**21**	**790**	<0.33	<1.3	<1.5	<3.7	**2.6**	**2.0 J**	**9.6**	<0.10	<2.3	**6.6 J**	<7.1	<1.2	<3.5	<0.70	**13 J**
GWE-3	GWE-3	8/15/18	<2.7	**18**	**290**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	<2.3	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
GWE-4	GWE-4	8/15/18	<2.7	<2.6	**970**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**14**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
GWE-4	GWE-4 (D)	8/15/18	<2.7	<2.6	**940**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**13**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MK-2A	MK-2A	8/14/18	<2.7	<2.6	**330**	<0.33	<1.3	<1.5	<3.7	**79**	<1.5	<2.3	<0.10	<2.3	**49**	<7.1	<1.2	<3.5	<0.70	<9.6
MK-4A	MK-4A	8/15/18	<2.7	**41**	**69**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	<2.3	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MK-5AR	MK-5AR	8/14/18	<2.7	**130**	**79**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**8.1**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	**24**
MK-5AR	MK-5AR (D)	8/14/18	<2.7	**130**	**79**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**8.1**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	**26**
MK-6A	MK-6A	8/15/18	<2.7	<2.6	**81**	<0.33	<1.3	<1.5	<3.7	**5.2**	<1.5	**6.2**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-4A	MW-4A	8/15/18	<2.7	**120**	**210**	<0.33	<1.3	<1.5	<3.7	**13**	<1.5	**12**	<0.10	**14**	**24**	<7.1	<1.2	<3.5	<0.70	**22**
MW-6AR	MW-6AR	8/15/18	<2.7	**12**	**200**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**5.3**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-7A	MW-7A	8/15/18	<2.7	<2.6	**560**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**16**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6
MW-8A	MW-8A	8/15/18	<2.7	<2.6	**280**	<0.33	<1.3	<1.5	<3.7	<1.2	<1.5	**7.8**	<0.10	<2.3	<0.80	<7.1	<1.2	<3.5	<0.70	<9.6

Notes:

1. Metals were analyzed by USEPA Methods 6010B, 7196, and 7471A.
2. GSLs are San Francisco Regional Water Quality Control Board Environmental Screening Levels for saltewater ecotoxicity (April 2019) with an attenuation factor of 100 to account for sorption and dilution between the Site and San Francisco Bay.
3. Non-detect results are presented with "<" followed by the MDL.
4. Results in **bold** font indicate a detection above the MDL.
5. Results shaded with gray indicate the MDL exceeded the GSL.
6. Results highlighted with yellow indicate the result exceeds the GSL.

Abbreviations and Symbols:

"<" - Non-detect result
µg/L - microgram per liter
B - Compound was found in the blank and sample.
(D) - Duplicate sample
F1 - MS and/or MSD Recovery is outside acceptance limits.
F2 - MS/MSD RPD exceeds control limits.
GSL - Groundwater screening level
J - Estimated value
MDL - Method Detection Limit
R - Result rejected during data validation
USEPA - United States Environmental Protection Agency

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	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	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene
Groundwater Screening Level (GSL)			5.7E-01	2.0E+02	1.0E+00	--	5.0E+00	5.0E+00	6.0E+00	--	--	5.0E-03	5.0E+00	--	2.0E-01	5.0E-02	6.5E+01	5.0E-01	5.0E+00	--	6.5E+01
Vapor Intrusion Screening Level			3.8E+00	1.5E+03	3.2E+00	--	5.2E+00	7.6E+00	6.6E+01	--	--	2.2E+01	3.6E+01	--	2.8E-02	1.7E-01	2.7E+03	2.2E+00	2.3E+00	--	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<2.0	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
B4	DG-B4W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
B5	DG-B5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.44 J**	<4.0	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
B9	DG-B9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
C3	DG-C3W	8/22/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.14 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
C7	DG-C7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
D1	DG-D1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
D5	DG-D5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.11 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
D9	DG-D9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
DE8-9	DG-DE8-9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
E7	DG-E7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
E11	DG-E11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
E11	DG-E11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
F1	DG-F1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
F3	DG-F3W	8/22/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
F9	DG-F9W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.12 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
FG9-10	DG-FG9-10W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
G7	DG-G7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
G11	DG-G11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H1	DG-H1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H5	DG-H5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H6	DG-H6W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
H9	DG-H9W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I3	DG-I3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I7	DG-I7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I7	DG-I7W (D)	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
I11	DG-I11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
J5	DG-J5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
J9	DG-J9W	9/26/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
K3	DG-K3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
K11	DG-K11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L1	DG-L1W	8/21/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L5	DG-L5W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	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	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene
Groundwater Screening Level (GSL)			5.7E-01	2.0E+02	1.0E+00	--	5.0E+00	5.0E+00	6.0E+00	--	--	5.0E-03	5.0E+00	--	2.0E-01	5.0E-02	6.5E+01	5.0E-01	5.0E+00	--	6.5E+01
Vapor Intrusion Screening Level			3.8E+00	1.5E+03	3.2E+00	--	5.2E+00	7.6E+00	6.6E+01	--	--	2.2E+01	3.6E+01	--	2.8E-02	1.7E-01	2.7E+03	2.2E+00	2.3E+00	--	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L5	DG-L5W (D)	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L9	DG-L9W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
L9	DG-L9W (D)	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
M3	DG-M3W	8/23/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
M7	DG-M7W	8/24/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
M11	DG-M11W	8/27/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-1	GWE-1	8/30/18	<0.067	<0.20	<0.074	<0.091	<0.11	**0.35 J**	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-2	GWE-2	8/30/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0025	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-3	GWE-3	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-4	GWE-4	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
GWE-4	GWE-4 (D)	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-2A	MK-2A	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-4A	MK-4A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-5AR	MK-5AR	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-5AR	MK-5AR (D)	8/14/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MK-6A	MK-6A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-4A	MW-4A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-6AR	MW-6AR	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-7A	MW-7A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20
MW-8A	MW-8A	8/15/18	<0.067	<0.20	<0.074	<0.091	<0.11	<0.11	<0.20	<0.20	<0.21	<0.0017	<0.13	<0.20	<0.30	<0.075	<0.21	<0.077	<0.20	<0.17	<0.20

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	1,3-Dichloropropene	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene
Groundwater Screening Level (GSL)			--	5.0E+00	--	5.0E-01	--	--	--	--	1.2E+02	1.4E+04	1.0E+00	--	--	8.0E+01	8.0E+01	7.5E+00	--	2.2E-01	5.0E+01
Vapor Intrusion Screening Level			--	2.6E+00	--	1.2E+00	--	--	--	--	--	2.3E+07	4.2E-01	--	--	8.7E-01	--	1.7E+01	--	6.1E-02	4.0E+02
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
B4	DG-B4W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
B5	DG-B5W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
B9	DG-B9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
C3	DG-C3W	8/22/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
C7	DG-C7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
D1	DG-D1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
D5	DG-D5W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
D9	DG-D9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
DE8-9	DG-DE8-9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
E7	DG-E7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
E11	DG-E11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
E11	DG-E11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
F1	DG-F1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
F3	DG-F3W	8/22/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
F9	DG-F9W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
FG9-10	DG-FG9-10W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
G7	DG-G7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
G11	DG-G11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H1	DG-H1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H5	DG-H5W	8/23/18	<0.17	<0.16	<0.17	**8.8 J**	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H6	DG-H6W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
H9	DG-H9W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I3	DG-I3W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I7	DG-I7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I7	DG-I7W (D)	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
I11	DG-I11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
J5	DG-J5W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
J9	DG-J9W	9/26/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
K3	DG-K3W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
K11	DG-K11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L1	DG-L1W	8/21/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L5	DG-L5W	8/23/18	<0.17	<0.16	<0.17	**8.8 J**	<0.20	<3.0	<0.20	<0.20	<4.5	<20	**0.27 J**	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	1,3-Dichloropropane	1,4-Dichlorobenzene	2,2-Dichloropropane	1,3-Dichloropropene	2-Chlorotoluene	2-Hexanone	4-Chlorotoluene	4-Isopropyltoluene	4-Methyl-2-pentanone	Acetone	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon disulfide	Carbon tetrachloride	Chlorobenzene
Groundwater Screening Level (GSL)			--	5.0E+00	--	5.0E-01	--	--	--	--	1.2E+02	1.4E+04	1.0E+00	--	--	8.0E+01	8.0E+01	7.5E+00	--	2.2E-01	5.0E+01
Vapor Intrusion Screening Level			--	2.6E+00	--	1.2E+00	--	--	--	--	--	2.3E+07	4.2E-01	--	--	8.7E-01	--	1.7E+01	--	6.1E-02	4.0E+02
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L5	DG-L5W (D)	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L9	DG-L9W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
L9	DG-L9W (D)	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
M3	DG-M3W	8/23/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
M7	DG-M7W	8/24/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
M11	DG-M11W	8/27/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-1	GWE-1	8/30/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-2	GWE-2	8/30/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-3	GWE-3	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-4	GWE-4	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
GWE-4	GWE-4 (D)	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-2A	MK-2A	8/14/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-4A	MK-4A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-5AR	MK-5AR	8/14/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-5AR	MK-5AR (D)	8/14/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MK-6A	MK-6A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-4A	MW-4A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-6AR	MW-6AR	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-7A	MW-7A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13
MW-8A	MW-8A	8/15/18	<0.17	<0.16	<0.17	<8.4	<0.20	<3.0	<0.20	<0.20	<4.5	<20	<0.25	<0.20	<0.25	<0.20	<0.50	<0.49	<0.78	<0.11	<0.13

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene
Groundwater Screening Level (GSL)			1.6E+01	2.3E+00	1.9E+02	6.0E+00	--	8.0E+01	--	--	1.3E+01	1.4E-01	--	5.0E+00	5.0E+00	1.7E-01	--	--	--	1.0E+01	--
Vapor Intrusion Screening Level			2.3E+04	8.1E-01	2.6E+02	4.9E+01	--	--	--	--	3.5E+00	3.0E-01	--	7.8E+00	4.5E+02	4.6E+00	--	--	--	8.5E+03	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	<0.17	<0.40	<0.19	**130**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
B4	DG-B4W	8/23/18	<0.17	<0.40	<0.19	**0.86**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
B5	DG-B5W	8/23/18	<0.17	<0.40	<0.19	**160**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
B9	DG-B9W	8/24/18	<0.17	<0.40	<0.19	**2.1**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
C3	DG-C3W	8/22/18	<0.17	<0.40	<0.19	**7.6**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
C7	DG-C7W	8/24/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
D1	DG-D1W	8/21/18	<0.17	<0.40	<0.19	**1.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.16 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
D5	DG-D5W	8/23/18	<0.17	<0.40	<0.19	**6.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
D9	DG-D9W	8/24/18	<0.17	<0.40	<0.19	**0.62**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
DE8-9	DG-DE8-9W	8/24/18	<0.17	<0.40	<0.19	**0.15 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
E7	DG-E7W	8/24/18	<0.17	<0.40	<0.19	**0.50**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
E11	DG-E11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
E11	DG-E11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
F1	DG-F1W	8/21/18	<0.17	<0.40	<0.19	**0.55**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.33 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
F3	DG-F3W	8/22/18	<0.17	<0.40	<0.19	**7.9**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
F9	DG-F9W	8/24/18	<0.17	<0.40	<0.19	**0.095 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
FG9-10	DG-FG9-10W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
G7	DG-G7W	8/24/18	<0.17	<0.40	<0.19	**23**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
G11	DG-G11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H1	DG-H1W	8/21/18	<0.17	<0.40	<0.19	**0.30 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.27 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H5	DG-H5W	8/23/18	<0.17	<0.40	<0.19	**3.2**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H6	DG-H6W	8/23/18	<0.17	<0.40	<0.19	**0.25 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
H9	DG-H9W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I3	DG-I3W	8/23/18	<0.17	<0.40	<0.19	**6.0**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I7	DG-I7W	8/24/18	<0.17	<0.40	<0.19	**18**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I7	DG-I7W (D)	8/24/18	<0.17	<0.40	<0.19	**21**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
I11	DG-I11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
J5	DG-J5W	8/23/18	<0.17	<0.40	<0.19	**1.6**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
J9	DG-J9W	9/26/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
K3	DG-K3W	8/23/18	<0.17	<0.40	<0.19	**3.9**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
K11	DG-K11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L1	DG-L1W	8/21/18	<0.17	<0.40	<0.19	**0.26 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	**0.49 J**	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L5	DG-L5W	8/23/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Chloroethane	Chloroform	Chloromethane	cis-1,2-Dichloroethene	cis-1,3-Dichloropropene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	Methylene Chloride	Methyl-tert-butyl ether (MTBE)	Naphthalene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	Styrene	tert-Butylbenzene
Groundwater Screening Level (GSL)			1.6E+01	2.3E+00	1.9E+02	6.0E+00	--	8.0E+01	--	--	1.3E+01	1.4E-01	--	5.0E+00	5.0E+00	1.7E-01	--	--	--	1.0E+01	--
Vapor Intrusion Screening Level			2.3E+04	8.1E-01	2.6E+02	4.9E+01	--	--	--	--	3.5E+00	3.0E-01	--	7.8E+00	4.5E+02	4.6E+00	--	--	--	8.5E+03	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L5	DG-L5W (D)	8/23/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L9	DG-L9W	8/27/18	<0.17	<0.40	<0.19	**0.82**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
L9	DG-L9W (D)	8/27/18	<0.17	<0.40	<0.19	**0.79**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
M3	DG-M3W	8/23/18	<0.17	<0.40	<0.19	**1.3**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
M7	DG-M7W	8/24/18	<0.17	<0.40	<0.19	**0.23 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
M11	DG-M11W	8/27/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-1	GWE-1	8/30/18	<0.17	<0.40	<0.19	**70**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<15	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-2	GWE-2	8/30/18	<0.17	<0.40	<0.19	**0.34 J**	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-3	GWE-3	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-4	GWE-4	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
GWE-4	GWE-4 (D)	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-2A	MK-2A	8/14/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-4A	MK-4A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-5AR	MK-5AR	8/14/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-5AR	MK-5AR (D)	8/14/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MK-6A	MK-6A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-4A	MW-4A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-6AR	MW-6AR	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-7A	MW-7A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20
MW-8A	MW-8A	8/15/18	<0.17	<0.40	<0.19	<0.076	<0.10	<0.10	<0.30	<0.25	<0.13	<0.27	<0.20	<1.5	<0.11	<0.22	<0.30	<0.20	<0.17	<0.22	<0.20

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-diesel (C10-C28)	TPH-gasoline (C4-C12)
Groundwater Screening Level (GSL)			3.0E+00	4.0E+01	1.0E+01	--	5.0E+00	--	--	6.1E-02	2.0E+01	2.0E+02	7.6E+02
Vapor Intrusion Screening Level			6.4E-01	1.2E+03	2.2E+02	--	1.2E+00	--	--	8.6E-03	3.9E+02	--	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
A7	DG-A7W	8/24/18	**5.7**	<0.17	**24**	<0.17	**200**	<0.30	<0.60	**2.6**	<0.40	**55**	**280**
B4	DG-B4W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**1.8**	<0.40	**260**	**30 J**
B5	DG-B5W	8/23/18	<0.20	<0.17	<2.6	<0.17	**8.5**	<0.30	<0.60	**410**	<0.40	**57**	**380**
B9	DG-B9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40	**180**	**24 J**
C3	DG-C3W	8/22/18	<0.20	<0.17	**0.53**	<0.17	**3.9**	<0.30	<0.60	**0.78**	<0.40	**69**	<21
C7	DG-C7W	8/24/18	<0.20	<0.17	<0.13	<0.17	**1.2**	<0.30	<0.60	<0.20	<0.40	**240**	**24 J**
D1	DG-D1W	8/21/18	<0.20	<0.17	<0.13	<0.17	**0.25 J**	<0.30	<0.60	<0.20	<0.40	**73**	<21
D5	DG-D5W	8/23/18	**0.33 J**	<0.17	**0.75**	<0.17	**4.1**	<0.30	<0.60	**0.73**	<0.40	**130**	**30 J**
D9	DG-D9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.51**	<0.40	**170**	**30 J**
DE8-9	DG-DE8-9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.24 J**	<0.40	**210**	<21
E7	DG-E7W	8/24/18	<0.20	<0.17	<0.13	<0.17	**1.0**	<0.30	<0.60	<0.20	<0.40	**170**	**26 J**
E11	DG-E11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**99**	<21
E11	DG-E11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**110 B**	**29 J**
F1	DG-F1W	8/21/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<21
F3	DG-F3W	8/22/18	<0.20	<0.17	**0.39 J**	<0.17	**0.60**	<0.30	<0.60	<0.20	<0.40	**120**	<21
F9	DG-F9W	8/24/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**220**	<21
FG9-10	DG-FG9-10W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**230**	<21
G7	DG-G7W	8/24/18	<0.20	<0.17	**1.9**	<0.17	**15**	<0.30	<0.60	**4.6**	<0.40	**130**	**54**
G11	DG-G11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**670**	**85**
H1	DG-H1W	8/21/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**96**	<21
H5	DG-H5W	8/23/18	<0.20	<0.17	<0.13	<0.17	**0.22 J**	<0.30	<0.60	<0.20	<0.40	**59**	<21
H6	DG-H6W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**71**	<21
H9	DG-H9W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**160**	<21
I3	DG-I3W	8/23/18	<0.20	<0.17	<0.13	<0.17	**0.52**	<0.30	<0.60	<0.20	<0.40	**57**	<21
I7	DG-I7W	8/24/18	<0.20	<0.17	**1.1**	<0.17	**5.3**	<0.30	<0.60	**13**	<0.40	**100**	**42 J**
I7	DG-I7W (D)	8/24/18	<0.20	<0.17	**1.2**	<0.17	**5.9**	<0.30	<0.60	**16**	<0.40	**110**	**30 J**
I11	DG-I11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**220**	<21
J5	DG-J5W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40	**76**	<21
J9	DG-J9W	9/26/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**78**	<21
K3	DG-K3W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**52**	<21
K11	DG-K11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**68**	<21
L1	DG-L1W	8/21/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**220**	<21
L5	DG-L5W	8/23/18	<0.20	**0.26 J**	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**170**	**57**

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Sample Location	Sample Name	Collection Date	Tetrachloroethene (PCE)	Toluene	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Trichlorofluoromethane	Vinyl Acetate	Vinyl Chloride	Xylenes, Total	TPH-diesel (C10-C28)	TPH-gasoline (C4-C12)
Groundwater Screening Level (GSL)			3.0E+00	4.0E+01	1.0E+01	--	5.0E+00	--	--	6.1E-02	2.0E+01	2.0E+02	7.6E+02
Vapor Intrusion Screening Level			6.4E-01	1.2E+03	2.2E+02	--	1.2E+00	--	--	8.6E-03	3.9E+02	--	--
Units			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
L5	DG-L5W (D)	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**190**	**31 J**
L9	DG-L9W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**80**	<21
L9	DG-L9W (D)	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	**0.37 J**	<0.40	**91**	<21
M3	DG-M3W	8/23/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**56**	<21
M7	DG-M7W	8/24/18	<0.20	<0.17	<0.13	<0.17	**0.36 J**	<0.30	<0.60	<0.20	<0.40	**600**	<21
M11	DG-M11W	8/27/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**77**	<21
GWE-1	GWE-1	8/30/18	**0.28 J**	<0.17	**0.85**	<0.17	**3.0**	<0.30	<0.60	**210**	<0.40	**64**	**120**
GWE-2	GWE-2	8/30/18	<0.20	<0.17	**0.15 J**	<0.17	<0.20	<0.30	<0.60	**0.34 J**	<0.40	**73**	<21
GWE-3	GWE-3	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	<32	<25
GWE-4	GWE-4	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<25
GWE-4	GWE-4 (D)	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<25
MK-2A	MK-2A	8/14/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	<32	<25
MK-4A	MK-4A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**55**	<25
MK-5AR	MK-5AR	8/14/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**250**	<25
MK-5AR	MK-5AR (D)	8/14/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**240**	<25
MK-6A	MK-6A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**200**	<25
MW-4A	MW-4A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**1,100**	<25
MW-6AR	MW-6AR	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**58**	<25
MW-7A	MW-7A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**97**	<25
MW-8A	MW-8A	8/15/18	<0.20	<0.17	<0.13	<0.17	<0.20	<0.30	<0.60	<0.20	<0.40	**120**	<25

Table 8: Volatile Organic Compounds and Total Petroleum Hydrocarbons
Concentrations in Fill Groundwater
UPC OU-SM
Brisbane, California

Notes:

1. VOCs and TPH-g were analyzed by USEPA Method 8260B, with the exception of 1,2,3-Trichloropropane, which was analyzed by USEPA Method E524.2 SIM for the following samples: DG-B4W, DG-B5W, DG-D1W, DG-F1W, GWE-3, GWE-4, GWE-4 (D), DG-H1W, DG-L1W, MK-2A, MK-4A, MK-5AR, MK-5AR (D), MK-6A, MW-4A, MW-6AR, MW-7A, and MW-8A; the remaining samples were anlyzed by USEPA Method 8260B SIM.
2. 1,2,3-Trichloropropane results were analyzed by USEPA Method 8260B SIM for select samples.
3. GSLs are from (1) Maximum Contaminant Levels, consisten with cleanup levels for COCs at the Schlage OU, and (2) vapor intrusion screening levels for residential land use.
   Per the Order (DTSC, 2008), VOCs at the UPC OU-SM are sourced from, and will be cleaned up under, the Schlage OU remedy.
4. Non-detect results are presented with "<" followed by the MDL.
5. Results in bold font indicate a detection above the MDL.
6. All wells are screened in Fill water-bearing zone.
7. Results shaded with gray indicate the MDL exceeded the GSL.
8. Results highlighted with yellow indicate the result exceeds the GSL.

Abbreviations and Symbols:

"--" - Not Available
"<" - Non-detect result
µg/L - microgram per liter
(D) - Duplicate sample
GSL - Groundwater screening level
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
MDL - Method Detection Limit
RL - Reporting Limit
SIM - Selected Ion Monitoring
TPH-g - Total Petroleum Hydrocarbons as Gasoline
TPH-d - Total Petroleum Hydrocarbons as Diesel
USEPA - United States Environmental Protection Agency

FIGURES



Site Location Map

UPC OU-SM
Brisbane, California

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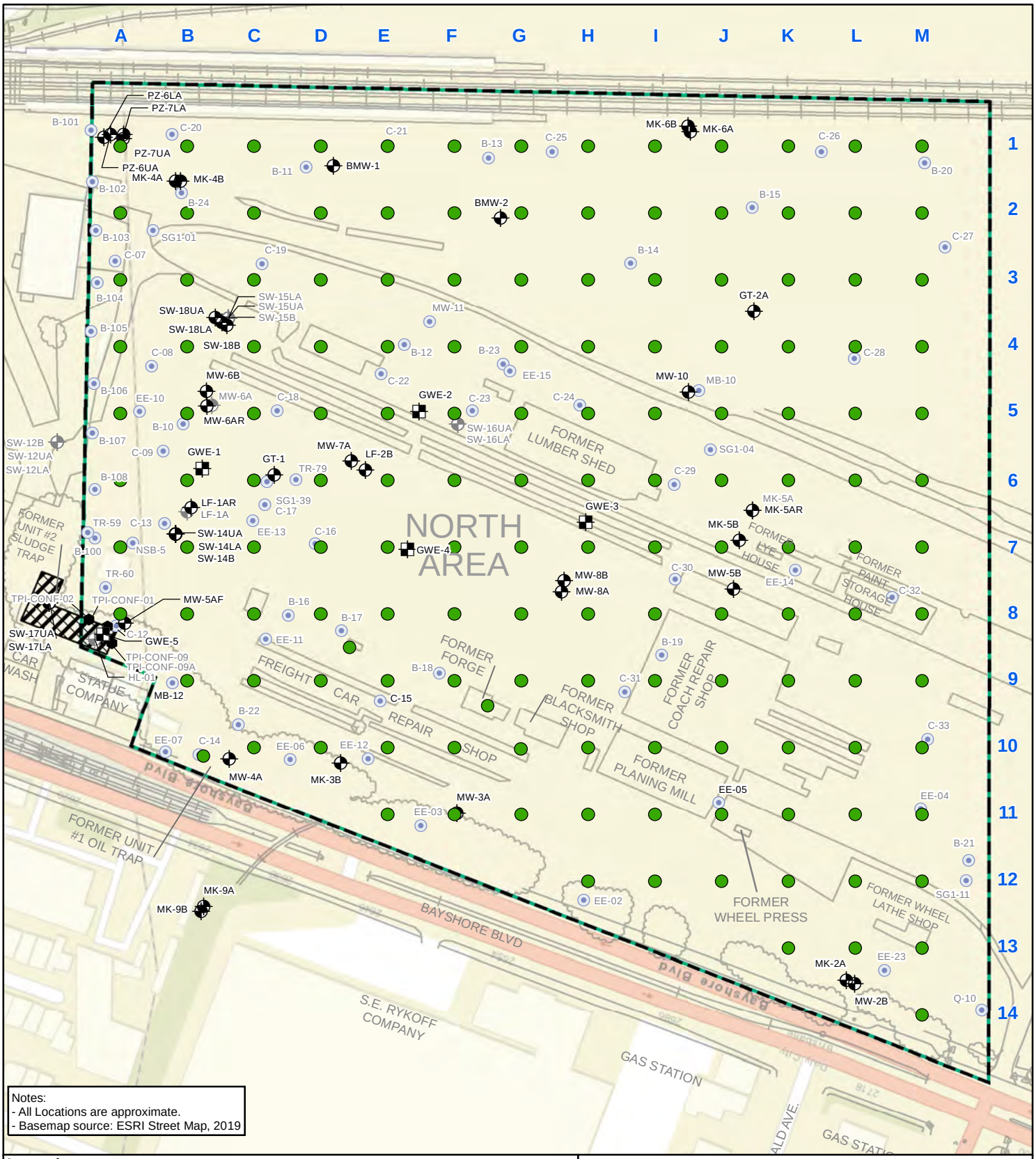
Figure 1

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure01_SiteLocation.mxd 6/11/2020 5:05:58 PM



Soil Sample Locations

UPC OU-SM
Brisbane, California

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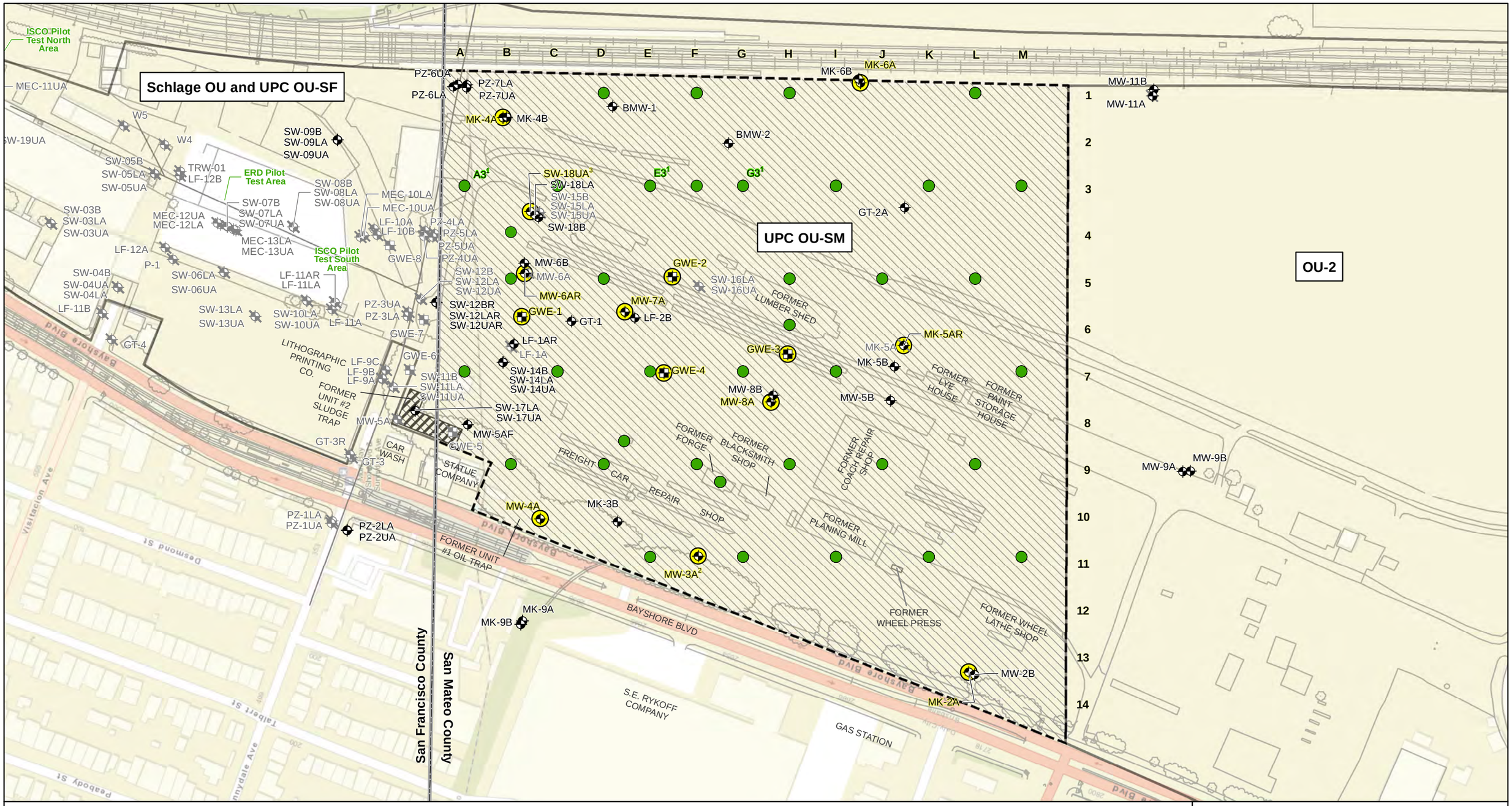
Figure 2

P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure02_SoilSampleLocs.mxd 6/12/2020 9:47:24 AM



Legend

- Grab Groundwater Sample Locations
- Groundwater Well Sample Location
- Groundwater Monitoring Well
- Decommissioned Groundwater Monitoring Well
- Groundwater Extraction Well
- Decommissioned Groundwater Extraction Well
- Sewer Line
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary
- DTSC Oversight Operable Unit
- County Boundary

Note:
[1] Borehole was dry or well had no to low recharge. A sample could not be collected.
[2] Obstruction was encountered, unable to sample.
[3] Could not be located.
All locations are approximate and were obtained from AMEC (2014).
Basemap source: ESRI Street Map, 2019

N

0 200 Feet

Groundwater Sample Locations

UPC OU-SM
Brisbane, California

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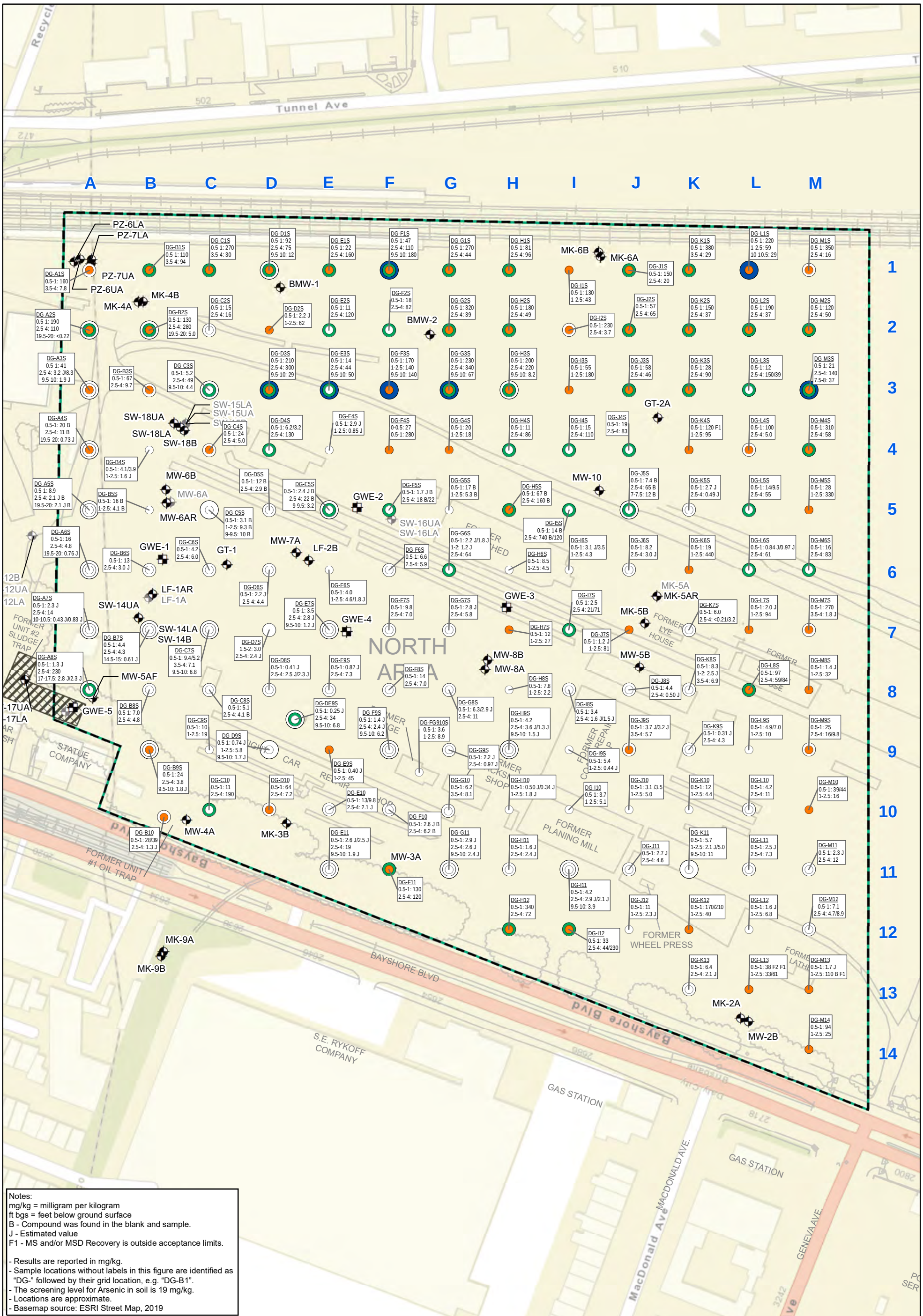
Figure 3

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure03_GWSampleLocs.mxd 6/11/2020 7:14:23 PM



Notes:
mg/kg = milligram per kilogram
ft bgs = feet below ground surface
B - Compound was found in the blank and sample.
J - Estimated value
F1 - MS and/or MSD Recovery is outside acceptance limits.

- Results are reported in mg/kg.
- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1".
- The screening level for Arsenic in soil is 19 mg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, exceeds screening level at deep depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-K11 (0.5-1: 5.7 / 1-2.5: 2.1 J/5.0 / 9.5-10: 11) - Arsenic Concentration (mg/kg)

N

0 150 Feet

Arsenic Concentrations in Soil

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Brisbane, California

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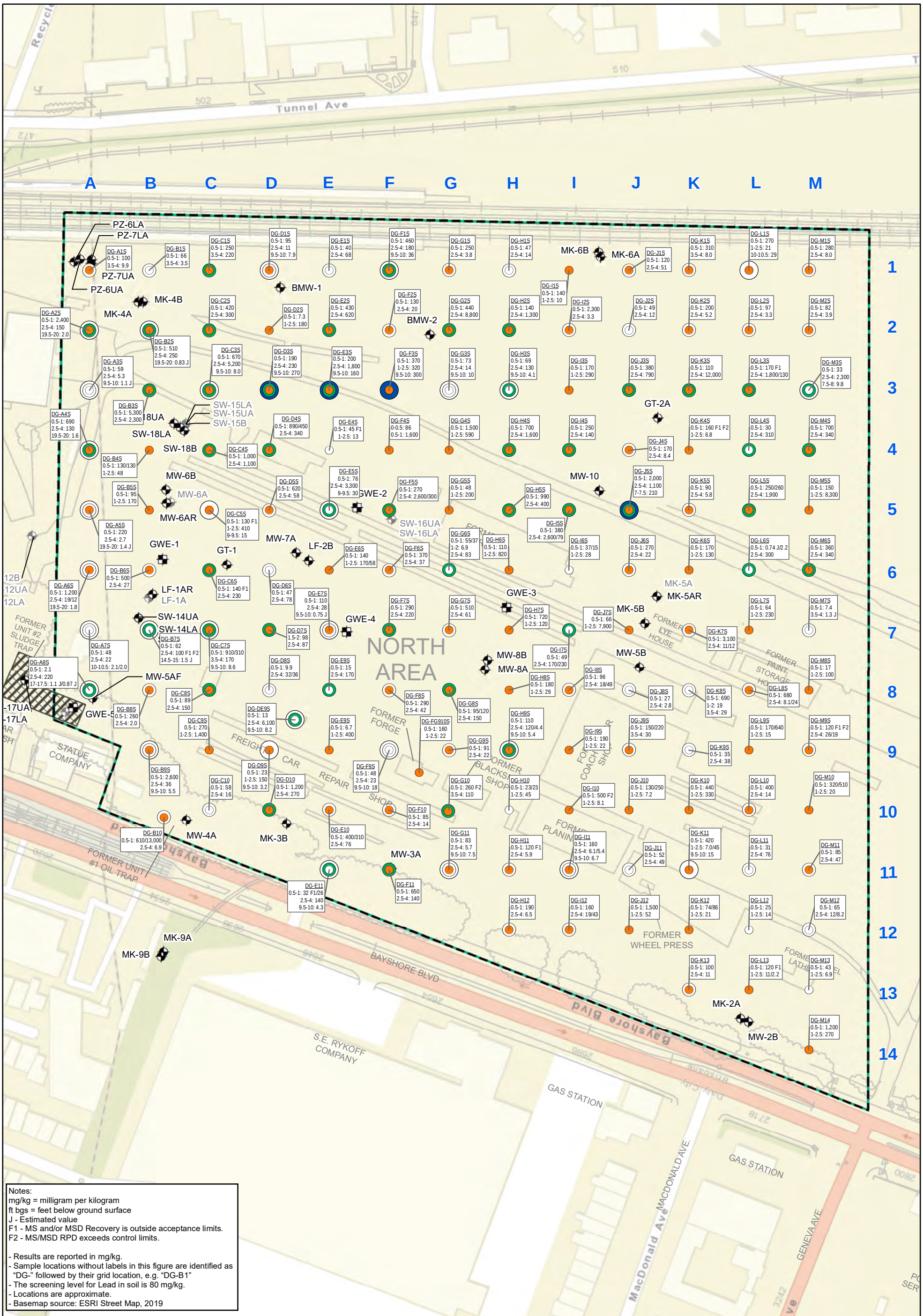
Figure 4

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure04_Soil_Arsenic.mxd 6/11/2020 7:03:32 PM



Notes:
mg/kg = milligram per kilogram
ft bgs = feet below ground surface
J - Estimated value
F1 - MS and/or MSD Recovery is outside acceptance limits.
F2 - MS/MSD RPD exceeds control limits.

- Results are reported in mg/kg.
- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1"
- The screening level for Lead in soil is 80 mg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, exceeds screening level at deep depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-K11 (0.5-1: 5.7 / 1-2.5: 2.1 J/5.0 / 9.5-10: 11) - Arsenic Concentration (mg/kg)

N

0 150 Feet

Lead Concentrations in Soil

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Brisbane, California

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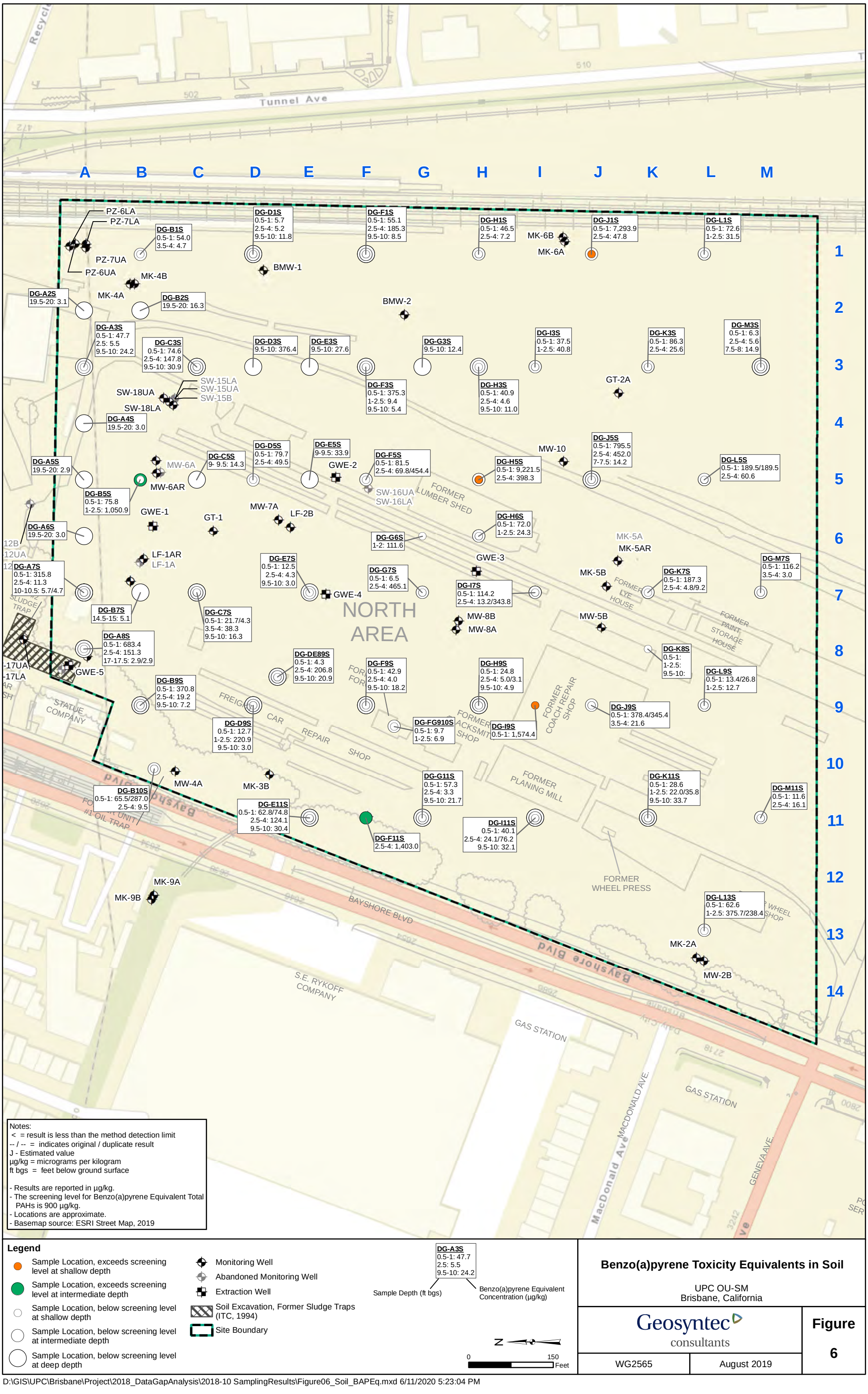
Figure 5

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure05_Soil_Lead.mxd 6/11/2020 5:22:58 PM



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
J - Estimated value
µg/kg = micrograms per kilogram
ft bgs = feet below ground surface

- Results are reported in µg/kg.
- The screening level for Benzo(a)pyrene Equivalent Total PAHs is 900 µg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-A3S
0.5-1: 47.7
2.5: 5.5
9.5-10: 24.2

Sample Depth (ft bgs)

Benzo(a)pyrene Equivalent Concentration (µg/kg)

N

0 150 Feet

Benzo(a)pyrene Toxicity Equivalents in Soil

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Brisbane, California

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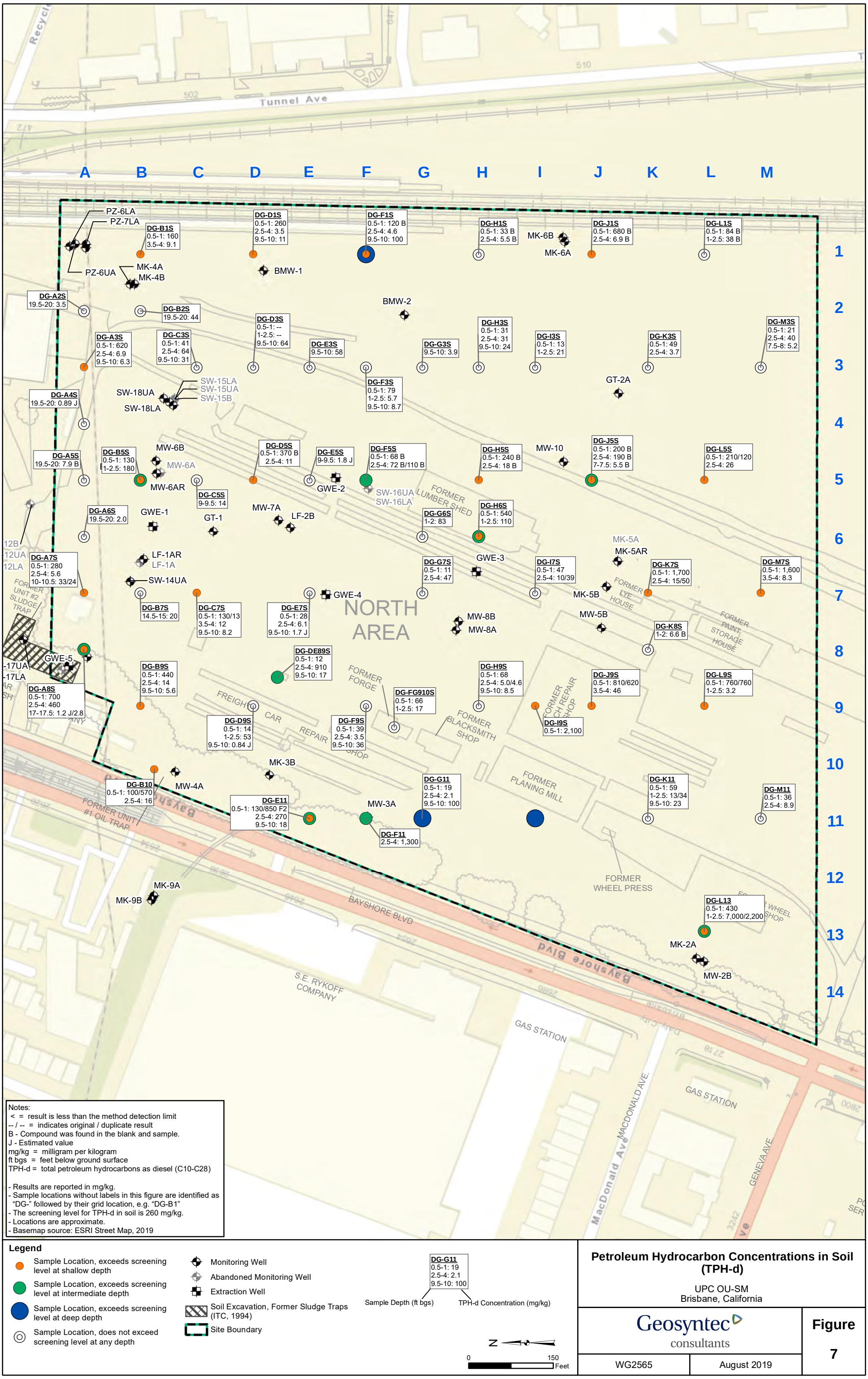
Figure 6

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure06_Soil_BAPEq.mxd 6/11/2020 5:23:04 PM



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
B - Compound was found in the blank and sample.
J - Estimated value
mg/kg = milligram per kilogram
ft bgs = feet below ground surface
TPH-d = total petroleum hydrocarbons as diesel (C10-C28)

- Results are reported in mg/kg.
- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1"
- The screening level for TPH-d in soil is 260 mg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, exceeds screening level at shallow depth
- Sample Location, exceeds screening level at intermediate depth
- Sample Location, exceeds screening level at deep depth
- Sample Location, does not exceed screening level at any depth
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-G11
0.5-1: 19
2.5-4: 2.1
9.5-10: 100

Sample Depth (ft bgs) — TPH-d Concentration (mg/kg)

N

0 150 Feet

Petroleum Hydrocarbon Concentrations in Soil (TPH-d)

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Brisbane, California

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Figure 7

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure07_Soil_TPHDiesel.mxd 6/11/2020 5:23:30 PM

A B C D E F G H I J K L M

1 2 3 4 5 6 7 8 9 10 11 12 13 14

PZ-6LA
PZ-7LA
PZ-7UA
PZ-6UA
MK-4B
MK-4A
BMW-1
DG-F1S
9.5-10: 0.96 J (TCE)
MK-6B
MK-6A
BMW-2
DG-C3S
0.5-1: 18 * (TCE)
DG-E3S
9.5-10: 1.9 J (cDCE)
0.52 J (TCE)
DG-G3S
9.5-10: 3.0 J (cDCE)
DG-M3S
7.5-8: 2.7 J (cDCE)
GT-2A
SW-15LA
SW-15UA
SW-15B
SW-18UA
SW-18LA
SW-18B
DG-C5S
9-9.5: 87 (cDCE)
120 (TCE)
DG-E5S
9-9.5: 5.7 (cDCE)
0.85 J (VC)
DG-F5S
2.5-4: <0.53/0.76 J (cDCE)
0.96 J/<0.43(TCE)
<0.56/0.88 J (VC)
MW-10
DG-J5S
7-7.5: 5.4 (cDCE)
DG-A5S
19.5-20: 120 * (cDCE)
38 * (TCE)
MW-6B
MW-6A
MW-6AR
DG-D5S
0.5-1: 0.57 J (TCE)
GWE-2
SW-16UA
SW-16LA
FORMER LUMBER SHED
DG-B5S
0.5-1: 1.1 J (TCE)
1-2.5: 2.3 J (cDCE)
9.1 (PCE)
GWE-1
GT-1
MW-7A
LF-2B
DG-A6S
19.5-20: 35 (cDCE)
0.53 J (TCE)
LF-1AR
LF-1A
DG-G7S
2.5-4: 2.8 J (cDCE)
1.8 J (PCE)
31 (TCE)
GWE-3
DG-I7S
2.5-4: 0.97 J/2.5 J (TCE)
MK-5A
MK-5AR
MK-5B
SW-14UA
SW-14LA
SW-14B
GWE-4
FORMER UNIT #2 SLUDGE TRAP
FORMER LYE HOUSE
NORTH AREA
DG-A7S
10-10.5: 18/12 (cDCE)
1.1 J/<0.54 (VC)
MW-8B
MW-8A
MW-5B
FORMER PAINT STORAGE HOUSE
DG-A8S
17-17.5: 2.1 J/1.4 J (cDCE)
10/6.7 (TCE)
MW-5AF
GWE-5
FORMER FORGE
DG-I9S
0.5-1: <610 (VC)
FORMER COACH REPAIR SHOP
STATUE COMPANY
FREIGHT CAR REPAIR SHOP
FORMER BLACKSMITH SHOP
FORMER PLANING MILL
MW-4A
MK-3B
MW-3A
FORMER UNIT #1 OIL TRAP
MK-9A
MK-9B
FORMER WHEEL PRESS
FORMER WHEEL LATHE SHOP
BAYSHORE BLVD
MK-2A
MW-2B
S.E. RYKOFF COMPANY
GAS STATION
GAS STATION
MACDONALD AVE.
GENEVA AVE.
Recycle
Tunnel Ave
502
510

Notes:
µg/kg = micrograms per kilogram
ft bgs = feet below ground surface
PCE = tetrachloroethene
TCE = trichloroethene
cDCE = cis-1,2-dichloroethene
VC = vinyl chloride
* = ISTD response orretention time outside acceptable limits or LCS or LCSD outside acceptable limits
J - Estimated value
F1 - MS and/or MSD Recovery is outside acceptance limits.
F2 - MS/MSD RPD exceeds control limits.

- Results are reported in µg/kg.
- Sample locations without labels in this figure are identified as "DG-" followed by their grid location, e.g. "DG-B1"
- The screening level for PCE is 590 µg/kg.
- The screening level for TCE is 940 µg/kg.
- The screening level for cDCE is 18,000 µg/kg.
- The screening level for VC is 8.2 µg/kg.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample Location, detection limit exceeds screening level at shallow depth
- Sample Location, below screening level at shallow depth
- Sample Location, below screening level at intermediate depth
- Sample Location, below screening level at deep depth
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

Sample Depth (ft bgs) - DG-D5S 0.5-1: 0.57 J (TCE) - Detected Concentration (µg/kg)

N

0 150 Feet

Chlorinated VOC Concentrations in Soil

UPC OU-SM
Brisbane, California

Geosyntec consultants

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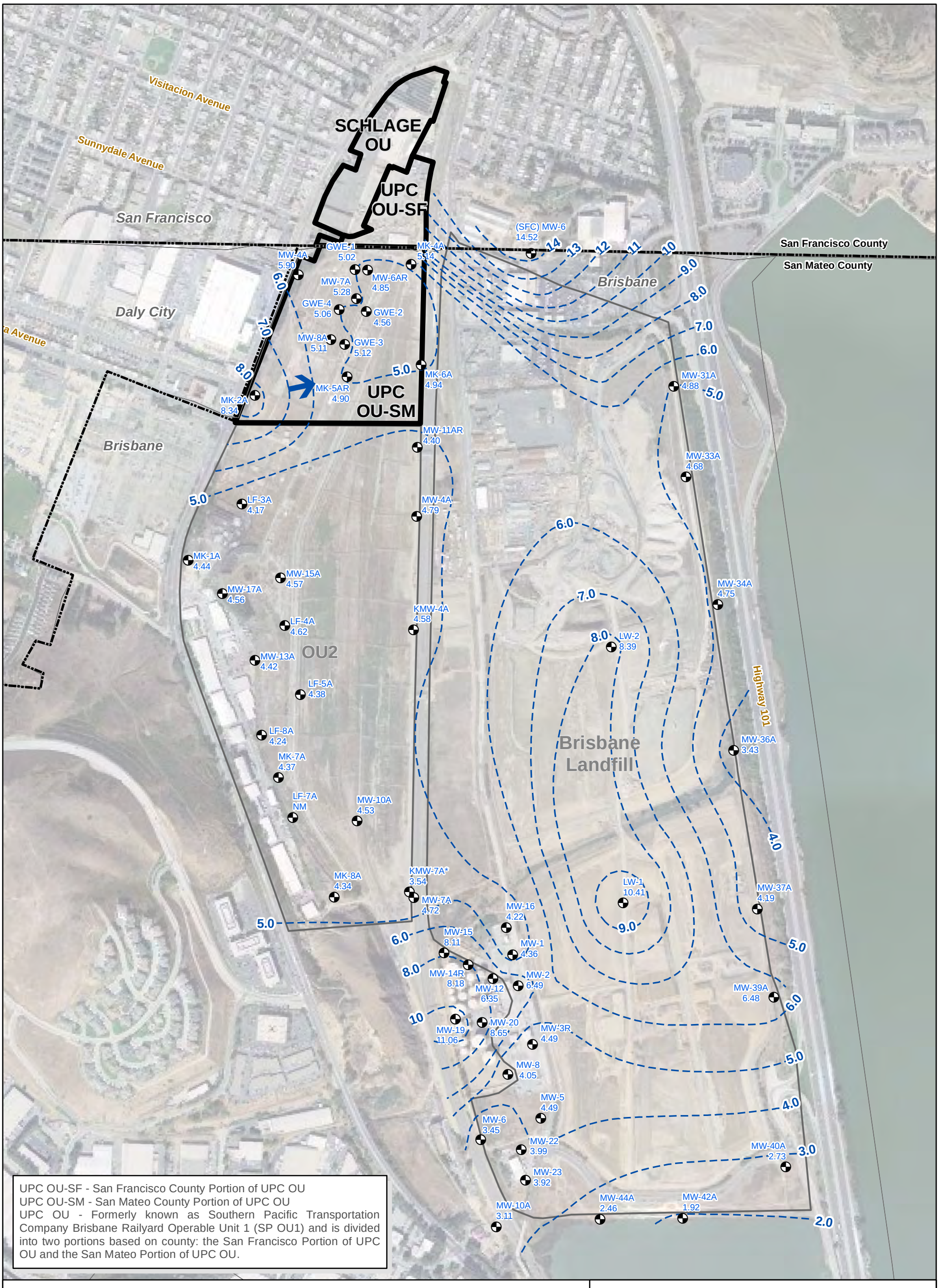
Figure 8

P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure08_Soil_ClorVOCs.mxd 6/12/2020 9:53:11 AM



LEGEND

- Monitoring Well Location
- Groundwater Elevation Contour - August 2018 (ft aMSL)
- DTSC Oversight Operable Unit
- CRWQCB Oversight Operable Unit
- City Boundary
- County Boundary

Notes:
* = not used in contouring
NM = not monitored
ft aMSL = feet above mean sea level
CRWQCB = California Regional Water Quality Control Board
Pumping at groundwater extraction wells ceased in 2008 [AMEC, 2014].
Aerial Photo Source: Terraserver, 27 February 2008.
Boundaries and locations are approximate.

N

700 350 0 700 Feet

Fill Groundwater Potentiometric Map (August 2018)

Brisbane Baylands Development
Brisbane, California

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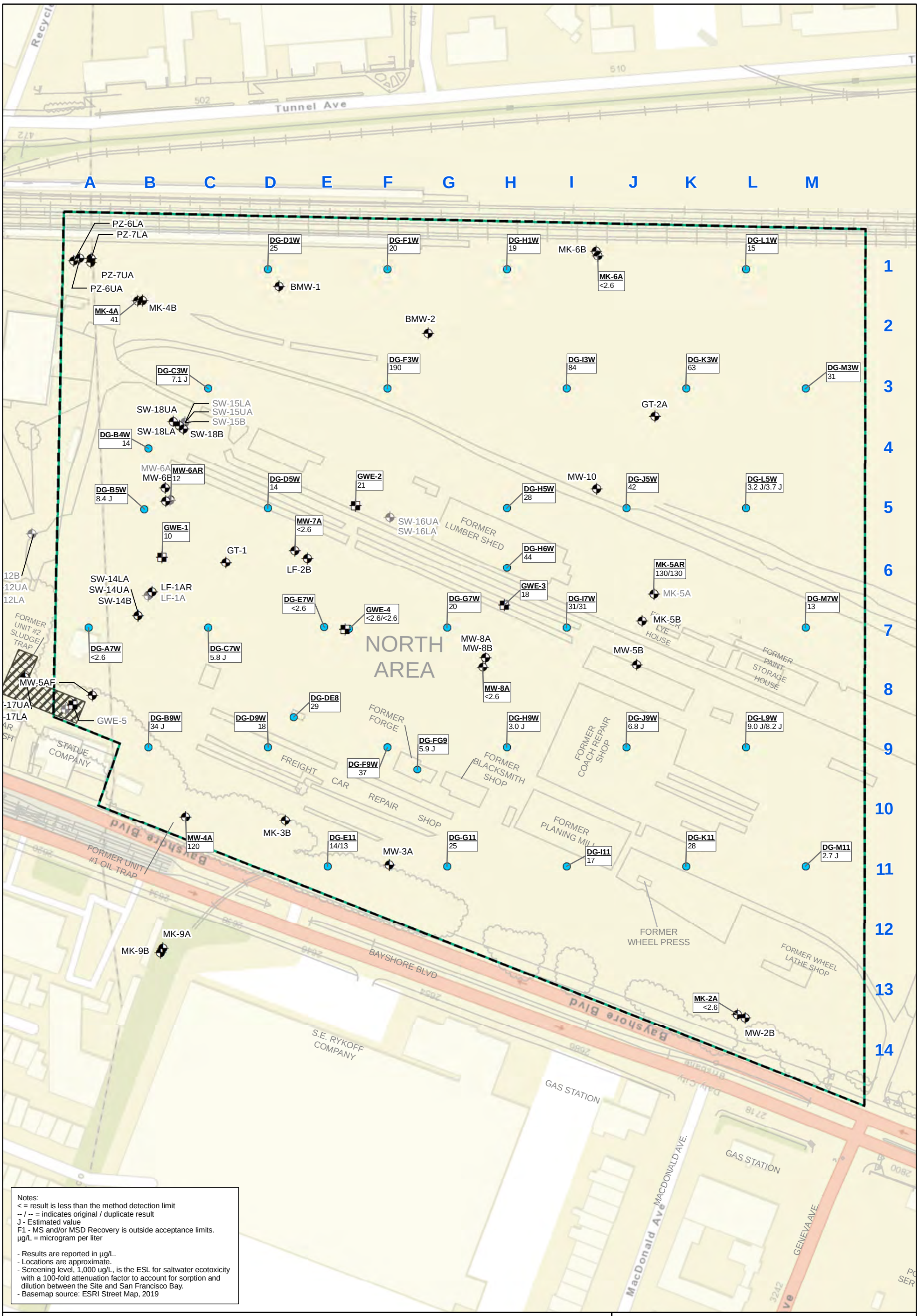
Figure 9

P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure09_GWE_Contours.mxd



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
J - Estimated value
F1 - MS and/or MSD Recovery is outside acceptance limits.
µg/L = microgram per liter

- Results are reported in µg/L.
- Locations are approximate.
- Screening level, 1,000 ug/L, is the ESL for saltwater ecotoxicity with a 100-fold attenuation factor to account for sorption and dilution between the Site and San Francisco Bay.
- Basemap source: ESRI Street Map, 2019

Legend

- Groundwater Sample Location Below Screening Level
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-L9W
9.0 J/8.2 J - Concentration (µg/L)

N

0 150 Feet

Dissolved Arsenic Concentrations in Fill Groundwater

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Brisbane, California

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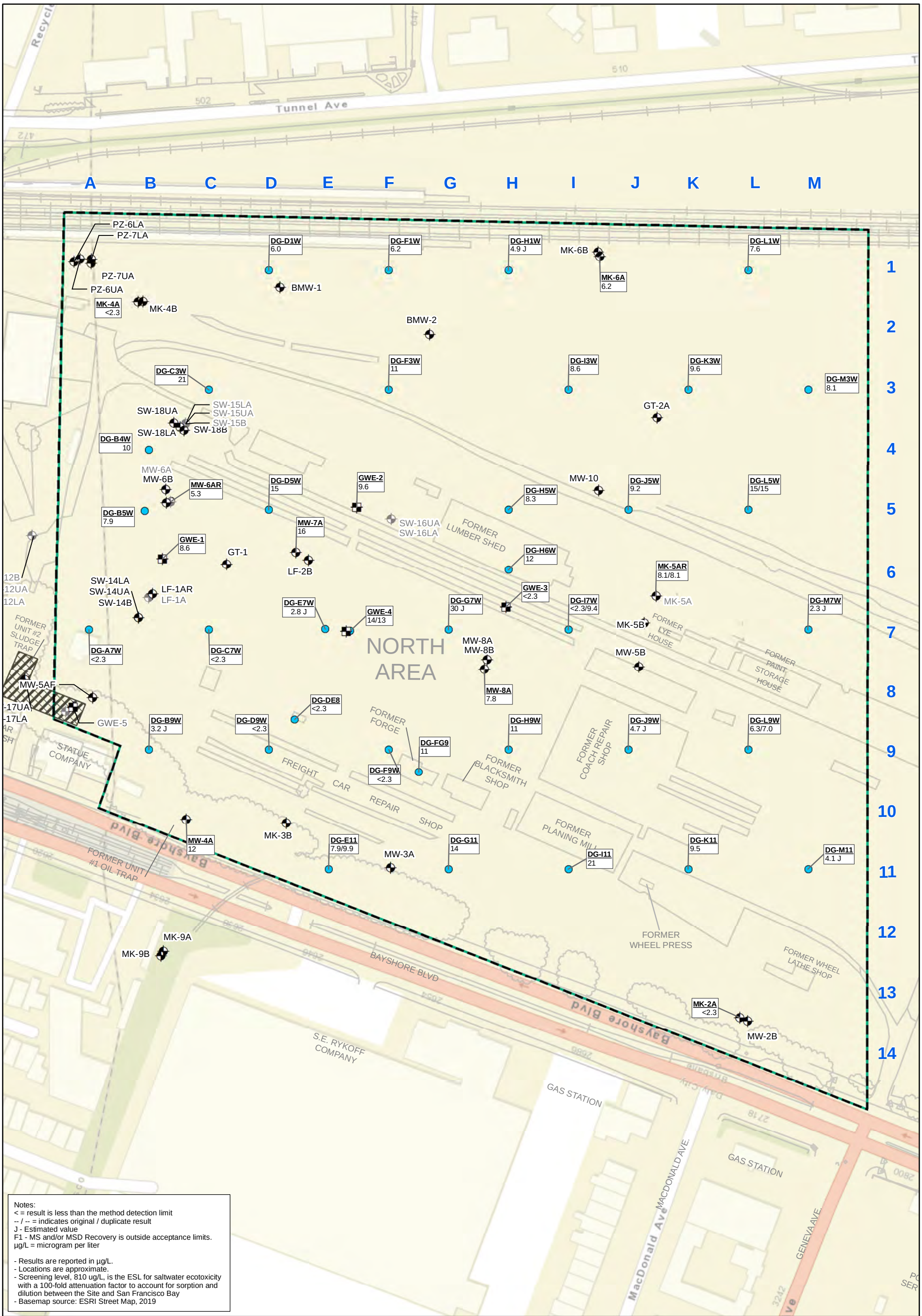
Figure 10

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure10_GW_Arsenic.mxd 6/11/2020 5:33:47 PM



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
J - Estimated value
F1 - MS and/or MSD Recovery is outside acceptance limits.
µg/L = microgram per liter

- Results are reported in µg/L.
- Locations are approximate.
- Screening level, 810 ug/L, is the ESL for saltwater ecotoxicity with a 100-fold attenuation factor to account for sorption and dilution between the Site and San Francisco Bay
- Basemap source: ESRI Street Map, 2019

Legend

- Groundwater Sample Location Below Screening Level
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-D9W
<2.3 - Concentration (µg/L)

N

0 150 Feet

Dissolved Lead Concentrations in Fill Groundwater

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Brisbane, California

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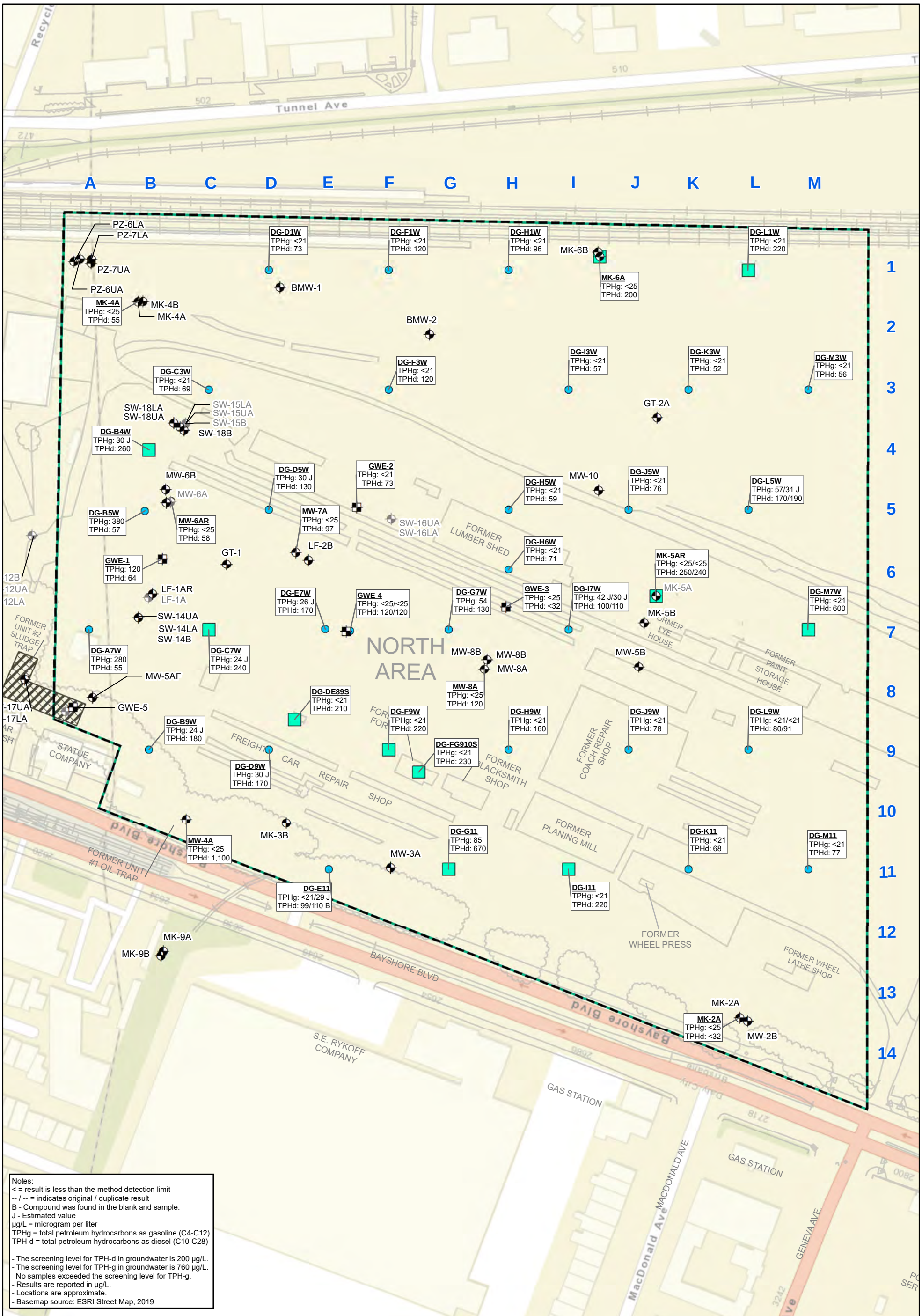
Figure 11

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure11_GW_Lead.mxd 6/11/2020 5:37:15 PM



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
B - Compound was found in the blank and sample.
J - Estimated value
µg/L = microgram per liter
TPHg = total petroleum hydrocarbons as gasoline (C4-C12)
TPH-d = total petroleum hydrocarbons as diesel (C10-C28)

- The screening level for TPH-d in groundwater is 200 µg/L.
- The screening level for TPH-g in groundwater is 760 µg/L. No samples exceeded the screening level for TPH-g.
- Results are reported in µg/L.
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample location exceeds TPHd screening level
- Groundwater Sample Location Below Screening Level
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-I11
TPHg: <21
TPHd: 220
Constituent
Concentration (µg/L)

N
0 150 Feet

Petroleum Hydrocarbon Concentrations in Fill Groundwater

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Brisbane, California

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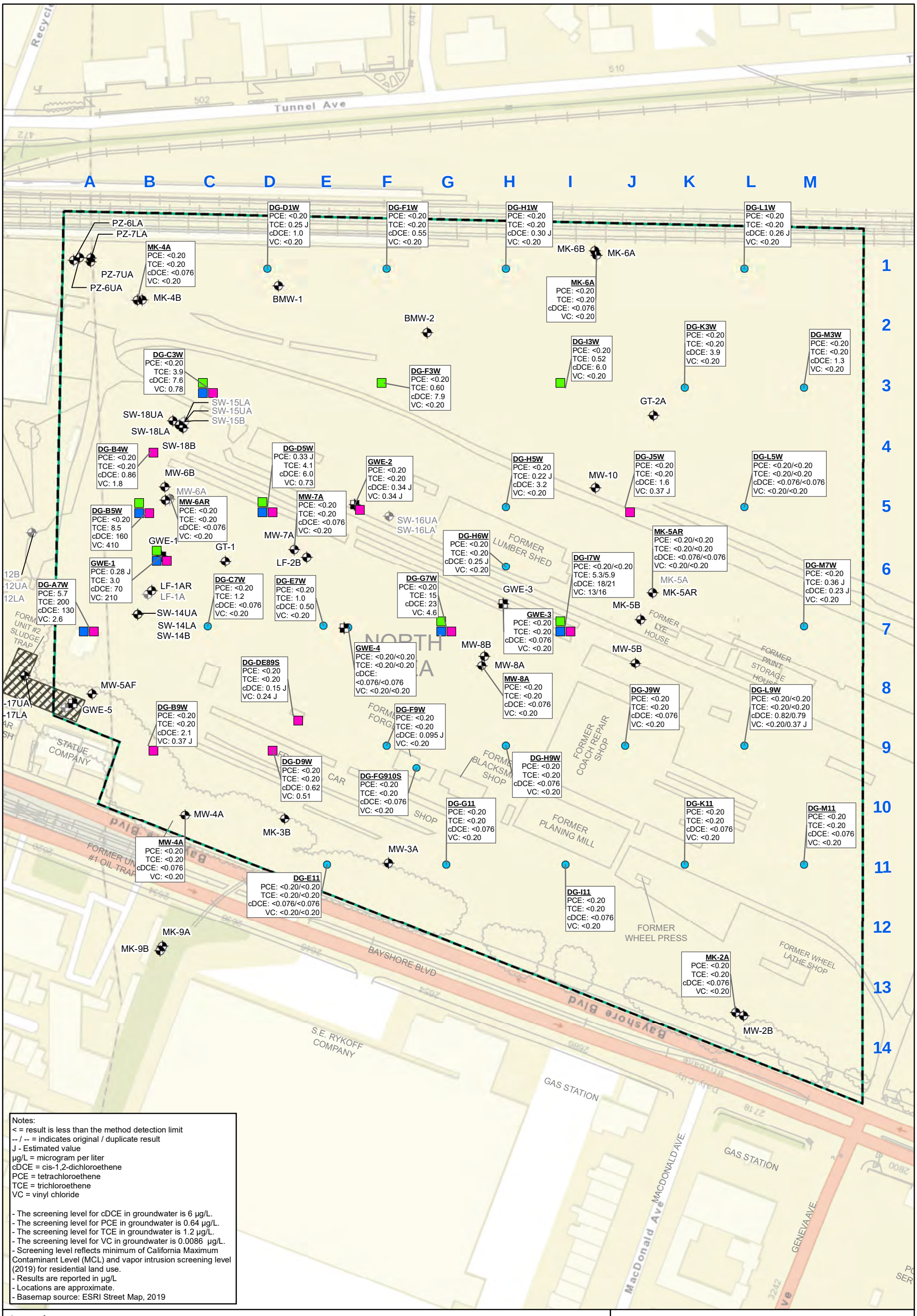
Figure 12

D:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure12_GW_TPH.mxd 6/11/2020 5:44:25 PM



Notes:
< = result is less than the method detection limit
-- / -- = indicates original / duplicate result
J - Estimated value
µg/L = microgram per liter
cDCE = cis-1,2-dichloroethene
PCE = tetrachloroethene
TCE = trichloroethene
VC = vinyl chloride

- The screening level for cDCE in groundwater is 6 µg/L.
- The screening level for PCE in groundwater is 0.64 µg/L.
- The screening level for TCE in groundwater is 1.2 µg/L.
- The screening level for VC in groundwater is 0.0086 µg/L.
- Screening level reflects minimum of California Maximum Contaminant Level (MCL) and vapor intrusion screening level (2019) for residential land use.
- Results are reported in µg/L
- Locations are approximate.
- Basemap source: ESRI Street Map, 2019

Legend

- Sample location exceeds PCE screening level
- Sample location exceeds cDCE screening level
- Sample location exceeds TCE screening level
- Sample location exceeds VC screening level
- Groundwater Sample Location
- Monitoring Well
- Abandoned Monitoring Well
- Extraction Well
- Soil Excavation, Former Sludge Traps (ITC, 1994)
- Site Boundary

DG-I11
PCE: <0.20
TCE: <0.20
cDCE: <0.076
VC: <0.20

Constituent — Concentration (µg/L)

N

0 150 Feet

Chlorinated Solvent Concentrations in Fill Groundwater

UPC OU-SM
Brisbane, California

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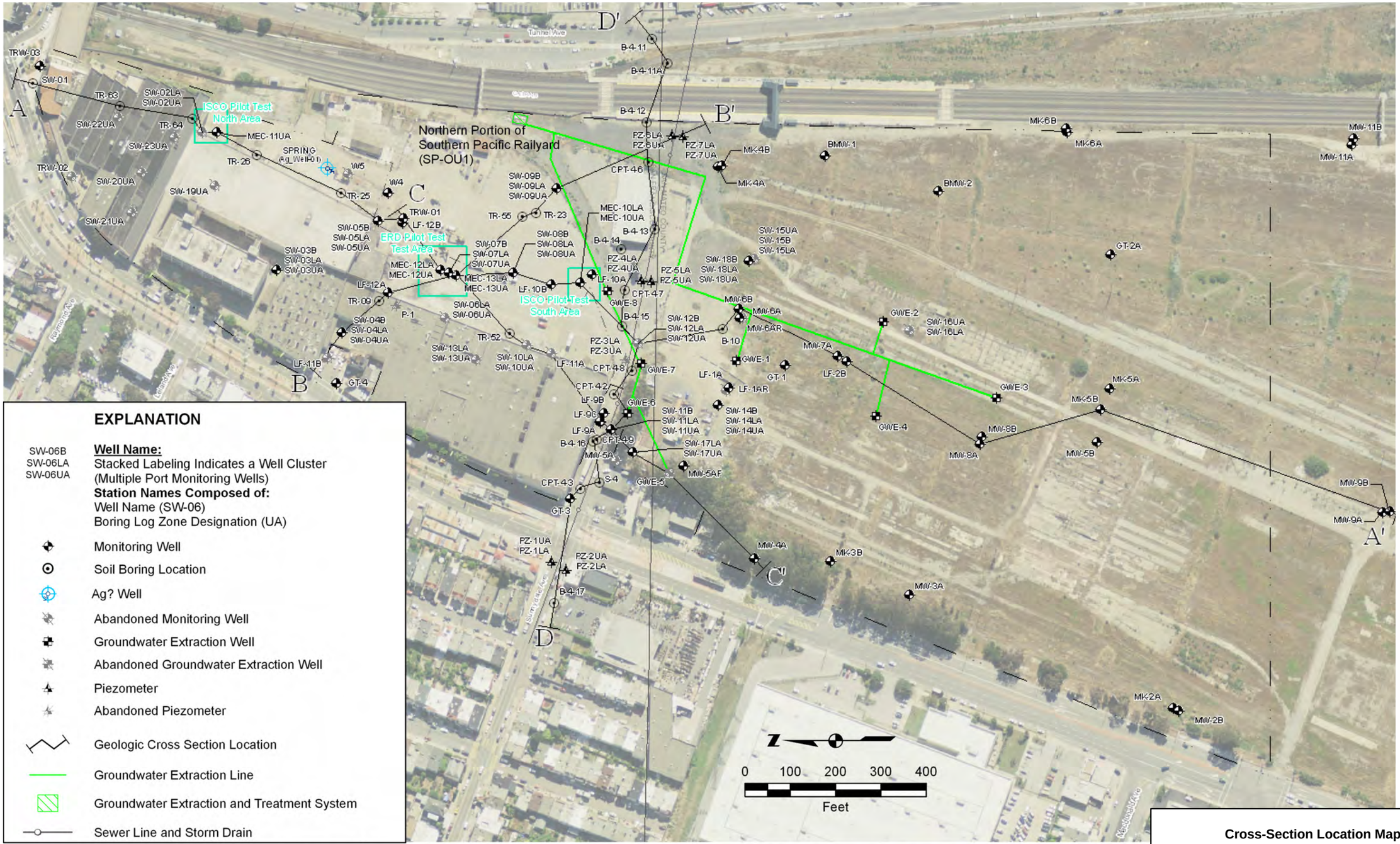
Figure 13

P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\Figure13_GW_ChlorinatedSolvents.mxd 6/12/2020 10:31:44 AM

APPENDIX A

Hydrogeologic Cross-Section [AMEC, 2014]



EXPLANATION

SW-06B
SW-06LA
SW-06UA

Well Name:
Stacked Labeling Indicates a Well Cluster
(Multiple Port Monitoring Wells)
Station Names Composed of:
Well Name (SW-06)
Boring Log Zone Designation (UA)

- Monitoring Well
- Soil Boring Location
- Ag? Well
- Abandoned Monitoring Well
- Groundwater Extraction Well
- Abandoned Groundwater Extraction Well
- Piezometer
- Abandoned Piezometer
- Geologic Cross Section Location
- Groundwater Extraction Line
- Groundwater Extraction and Treatment System
- Sewer Line and Storm Drain

Source: Mactec, 2010. Groundwater Monitoring Report, First Quarter 2010. Schlage OU, San Francisco and Brisbane, California. May 21.

Cross-Section Location Map

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Brisbane, California

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Figure A-1

P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\FigureA-1_MactecXS.ai

A North

A' South

Elevation (feet MSL)

80
60
40
20
0
-20
-40
-60

SW-01 TD=65
TR-63 TD=28
TR-64 TD=12
SW-02 TD=16
MEC-11UA TD=17
TR-26 TD=22
Spring (40 ft. E) TD=34
TR-25
SW-05 TD=52.5
TRW-01* TD=18
LF-12B*
MEC-12 TD=42
SW-07 TD=56
MEC-13
SW-08 TD=65
LF-10B TD=45
MEC-10 TD=45 1/2
B-4-15 STORM SEWER TD=70
SW-12 TD=69
County Line
B-10 TD=14 1/2
MW-6B* TD=35
MW-7A TD=13
LF-2B* TD=44
MW-8* TD=39
MK-5B* TD=30
MW-9B* TD=39
TD=70
TD=91 1/2

Fill

Young Bay Margin Deposit

Stacked Channel Deposits

Colma Formation

Old Bay Margin Deposit

Merced Formation

Bedrock

Clay

?

Legend

Geologic Units (as described on driller's logs):

- Coarse Material (Gravel & Sand)
- Fine Material (Silt, Clay & Peat)
- Fill

- Well Location and Depth
- Screen Interval
- Gravel Pack
- Total Depth of Well

TD=70

Notes:

* = Well information for screened interval only

Source: Mactec, 2010. Groundwater Monitoring Report, First Quarter 2010. Schlage OU, San Francisco and Brisbane, California. May 21.

SCALE IN FEET
20
0
0
200
SCALE IN FEET

Cross-Section A-A'

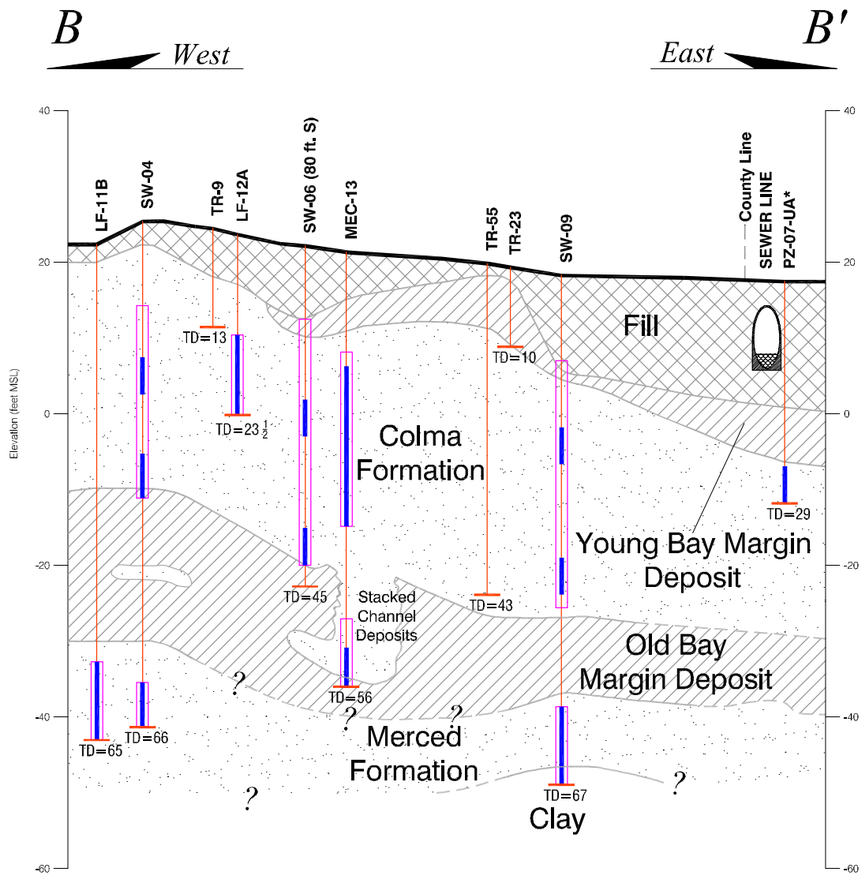
UPC OU-SM
Brisbane, California

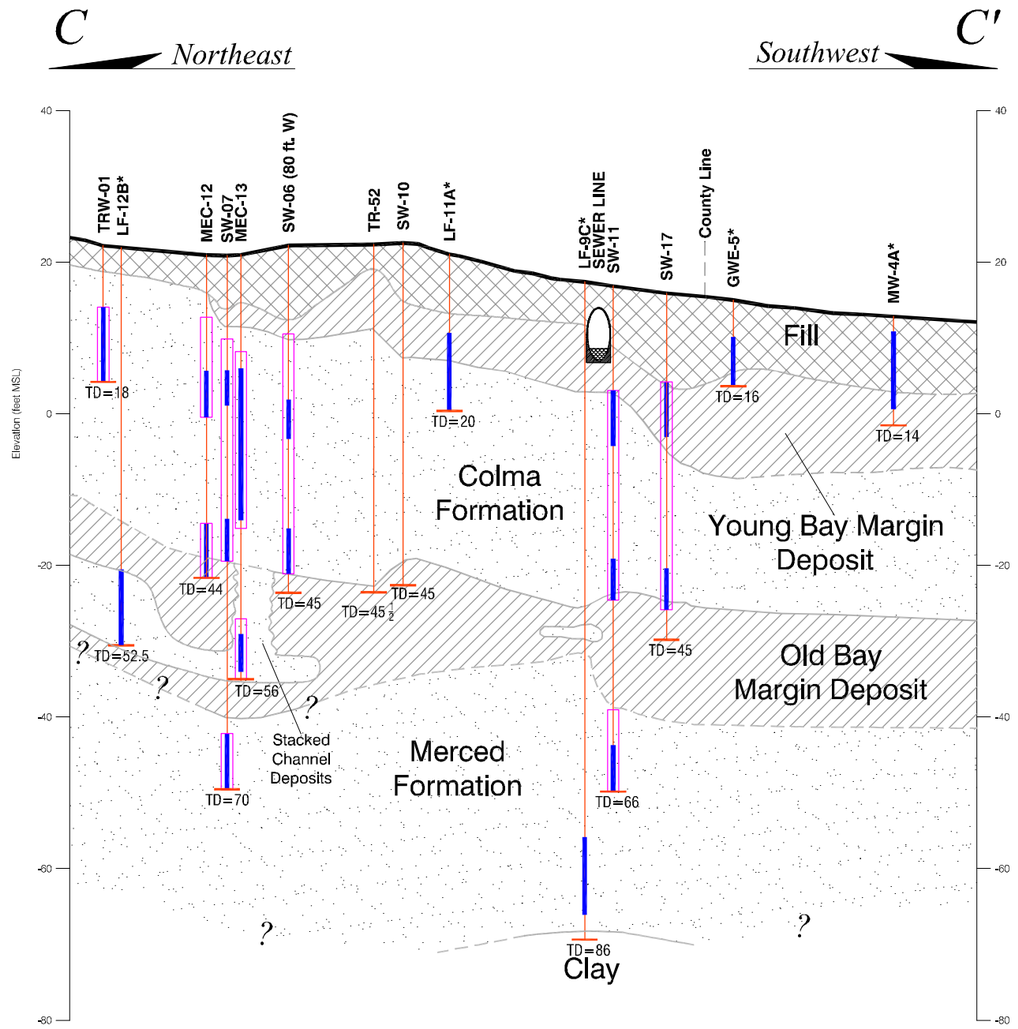
Geosyntec consultants

WG2565 | August 2019

Figure A-2

P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\FigureA-2_MactecXS.ai





Legend

Geologic Units (as described on driller's logs):

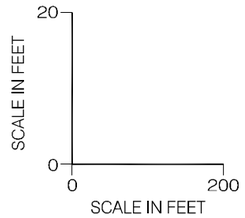
- Coarse Material (Gravel & Sand)
- Fine Material (Silt, Clay & Peat)
- Fill

- Well Location and Depth
- Screen Interval
- Gravel Pack
- Total Depth of Well

TD=70

Notes:

* = Well information for screened interval only



Source: Mactec, 2010. Groundwater Monitoring Report, First Quarter 2010. Schlage OU, San Francisco and Brisbane, California. May 21.

Cross-Sections B-B' and C-C'

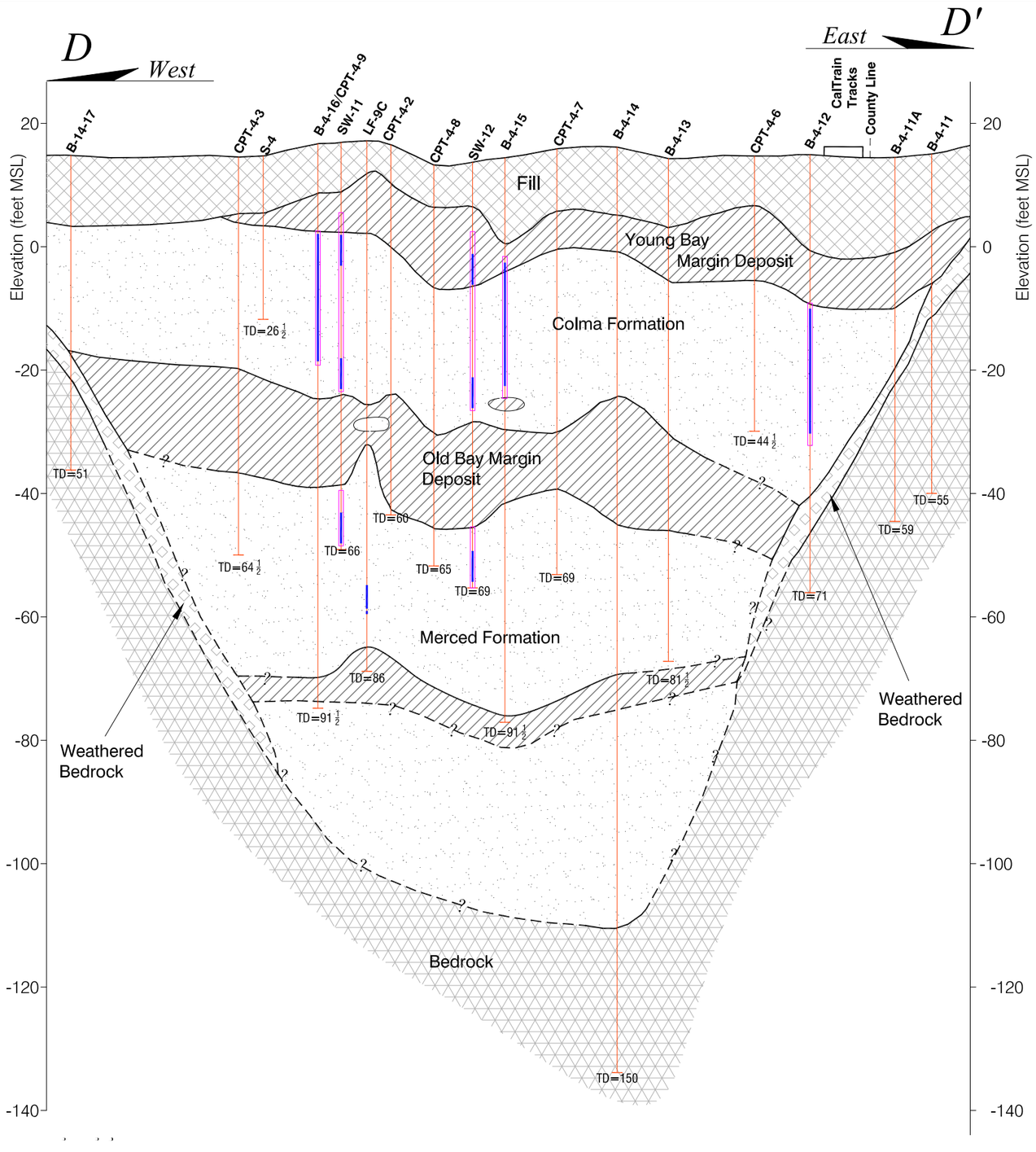
UPC OU-SM
Brisbane, California

Geosyntec consultants

WG2565 | August 2019

Figure A-3

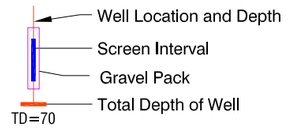
P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\FigureA-3_MactecXS.ai

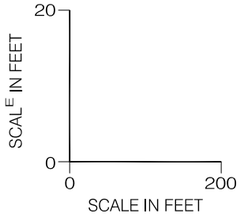


Legend

Geologic Units (as described on driller's logs):

- Coarse Material (Gravel & Sand)
- Fine Material (Silt, Clay & Peat)
- Fill
- Bedrock
- Weathered Bedrock





Source: Mactec, 2010. Groundwater Monitoring Report, First Quarter 2010. Schlage OU, San Francisco and Brisbane, California. May 21.

Cross-Section D-D'

UPC OU-SM
Brisbane, California

Geosyntec consultants

WG2565 | August 2019

Figure A-4

P:\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\2018-10 SamplingResults\FigureA-4_MactecXS.ai

APPENDIX B

Boring Permits

ORDINANCE: 04023

ENVIRONMENTAL HEALTH
SAN MATEO COUNTY

Protecting Our Health and Environment

PERMIT 18-1195

P/E: 2010 **MONITORING WELLS - INSTALLATION/DESTRUCTION**

FACILITY:
0 BAYSHORE BLVD/SUNNYDALE AVE (5), BRISBANE

OWNER:
UNIVERSAL PARAGON CORPORATION
150 EXECUTIVE PARK BLVD # 4000
SAN FRANCISCO

WP0011978 FA0064737
005340100
AMOUNT PAID: 0.00

CONTRACTOR:
PENECORE DRILLING

TERMS & CONDITIONS:

CONSTRUCT SOIL BORINGS (5)
CONSULTANT: GEOSYNTEC CONSULTANTS
PROJECT MGR: ANTHONY SMITH

KIAN ATKINSON
ENVIRONMENTAL HEALTH SPECIALIST

DATE ISSUED: 8/20/2018

EXPIRATION DATE: 12/20/2018

THIS PERMIT IS NONTRANSFERABLE AND MUST BE POSTED ON-SITE IN A CONSPICUOUS PLACE

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH

AUG 16 2018

RECEIVED

COUNTY OF SAN MATEO
HEALTH SYSTEM

Environmental Health Services
Groundwater Protection Program
2000 Alameda de las Pulgas, Suite #100
San Mateo, CA 94403
Phone:(650) 372-6200 Fax: (650) 627-8244
smchealth.org/gpp

SUBSURFACE DRILLING PERMIT APPLICATION

Allow three (3) full working days for processing a complete permit application which includes payment (one permit per parcel). Drilling **start date & time must be scheduled with County staff at (650) 464-0047 or drilling@smcgov.org at least 2 full working days (i.e. 48 hours) in advance.** Visit smchealth.org/ehfees for Groundwater Protection Program Fees

PURPOSE OF APPLICATION ☐ Groundwater Monitoring/Vapor Well Installation ☒ Construct Soil Borings (variance request if to be left open >24 hrs) ☐ Groundwater Monitoring/Vapor Well Destruction Extension of Permit #

No. of Wells ____ No. of Borings 5 Well/Boring Names L-12, L-13, M-12, M-13, M-14

PURPOSE OF DRILLING ☒ Environmental ☐ Geotechnical **LEAD AGENCY** ☐ County GPP (permit approval is not to be considered work plan approval) ☒ RWQCB/DTSC/USEPA (Provide approval letter) ☐ None (i.e. voluntary)

SITE / DRILLING INFORMATION

Agency Case # HAS CO 07/08 185 Assessor's Parcel # (required) 005-340-100 BRISBANE (one per permit)

Drilling Location Address: ~~2500~~ Bayshore Blvd. / SUNNYDALE AVE (S) City: ~~San Francisco~~ Zip: 94134

To Be Constructed In: ☐ Public Property ☒ Private Property ☐ Refuse

Maximum Proposed Depth (wells/borings) 10 (feet) Drilling Method: Direct Push

Boring Diameter: 2 Casing Diameter: N/A Filter Pack Interval: N/A Screen Interval: N/A

Destruction Method: ☐ Pressure Grouting (provide well construction logs and grout calcs)

(6 gallons water max/94 lb cement, up to 5% bentonite) ☐ Overdrilling (guide rods for total depth prior to starting required)

WELL/BORING OWNER (Well/boring owner name or contact person should match signature)

Name: Universal Paragon Corporation Contact Person: Howard Pearce

Address: 150 Executive Park Blvd., Suite 4000 City, State, Zip: San Francisco, CA 94134

Telephone: 415.468.6676x114 Email: hpearce@upcsf.com

It is my responsibility to notify the County of any known changes in the purpose of this well/boring from that which is indicated on this application, to submit indication of annual usage of wells to the County, and to maintain the well in good condition. *(Letter signed by well/boring owner/contact person, containing above language and attesting to knowledge of all permit requirements and conditions, may be substituted for signature.)*

Well/Boring Owner's/Contact Person's Signature: [signature] Date: 8-13-18

PROPERTY OWNER (Name as appears on assessor's roles should match signature)

Name: Universal Paragon Corporation Contact Person: Howard Pearce

Address: 150 Executive Park Blvd., Suite 4000 City, State, Zip: San Francisco, CA 94134

Telephone: 415.468.6676x114 Email: hpearce@upcsf.com

I understand that a well/boring is being installed on my property. I agree to notify the County and Well Owner of any known damage or future access issues to the well *(Letter signed by property owner, containing above language, or encroachment permit may be substituted for signature)*

Property Owner's Signature: [signature] Date: 8-13-18

DRILLING COMPANY

Drilling Company: Penecore Drilling Contact Person: Xavier Green

Address: 220 N. East Street City, State, Zip: Woodland, CA 95776

Telephone: 530-661-3600 Email: xavier@penecore.com C57 Drillers License # 906899

I certify that the well/boring will be constructed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards, and that the license listed above is considered current and active by the Contractors State License Board.

Driller's Signature: [signature] Date: 8/15/18

CONSULTANT COMPANY

Consultant Company: Geosyntec Consultants Project Manager: Anthony Smith

Address: 1111 Broadway, 6th Floor City, State, Zip: Oakland, CA 94607

Telephone: 510-285-2770 Email: tsmith@geosyntec.com

Field Contact & Cell # (if known): Miranda Kahrilas, 847.530.7602

I certify that this application is correct to the best of my knowledge and the well/boring will be constructed/destroyed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards. I understand that I am responsible for General Conditions E, F, K, and L of this permit and if I indicated the purpose of drilling is geotechnical, then no one will use the boring to collect any samples for environmental analyses. If there is a change in Responsible Professional, I will notify San Mateo County GPP staff.

Responsible Professional's Name (Please print legibly): Anthony Smith

Responsible Professional's Signature: [signature] Date: 8/15/18

California Professional Geologist (PG) No. ____ or Civil Engineer (PE) No. 8473

REV 5/23/18

FAC4737

 2018 SUBSURFACE DRILLING PERMIT APPLICATION

REQUIREMENTS:
An accurate and correct map **must** be submitted with the application and include the following: north arrow, existing and historic site features, existing and proposed well/boring locations with ID's to scale, property lines and any other pertinent information. A work plan describing the drilling and construction/destruction methodology may be requested by County staff. A complete application with appropriate fees must be submitted 3 working days in advance of drilling and notification of start date and time must be provided at least 2 working days prior to drilling. The permit is subject to both General and Special Conditions stated below. A copy of the approved Subsurface Drilling Permit **must** be available on site while work related to the permit is being performed. **Drilling may begin at the notified date and time whether County staff is present or not.**

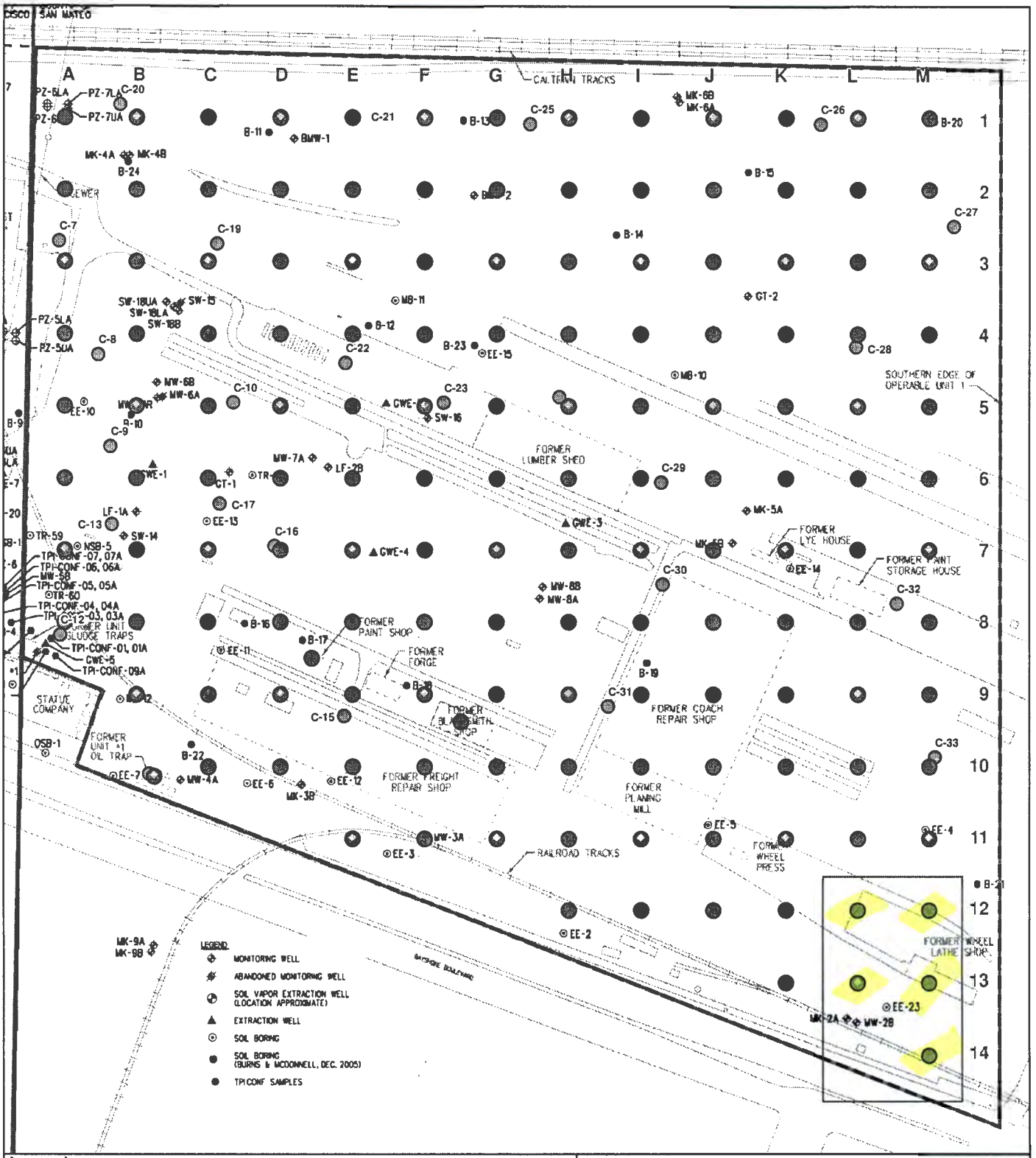
GENERAL CONDITIONS:

A. Field notification must be provided to GPP drilling inspection staff at least 2 full working days prior to the start of drilling. GPP Caseworker needs a separate notification if it is a contaminated site.
B. Well and boring construction and destruction under this permit are subject to the Standards for the Construction of Wells in San Mateo County, County Groundwater Protection Program (GPP) Guidelines, Policies & Procedures, the State Water Well Standards, and any instructions by a Health Department representative.
C. Well/Boring Owner, Driller, and Responsible Professional assume responsibility for all activities and uses under the permit, including compliance with Workmen's Compensation Laws, and indemnify, defend and save the County of San Mateo, its officers, agents and employees, free and harmless from any and all expense, cost, or liability in connection with or resulting from work or stopped-work associated with the permit, including, but not limited to, property damage, personal injury, wrongful death, and loss of income.
D. All borings **must** be properly destroyed (grouted/sealed) within 24 hours of drilling, unless special conditions are approved beforehand in writing as part of this permit, and must be continuously protected and stabilized.
E. Analytical results of all soil, vapor, and groundwater samples collected during the execution of drilling under this permit **must** be submitted to County GPP staff by the Responsible Professional within 60 days of sample collection. If contamination is discovered during drilling, verbal notification to County GPP by the Responsible Professional is **required** within 72 hours of discovery. Proper storage, labeling & disposal of investigation-derived residual wastes are the responsibility of the consultant unless stated otherwise contractually.
F. A copy of the State DWR Form 188, boring logs, well construction details, and finalized as-built locations for all borings/ wells (except geotechnical borings) signed by a Responsible Professional, **must** be submitted to County GPP by the Responsible Professional within 60 days of drilling/construction/destruction.
G. Permit is valid only for the purpose specified herein. No change in purpose or required procedures, as described on this permit application, in the associated workplan, or in the special conditions below, will be allowed except upon written permission from the County. Construction aspects can be changed based on conditions encountered in the field.
H. **Permit is valid for one mobilization** associated with originally permitted boring/well locations only, including contingency locations, and is automatically canceled if not exercised, or if an extension is not applied for and granted within 120 days of the original permit issuance date. Failure to notify staff of cancellation or delay in start time will result in the Consultant being billed an Inspection Cancellation fee of $342 as of August 1, 2017 if GPP staff attempted to perform an inspection.
I. Wells installed under this permit may not be used for domestic, municipal, agricultural, or irrigation water supply.
J. All work performed **must** conform to Business and Profession Codes and State Water Well Standards.
K. Top-of-casing elevation of all wells **must** be surveyed to the nearest 0.01-foot relative to Mean Sea Level or NAVD88 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate. Geotechnical wells are exempt from this requirement if a written variance from GPP is obtained prior to drilling.
L. Latitude and longitude of all wells **must** be surveyed with sub-meter accuracy relative to NAD83 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate.
M. Violation of any requirement or general or special permit condition may result in an order by GPP staff to cease work under this permit, correct the violation, potentially re-permit the work as a new mobilization, and potential actions may be taken against the Well Owner, Property Owner, or Responsible Professional by GPP.

SPECIAL CONDITIONS: _____
(agency use only)

For Agency Use Only:
County Approval: _____ FA# _____ Date: 8/17/18

Revised every January 1



Legend

- Historical Sample Locations (Burns & McDonnell, 2006b)
- Property Boundary

Proposed Sample Locations

- Metals
- Metals, VOCs, SVOCs, PCBs, OCPs, TPH, Asbestos
- Metals, VOCs, SVOCs, PCBs,TPH, Asbestos
- County Boundary

Notes:
- All Locations are approximate
Basemap Source: Burns & McDonnell, 2006c.
VOC - volatile organic compound
SVOC - semi-volitle organic compound
PCB - polychlorinated biphenyls
OCP - organochlorine pesticide
TPH - total petroleum hydrocarbons

N

0 180 Feet

Proposed Soil Sample Locations

UPC OU-SM
Brisbane, California

Geosyntec consultants

Figure 5

WG2245 | April 2018

\\oakland-01\data\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\Figure05_Proposed Sample Locations.mxd 4/19/2018 2:35:27 PM

Kian Atkinson

From: Yuen, Nicole@DTSC <Nicole.Yuen@dtsc.ca.gov>
Sent: Tuesday, August 14, 2018 6:14 PM
To: Kian Atkinson
Subject: UPC OU-San Mateo Drilling Permit for Geosyntec

Hi Kian,

I understand that Geosyntec is applying for a drilling permit with San Mateo County and they asked that I send you an email to explain DTSC's involvement with the project.

DTSC, Universal Paragon Corporation (UPC), and Geosyntec met on August 13, 2018 to discuss the proposed scope of work included in and DTSC's comments on the Data Gaps Investigation Workplan (Workplan) for the UPC OU-San Mateo Site located in Brisbane, also known as Operable Unit-1. UPC conveyed their wish to expedite the project and their plans to begin implementing the soil and groundwater sampling activities included in the Workplan on August 20th. Soil gas sampling activities are planned to begin at a later date. DTSC concurs with the Workplan scope of work and agrees with soil and groundwater sampling activities proceeding on August 20th.

Geosyntec is addressing DTSC's comments and will finalize the Workplan concurrently with the proposed soil and groundwater sampling work. We do not anticipate DTSC's comments will result in a change in the scope of work or substantial changes to the Workplan. In the August 13th meeting, DTSC agreed that work may proceed with the understanding that UPC will address any deficiencies that may result due to work proceeding before DTSC approval of the final Workplan.

Please feel free to reach out if you have any questions.

Thanks,

Nicole Yuen
Environmental Scientist || Project Manager
Site Mitigation and Restoration Program
700 Heinz Ave. Berkeley, CA 94710
510.540.3881

ORDINANCE: 04023

ENVIRONMENTAL HEALTH
SAN MATEO COUNTY

Protecting Our Health and Environment

PERMIT 18-1196

P/E: 2010 **MONITORING WELLS - INSTALLATION/DESTRUCTION**

FACILITY:
0 BAYSHORE BLVD/SUNNYDALE AVE, BRISBANE

OWNER:
UNIVERSAL PARAGON CORPORATION
150 EXECUTIVE PARK BLVD # 4000
SAN FRANCISCO

WP0011979 FA0061437
005340060
AMOUNT PAID: 0.00

CONTRACTOR:
PENECORE DRILLING

TERMS & CONDITIONS:

CONSTRUCT SOIL BORINGS (145)
CONSULTANT: GEOSYNTEC CONSULTANTS
PROJECT MGR: ANTHONY SMITH

KIAN ATKINSON
ENVIRONMENTAL HEALTH SPECIALIST

DATE ISSUED: 8/20/2018

EXPIRATION DATE: 12/20/2018

THIS PERMIT IS NONTRANSFERABLE AND MUST BE POSTED ON-SITE IN A CONSPICUOUS PLACE

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
AUG 16 2018
RECEIVED

COUNTY OF SAN MATEO
HEALTH SYSTEM

Environmental Health Services
Groundwater Protection Program
2000 Alameda de las Pulgas, Suite #100
San Mateo, CA 94403
Phone:(650) 372-6200 Fax: (650) 627-8244
smchealth.org/gpp

SUBSURFACE DRILLING PERMIT APPLICATION

Allow three (3) full working days for processing a complete permit application which includes payment (one permit per parcel). Drilling **start date & time** must be scheduled with County staff at (650) 464-0047 or drilling@smcgov.org **at least 2 full working days (i.e. 48 hours) in advance.** Visit smchealth.org/ehfees for Groundwater Protection Program Fees

PURPOSE OF APPLICATION ☐ Groundwater Monitoring/Vapor Well Installation ☒ Construct Soil Borings (variance request if to be left open >24 hrs) ☐ Groundwater Monitoring/Vapor Well Destruction Extension of Permit # _____

No. of Wells _____ No. of Borings 145 Well/Boring Names A-1 through M-11

PURPOSE OF DRILLING ☒ Environmental ☐ Geotechnical **LEAD AGENCY** ☐ County GPP (permit approval is not to be considered work plan approval) ☒ RWQCB/DTSC/USEPA (Provide approval letter) ☐ None (i.e. voluntary)

SITE / DRILLING INFORMATION

Agency Case # HAS CO 07/08 185 Assessor's Parcel # (required) 005-340-060 (one per permit)

Drilling Location Address: ~~2500~~ Bayshore Blvd / SUNNYDALE AVE City: ~~San Francisco~~ BRISBANE Zip: 94134

To Be Constructed In: ☐ Public Property ☒ Private Property ☐ Refuse

Maximum Proposed Depth (wells/borings) 20 (feet) Drilling Method: Direct Push

Boring Diameter: 2 Casing Diameter: N/A Filter Pack Interval: N/A Screen Interval: N/A

Destruction Method: (6 gallons water max/94 lb cement, up to 5% bentonite) ☐ Pressure Grouting (provide well construction logs and grout calcs) ☐ Overdrilling (guide rods for total depth prior to starting required)

WELL/BORING OWNER

(Well/boring owner name or contact person should match signature)

Name: Universal Paragon Corporation Contact Person: Howard Pearce

Address: 150 Executive Park Blvd., Suite 4000 City, State, Zip: San Francisco, CA 94134

Telephone: 415.468.6676x114 Email: hpearce@upcsf.com

It is my responsibility to notify the County of any known changes in the purpose of this well/boring from that which is indicated on this application, to submit indication of annual usage of wells to the County, and to maintain the well in good condition. *(Letter signed by well/boring owner/contact person, containing above language and attesting to knowledge of all permit requirements and conditions, may be substituted for signature.)*

Well/Boring Owner's/Contact Person's Signature: _____ Date: 8-13-18

PROPERTY OWNER

(Name as appears on assessor's roles should match signature)

Name: Universal Paragon Corporation Contact Person: Howard Pearce

Address: 150 Executive Park Blvd., Suite 4000 City, State, Zip: San Francisco, CA 94134

Telephone: 415.468.6676x114 Email: hpearce@upcsf.com

I understand that a well/boring is being installed on my property. I agree to notify the County and Well Owner of any known damage or future access issues to the well *(Letter signed by property owner, containing above language, or encroachment permit may be substituted for signature)*

Property Owner's Signature: _____ Date: 8-13-18

DRILLING COMPANY

Drilling Company: Penecore Drilling Contact Person: Xavier Green

Address: 220 N. East Street City, State, Zip: Woodland, CA 95776

Telephone: 530-661-3600 Email: xavier@penecore.com C57 Drillers License # 906899

I certify that the well/boring will be constructed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards, and that the license listed above is considered current and active by the Contractors State License Board.

Driller's Signature: _____ Date: 8/15/2018

CONSULTANT COMPANY

Consultant Company: Geosyntec Consultants Project Manager: Anthony Smith

Address: 1111 Broadway, 6th Floor City, State, Zip: Oakland, CA 94607

Telephone: 510-285-2770 Email: tsmith@geosyntec.com

Field Contact & Cell # (if known): Miranda Kahrilas, 847.530.7602

I certify that this application is correct to the best of my knowledge and the well/boring will be constructed/destroyed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards. I understand that I am responsible for General Conditions E, F, K, and L of this permit and if I indicated the purpose of drilling is geotechnical, then no one will use the boring to collect any samples for environmental analyses. If there is a change in Responsible Professional, I will notify San Mateo County GPP staff.

Responsible Professional's Name (Please print legibly): Anthony Smith

Responsible Professional's Signature: _____ Date: 8/15/18

California Professional Geologist (PG) No. _____ or Civil Engineer (PE) No. 8473

REV. 5/23/18

FA61437

 2018 SUBSURFACE DRILLING PERMIT APPLICATION

REQUIREMENTS:

An accurate and correct map **must** be submitted with the application and include the following: north arrow, existing and historic site features, existing and proposed well/boring locations with ID's to scale, property lines and any other pertinent information. A work plan describing the drilling and construction/destruction methodology may be requested by County staff. A complete application with appropriate fees must be submitted 3 working days in advance of drilling and notification of start date and time must be provided at least 2 working days prior to drilling. The permit is subject to both General and Special Conditions stated below. A copy of the approved Subsurface Drilling Permit **must** be available on site while work related to the permit is being performed. **Drilling may begin at the notified date and time whether County staff is present or not.**

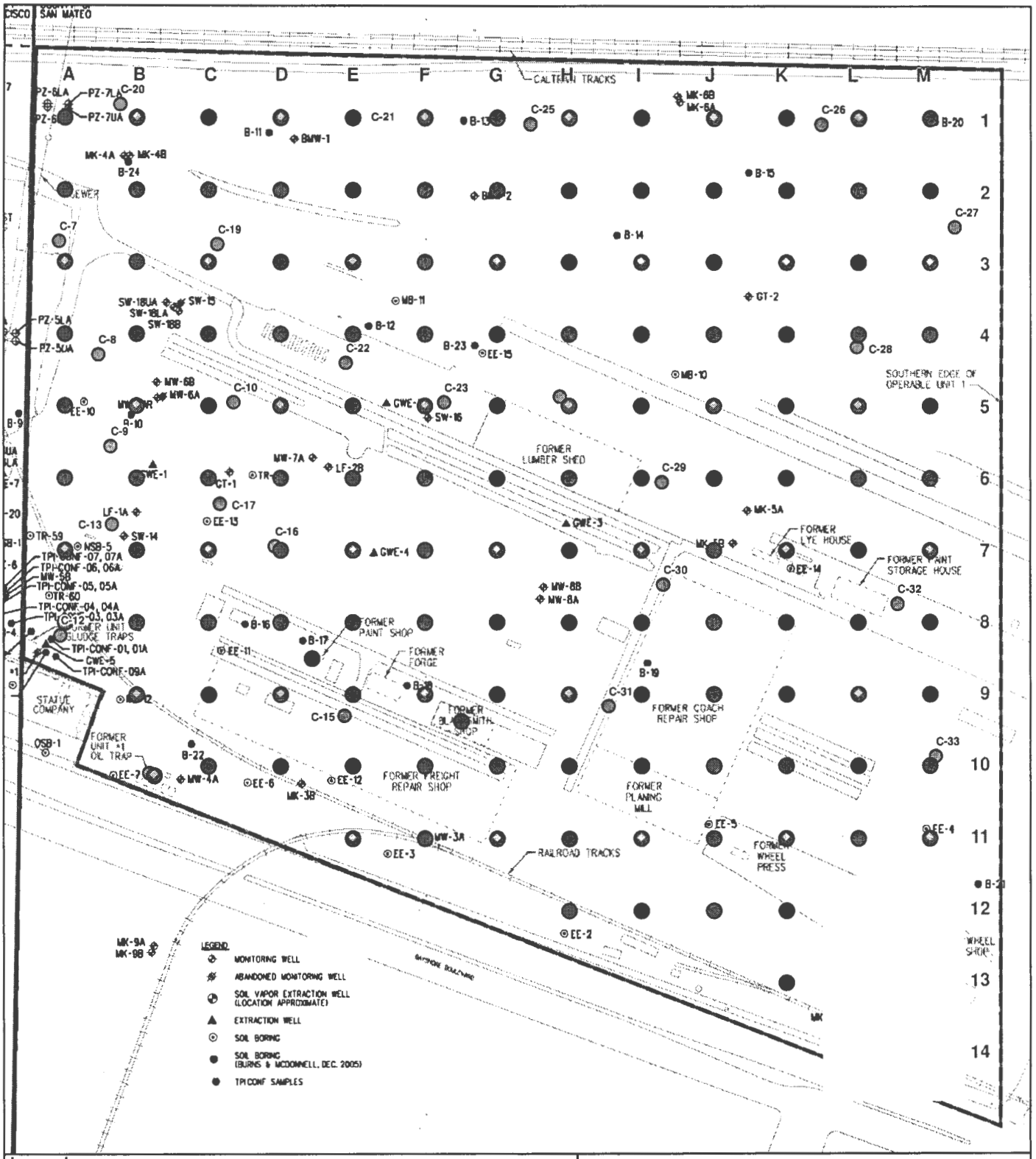
GENERAL CONDITIONS:

A. Field notification must be provided to GPP drilling inspection staff at least 2 full working days prior to the start of drilling. GPP Caseworker needs a separate notification if it is a contaminated site.
B. Well and boring construction and destruction under this permit are subject to the Standards for the Construction of Wells in San Mateo County, County Groundwater Protection Program (GPP) Guidelines, Policies & Procedures, the State Water Well Standards, and any instructions by a Health Department representative.
C. Well/Boring Owner, Driller, and Responsible Professional assume responsibility for all activities and uses under the permit, including compliance with Workmen's Compensation Laws, and indemnify, defend and save the County of San Mateo, its officers, agents and employees, free and harmless from any and all expense, cost, or liability in connection with or resulting from work or stopped-work associated with the permit, including, but not limited to, property damage, personal injury, wrongful death, and loss of income.
D. All borings **must** be properly destroyed (grouted/sealed) within 24 hours of drilling, unless special conditions are approved beforehand in writing as part of this permit, and must be continuously protected and stabilized.
E. Analytical results of all soil, vapor, and groundwater samples collected during the execution of drilling under this permit **must** be submitted to County GPP staff by the Responsible Professional within 60 days of sample collection. If contamination is discovered during drilling, verbal notification to County GPP by the Responsible Professional is **required** within 72 hours of discovery. Proper storage, labeling & disposal of investigation-derived residual wastes are the responsibility of the consultant unless stated otherwise contractually.
F. A copy of the State DWR Form 188, boring logs, well construction details, and finalized as-built locations for all borings/ wells (except geotechnical borings) signed by a Responsible Professional, **must** be submitted to County GPP by the Responsible Professional within 60 days of drilling/construction/destruction.
G. Permit is valid only for the purpose specified herein. No change in purpose or required procedures, as described on this permit application, in the associated workplan, or in the special conditions below, will be allowed except upon written permission from the County. Construction aspects can be changed based on conditions encountered in the field.
H. **Permit is valid for one mobilization** associated with originally permitted boring/well locations only, including contingency locations, and is automatically canceled if not exercised, or if an extension is not applied for and granted within 120 days of the original permit issuance date. Failure to notify staff of cancellation or delay in start time will result in the Consultant being billed an Inspection Cancellation fee of $342 as of August 1, 2017 if GPP staff attempted to perform an inspection.
I. Wells installed under this permit may not be used for domestic, municipal, agricultural, or irrigation water supply.
J. All work performed **must** conform to Business and Profession Codes and State Water Well Standards.
K. Top-of-casing elevation of all wells **must** be surveyed to the nearest 0.01-foot relative to Mean Sea Level or NAVD88 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate. Geotechnical wells are exempt from this requirement if a written variance from GPP is obtained prior to drilling.
L. Latitude and longitude of all wells **must** be surveyed with sub-meter accuracy relative to NAD83 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate.
M. Violation of any requirement or general or special permit condition may result in an order by GPP staff to cease work under this permit, correct the violation, potentially re-permit the work as a new mobilization, and potential actions may be taken against the Well Owner, Property Owner, or Responsible Professional by GPP.

SPECIAL CONDITIONS: _____
(agency use only)

For Agency Use Only:
County Approval: ICHA FA# _____ Date: 8/17/18

Revised every January 1



Legend

- Historical Sample Locations (Burns & McDonnell, 2006b)
- Property Boundary

Proposed Sample Locations

- Metals
- Metals, VOCs, SVOCs, PCBs, OCPs, TPH, Asbestos
- Metals, VOCs, SVOCs, PCBs,TPH, Asbestos
- County Boundary

Notes:
- All Locations are approximate
Basemap Source: Burns & McDonnell, 2006c.
VOC - volatile organic compound
SVOC - semi-volitle organic compound
PCB - polychlorinated biphenyls
OCP - organochlorine pesticide
TPH - total petroleum hydrocarbons

N

0 180 Feet

Proposed Soil Sample Locations

UPC OU-SM
Brisbane, California

Geosyntec consultants

WG2245 | April 2018

Figure 5

\\oakland-01\data\GIS\UPC\Brisbane Project\2018_DataGapAnalysis\Figure05_Proposed Sample Locations.mxd 4/19/2018 2:05:23 PM

Kian Atkinson

From: Yuen, Nicole@DTSC <Nicole.Yuen@dtsc.ca.gov>
Sent: Tuesday, August 14, 2018 6:14 PM
To: Kian Atkinson
Subject: UPC OU-San Mateo Drilling Permit for Geosyntec

Hi Kian,

I understand that Geosyntec is applying for a drilling permit with San Mateo County and they asked that I send you an email to explain DTSC's involvement with the project.

DTSC, Universal Paragon Corporation (UPC), and Geosyntec met on August 13, 2018 to discuss the proposed scope of work included in and DTSC's comments on the Data Gaps Investigation Workplan (Workplan) for the UPC OU-San Mateo Site located in Brisbane, also known as Operable Unit-1. UPC conveyed their wish to expedite the project and their plans to begin implementing the soil and groundwater sampling activities included in the Workplan on August 20th. Soil gas sampling activities are planned to begin at a later date. DTSC concurs with the Workplan scope of work and agrees with soil and groundwater sampling activities proceeding on August 20th.

Geosyntec is addressing DTSC's comments and will finalize the Workplan concurrently with the proposed soil and groundwater sampling work. We do not anticipate DTSC's comments will result in a change in the scope of work or substantial changes to the Workplan. In the August 13th meeting, DTSC agreed that work may proceed with the understanding that UPC will address any deficiencies that may result due to work proceeding before DTSC approval of the final Workplan.

Please feel free to reach out if you have any questions.

Thanks,

Nicole Yuen
Environmental Scientist || Project Manager
Site Mitigation and Restoration Program
700 Heinz Ave. Berkeley, CA 94710
510.540.3881

ORDINANCE: 04023

ENVIRONMENTAL HEALTH
SAN MATEO COUNTY

Protecting Our Health and Environment

PERMIT 18-1304

P/E: 2010 **MONITORING WELLS - INSTALLATION/DESTRUCTION**

FACILITY:
0 BAYSHORE BLVD/SUNNYDALE AVE, **BRISBANE**

OWNER:
UNIVERSAL PARAGON CORP
150 EXECUTIVE PARK BLVD 4000
SAN FRANCISCO

WP0012017 FA0061437
005340060
AMOUNT PAID: 747.00

CONTRACTOR:
PENECORE DRILLING

TERMS & CONDITIONS:

CONSTRUCT SOIL BORINGS (145)
CONSULTANT: GEOSYNTEC CONSULTANTS
PROJECT MGR: ANTHONY SMITH

KIAN ATKINSON

ENVIRONMENTAL HEALTH SPECIALIST

DATE ISSUED: 9/20/2018

EXPIRATION DATE: 1/20/2019

THIS PERMIT IS NONTRANSFERABLE AND MUST BE POSTED ON-SITE IN A CONSPICUOUS PLACE

PAID
$747 -
CK # 247

SAN MATEO COUNTY
ENVIRONMENTAL HEALTH
SEP 19 2018
RECEIVED

COUNTY OF SAN MATEO
HEALTH SYSTEM

Environmental Health Services
Groundwater Protection Program
2000 Alameda de las Pulgas, Suite #100
San Mateo, CA 94403
Phone:(650) 372-6200 Fax: (650) 627-8244
smchealth.org/gpp

SUBSURFACE DRILLING PERMIT APPLICATION

Allow three (3) full working days for processing a complete permit application which includes payment (one permit per parcel). Drilling **start date & time** must be scheduled with County staff at (650) 464-0047 or drilling@smcgov.org **at least 2 full working days (i.e. 48 hours) in advance.** Visit smchealth.org/ehfees for Groundwater Protection Program Fees

PURPOSE OF APPLICATION: ☐ Groundwater Monitoring/Vapor Well Installation ☒ Construct Soil Borings (variance request if to be left open >24 hrs) ☐ Groundwater Monitoring/Vapor Well Destruction Extension of Permit #

No. of Wells _____ No. of Borings 145 Well/Boring Names A-1 through M-11

PURPOSE OF DRILLING: ☒ Environmental ☐ Geotechnical

LEAD AGENCY: ☐ County GPP (permit approval is not to be considered work plan approval) ☒ RWQCB/DTSC/USEPA (Provide approval letter) ☐ None (i.e. voluntary)

SITE / DRILLING INFORMATION

Agency Case # HAS CO 07/08 185 Assessor's Parcel # (required) 005-340-060 (one per permit)

Drilling Location Address: ~~2500~~ Bayshore Blvd. / SUNNYDALE AVE City: ~~San Francisco~~ BRISBANE Zip: 94134

To Be Constructed In: ☐ Public Property ☒ Private Property ☐ Refuse

Maximum Proposed Depth (wells/borings) 20 (feet) Drilling Method: Direct Push

Boring Diameter: 2 Casing Diameter: N/A Filter Pack Interval: N/A Screen Interval: N/A

Destruction Method: (6 gallons water max/94 lb cement, up to 5% bentonite) ☐ Pressure Grouting (provide well construction logs and grout calcs) ☐ Overdrilling (guide rods for total depth prior to starting required)

WELL/BORING OWNER

(Well/boring owner name or contact person should match signature)

Name: Universal Paragon Corporation Contact Person: Howard Pearce

Address: 150 Executive Park Blvd., Suite 4000 City, State, Zip: San Francisco, CA 94134

Telephone: 415.468.6676x114 Email: hpearce@upcsf.com

It is my responsibility to notify the County of any known changes in the purpose of this well/boring from that which is indicated on this application, to submit indication of annual usage of wells to the County, and to maintain the well in good condition. *(Letter signed by well/boring owner/contact person, containing above language and attesting to knowledge of all permit requirements and conditions, may be substituted for signature.)*

Well/Boring Owner's/Contact Person's Signature: Date: 8-13-18

PROPERTY OWNER

(Name as appears on assessor's roles should match signature)

Name: Universal Paragon Corporation Contact Person: Howard Pearce

Address: 150 Executive Park Blvd., Suite 4000 City, State, Zip: San Francisco, CA 94134

Telephone: 415.468.6676x114 Email: hpearce@upcsf.com

I understand that a well/boring is being installed on my property. I agree to notify the County and Well Owner of any known damage or future access issues to the well *(Letter signed by property owner, containing above language, or encroachment permit may be substituted for signature)*

Property Owner's Signature: Date: 8-13-18

DRILLING COMPANY

Drilling Company: Penecore Drilling Contact Person: Xavier Green

Address: 220 N. East Street City, State, Zip: Woodland, CA 95776

Telephone: 530-661-3600 Email: xavier@penecore.com C57 Drillers License # 906899

I certify that the well/boring will be constructed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards, and that the license listed above is considered current and active by the Contractors State License Board.

Driller's Signature: Date: 8/15/2018

CONSULTANT COMPANY

Consultant Company: Geosyntec Consultants Project Manager: Anthony Smith

Address: 1111 Broadway, 6th Floor City, State, Zip: Oakland, CA 94607

Telephone: 510-285-2770 Email: tsmith@geosyntec.com

Field Contact & Cell # (if known): Miranda Kahrilas, 847.530.7602

I certify that this application is correct to the best of my knowledge and the well/boring will be constructed/destroyed in compliance with the conditions of this permit (see reverse), the San Mateo County Well Ordinance, and the State Water Well Standards. I understand that I am responsible for General Conditions E, F, K, and L of this permit and if I indicated the purpose of drilling is geotechnical, then no one will use the boring to collect any samples for environmental analyses. If there is a change in Responsible Professional, I will notify San Mateo County GPP staff.

Responsible Professional's Name (Please print legibly): Anthony Smith

Responsible Professional's Signature: Date: 8/15/18

California Professional Geologist (PG) No. _____ or Civil Engineer (PE) No. 8473

REV. 8/23/18

FAC1437

 2018 SUBSURFACE DRILLING PERMIT APPLICATION

REQUIREMENTS:

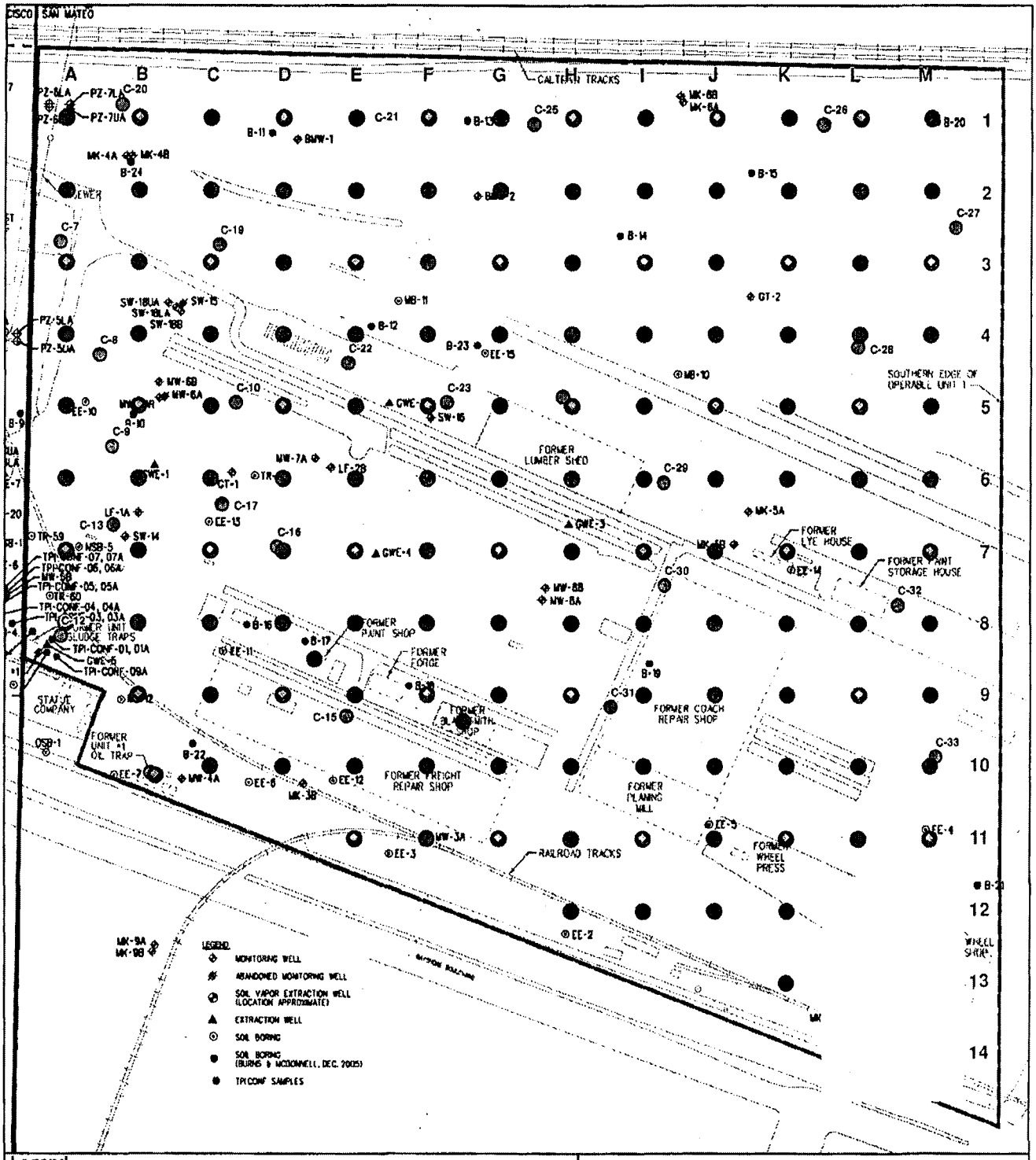
An accurate and correct map **must** be submitted with the application and include the following: north arrow, existing and historic site features, existing and proposed well/boring locations with ID's to scale, property lines and any other pertinent information. A work plan describing the drilling and construction/destruction methodology may be requested by County staff. A complete application with appropriate fees must be submitted 3 working days in advance of drilling and notification of start date and time must be provided at least 2 working days prior to drilling. The permit is subject to both General and Special Conditions stated below. A copy of the approved Subsurface Drilling Permit **must** be available on site while work related to the permit is being performed. **Drilling may begin at the notified date and time whether County staff is present or not.**

GENERAL CONDITIONS:

A. Field notification must be provided to GPP drilling inspection staff at least 2 full working days prior to the start of drilling. GPP Caseworker needs a separate notification if it is a contaminated site.
B. Well and boring construction and destruction under this permit are subject to the Standards for the Construction of Wells in San Mateo County, County Groundwater Protection Program (GPP) Guidelines, Policies & Procedures, the State Water Well Standards, and any instructions by a Health Department representative.
C. Well/Boring Owner, Driller, and Responsible Professional assume responsibility for all activities and uses under the permit, including compliance with Workmen's Compensation Laws, and indemnify, defend and save the County of San Mateo, its officers, agents and employees, free and harmless from any and all expense, cost, or liability in connection with or resulting from work or stopped-work associated with the permit, including, but not limited to, property damage, personal injury, wrongful death, and loss of income.
D. All borings **must** be properly destroyed (grouted/sealed) within 24 hours of drilling, unless special conditions are approved beforehand in writing as part of this permit, and must be continuously protected and stabilized.
E. Analytical results of all soil, vapor, and groundwater samples collected during the execution of drilling under this permit **must** be submitted to County GPP staff by the Responsible Professional within 60 days of sample collection. If contamination is discovered during drilling, verbal notification to County GPP by the Responsible Professional is **required** within 72 hours of discovery. Proper storage, labeling & disposal of investigation-derived residual wastes are the responsibility of the consultant unless stated otherwise contractually.
F. A copy of the State DWR Form 188, boring logs, well construction details, and finalized as-built locations for all borings/ wells (except geotechnical borings) signed by a Responsible Professional, **must** be submitted to County GPP by the Responsible Professional within 60 days of drilling/construction/destruction.
G. Permit is valid only for the purpose specified herein. No change in purpose or required procedures, as described on this permit application, in the associated workplan, or in the special conditions below, will be allowed except upon written permission from the County. Construction aspects can be changed based on conditions encountered in the field.
H. **Permit is valid for one mobilization** associated with originally permitted boring/well locations only, including contingency locations, and is automatically canceled if not exercised, or if an extension is not applied for and granted within 120 days of the original permit issuance date. Failure to notify staff of cancellation or delay in start time will result in the Consultant being billed an Inspection Cancellation fee of $342 as of August 1, 2017 if GPP staff attempted to perform an inspection.
I. Wells installed under this permit may not be used for domestic, municipal, agricultural, or irrigation water supply.
J. All work performed **must** conform to Business and Profession Codes and State Water Well Standards.
K. Top-of-casing elevation of all wells **must** be surveyed to the nearest 0.01-foot relative to Mean Sea Level or NAVD88 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate. Geotechnical wells are exempt from this requirement if a written variance from GPP is obtained prior to drilling.
L. Latitude and longitude of all wells **must** be surveyed with sub-meter accuracy relative to NAD83 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate.
M. Violation of any requirement or general or special permit condition may result in an order by GPP staff to cease work under this permit, correct the violation, potentially re-permit the work as a new mobilization, and potential actions may be taken against the Well Owner, Property Owner, or Responsible Professional by GPP.

SPECIAL CONDITIONS: _____
(agency use only)

For Agency Use Only:
County Approval: _____ FA# _____ Date: 9/15/18



Legend

- Historical Sample Locations (Burns & McDonnell, 2006b)
- Property Boundary

Proposed Sample Locations

- Metals
- Metals, VOCs, SVOCs, PCBs, OCPs, TPH, Asbestos
- Metals, VOCs, SVOCs, PCBs,TPH, Asbestos
- County Boundary

Notes:
- All Locations are approximate

Basemap Source: Burns & McDonnell, 2006c.
VOC - volatile organic compound
SVOC - semi-volatile organic compound
PCB - polychlorinated biphenyls
OCP - organochlorine pesticide
TPH - total petroleum hydrocarbons

N

0 180 Feet

Proposed Soil Sample Locations

UPC OU-SM
Brisbane, California

Geosyntec consultants

WG2245 | April 2018

Figure 5

\\oakland-01\data\GIS\UPC\Brisbane\Project\2018_DataGapAnalysis\Figure05_Proposed Sample Locations.mxd 4/19/2018 2:35:27 PM

Kian Atkinson

From: Yuen, Nicole@DTSC <Nicole.Yuen@dtsc.ca.gov>
Sent: Tuesday, August 14, 2018 6:14 PM
To: Kian Atkinson
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Please feel free to reach out if you have any questions.

Thanks,

Nicole Yuen
Environmental Scientist || Project Manager
Site Mitigation and Restoration Program
700 Heinz Ave. Berkeley, CA 94710
510.540.3881

APPENDIX C

Waste Disposal Manifests

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-88803-2
Client Project/Site: UPC OU-SM

For:
Geosyntec Consultants, Inc.
201 N. Civic Drive
Suite 245
Walnut Creek, California 94596

Attn: Mr. Krys Jesionek

Authorized for release by:
10/24/2018 2:37:10 PM

Micah Smith, Project Manager II
(916)374-4302
micah.smith@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

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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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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 720-88803-2

Laboratory: TestAmerica Pleasanton

Narrative

Job Narrative
720-88803-2

Comments
No additional comments.

Receipt
The sample was received on 9/26/2018 4:25 PM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 12.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: UPC OU-SM

TestAmerica Job ID: 720-88803-2

Client Sample ID: IDW-SOIL — Lab Sample ID: 720-88803-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.49		0.050	0.022	mg/L	1		6010B	STLC Citrate
Chromium	0.29		0.10	0.0070	mg/L	1		6010B	STLC Citrate

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Geosyntec Consultants, Inc.
Project/Site: UPC OU-SM

TestAmerica Job ID: 720-88803-2

Client Sample ID: IDW-SOIL
Date Collected: 09/26/18 10:30
Date Received: 09/26/18 16:25

Lab Sample ID: 720-88803-1
Matrix: Solid

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.49		0.050	0.022	mg/L		10/23/18 08:30	10/23/18 10:31	1
Chromium	0.29		0.10	0.0070	mg/L		10/23/18 08:30	10/23/18 10:31	1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-253941/1-A
Matrix: Solid
Analysis Batch: 253965

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 253941

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.0050	0.0022	mg/L		10/23/18 08:30	10/23/18 09:47	1
Chromium	ND		0.010	0.00070	mg/L		10/23/18 08:30	10/23/18 09:47	1

Lab Sample ID: LCS 720-253941/2-A
Matrix: Solid
Analysis Batch: 253965

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 253941

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	1.00	0.946		mg/L		95	80 - 120
Chromium	1.00	0.930		mg/L		93	80 - 120

Lab Sample ID: LB4 720-253694/1-C
Matrix: Solid
Analysis Batch: 253965

Client Sample ID: Method Blank
Prep Type: STLC Citrate
Prep Batch: 253941

Analyte	LB4 Result	LB4 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.050	0.022	mg/L		10/23/18 08:30	10/23/18 09:56	1
Chromium	ND		0.10	0.0070	mg/L		10/23/18 08:30	10/23/18 09:56	1

Lab Sample ID: 720-89021-A-5-G MS
Matrix: Solid
Analysis Batch: 253965

Client Sample ID: Matrix Spike
Prep Type: STLC Citrate
Prep Batch: 253941

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	0.029	J	10.0	8.88		mg/L		89	75 - 125
Chromium	0.37		10.0	9.46		mg/L		91	75 - 125

Lab Sample ID: 720-89021-A-5-H MSD
Matrix: Solid
Analysis Batch: 253965

Client Sample ID: Matrix Spike Duplicate
Prep Type: STLC Citrate
Prep Batch: 253941

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	0.029	J	10.0	8.15		mg/L		81	75 - 125	9	20
Chromium	0.37		10.0	8.67		mg/L		83	75 - 125	9	20

QC Association Summary

Client: Geosyntec Consultants, Inc.
Project/Site: UPC OU-SM

TestAmerica Job ID: 720-88803-2

Metals

Leach Batch: 253694

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88803-1	IDW-SOIL	STLC Citrate	Solid	CA WET Citrate	
LB4 720-253694/1-C	Method Blank	STLC Citrate	Solid	CA WET Citrate	
720-89021-A-5-G MS	Matrix Spike	STLC Citrate	Solid	CA WET Citrate	
720-89021-A-5-H MSD	Matrix Spike Duplicate	STLC Citrate	Solid	CA WET Citrate	

Prep Batch: 253941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88803-1	IDW-SOIL	STLC Citrate	Solid	3005A	253694
LB4 720-253694/1-C	Method Blank	STLC Citrate	Solid	3005A	253694
MB 720-253941/1-A	Method Blank	Total Recoverable	Solid	3005A	
LCS 720-253941/2-A	Lab Control Sample	Total Recoverable	Solid	3005A	
720-89021-A-5-G MS	Matrix Spike	STLC Citrate	Solid	3005A	253694
720-89021-A-5-H MSD	Matrix Spike Duplicate	STLC Citrate	Solid	3005A	253694

Analysis Batch: 253965

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88803-1	IDW-SOIL	STLC Citrate	Solid	6010B	253941
LB4 720-253694/1-C	Method Blank	STLC Citrate	Solid	6010B	253941
MB 720-253941/1-A	Method Blank	Total Recoverable	Solid	6010B	253941
LCS 720-253941/2-A	Lab Control Sample	Total Recoverable	Solid	6010B	253941
720-89021-A-5-G MS	Matrix Spike	STLC Citrate	Solid	6010B	253941
720-89021-A-5-H MSD	Matrix Spike Duplicate	STLC Citrate	Solid	6010B	253941

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: UPC OU-SM

TestAmerica Job ID: 720-88803-2

Client Sample ID: IDW-SOIL — **Lab Sample ID: 720-88803-1**
Date Collected: 09/26/18 10:30 — **Matrix: Solid**
Date Received: 09/26/18 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			253694	10/20/18 09:40	MAA	TAL PLS
STLC Citrate	Prep	3005A			253941	10/23/18 08:30	SUN	TAL PLS
STLC Citrate	Analysis	6010B		1	253965	10/23/18 10:31	MAG	TAL PLS

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc. TestAmerica Job ID: 720-88803-2
Project/Site: UPC OU-SM

Laboratory: TestAmerica Pleasanton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

Method Summary

Client: Geosyntec Consultants, Inc.
Project/Site: UPC OU-SM

TestAmerica Job ID: 720-88803-2

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL PLS
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL PLS
CA WET Citrate	California - Waste Extraction Test with Citrate Leach	CA-WET	TAL PLS

Protocol References:

CA-WET = California Waste Extraction Test, from Title 22

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: UPC OU-SM

TestAmerica Job ID: 720-88803-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-88803-1	IDW-SOIL	Solid	09/26/18 10:30	09/26/18 16:25

Smith, Micah

From: Anthony Smith <TSmith@Geosyntec.com>
Sent: Thursday, October 18, 2018 11:53 AM
To: Smith, Micah
Subject: RE: TestAmerica EDD, invoice and report files from 720-88803-1 UPC OU-SM

-External Email-

Yes, please proceed. No rush – what's a standard turn?

Tony Smith, Ph.D., P.E. (CA)
Senior Engineer

Geosyntec Consultants
1111 Broadway, 6th Floor
Oakland, CA 94607
Direct: (510) 285-2770
tsmith@geosyntec.com

From: Smith, Micah <Micah.Smith@testamericainc.com>
Sent: Thursday, October 18, 2018 11:43 AM
To: Anthony Smith <TSmith@Geosyntec.com>
Subject: RE: TestAmerica EDD, invoice and report files from 720-88803-1 UPC OU-SM

Tony,
Based on what was received we should have enough. Should I proceed and if so on what turn around time?
Thank you.

MICAH SMITH
Project Manager

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

1220 Quarry lane
Pleasanton, CA 94566
Phone: 925.484.1919 x137

880 Riverside Parkway
West Sacramento, CA 95605
Tel 916 374-4302 Direct
916 373-5600 Main | Fax 916 379-1059

www.testamericainc.com

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

---

From: Anthony Smith [mailto:TSmith@Geosyntec.com]
Sent: Thursday, October 18, 2018 10:50 AM

To: Smith, Micah
Subject: RE: TestAmerica EDD, invoice and report files from 720-88803-1 UPC OU-SM

-External Email-

Hi Micah,
Do you have any soil sample left from this job, and if so, is it enough to run STLC for chromium and lead?
Thanks.

Tony Smith, Ph.D., P.E. (CA)
Senior Engineer

Geosyntec Consultants
1111 Broadway, 6th Floor
Oakland, CA 94607
Direct: (510) 285-2770
tsmith@geosyntec.com

From: Smith, Micah <micah.smith@testamericainc.com>
Sent: Thursday, October 4, 2018 5:41 PM
To: Krzysztof Jesionek <KJesionek@Geosyntec.com>; Miranda Kahrilas <MKahrilas@Geosyntec.com>; Anthony Smith <TSmith@Geosyntec.com>
Subject: TestAmerica EDD, invoice and report files from 720-88803-1 UPC OU-SM

Hello,

Attached please find the EDD, invoice and report files for job 720-88803-1; UPC OU-SM

Please feel free to contact me if you have any questions.

Thank you.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback

MICAH SMITH
Project Manager

TestAmerica Pleasanton
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 916.374.4302
www.testamericainc.com

Reference: [288194]
Attachments: 4

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

720-88803

TESTAMERICA Pleasanton Chain of Custody
1220 Quarry Lane • Pleasanton CA 94566-4756
Phone: (925) 484-1919 • Fax: (925) 600-3002

Reference #: 185712

Date 9/26 Page 1 of 1

10/24/2018

Report To

Attn: MIRANDA KAHRILAS
Company: GEOSYNTEC
Address: 1111 BROADWAY 6TH FLOOR
Email: mkahrilas@geosyntec.com
Bill To: GEOSYNTEC
Attn: A SMITH
Sampled By: M. KAHRILAS
Phone: 847-530-7602

Analysis Request

Sample ID	Date	Time	Matrix	Preserv	Volatile Organics GC/MS (VOCs) ☒ EPA 8260B ☐ 624	HVOCs by ☐ EPA 8260B	EPA 8260B: ☐ Gas ☐ BTEX ☐ 5 Oxygenates ☐ DCA, EDB ☐ Ethanol	TEPH EPA 8015B ☐ Silica Gel ☒ Diesel ☐ Motor Oil ☐ Other ___	SemiVolatile Organics GC/MS ☐ EPA 8270C	PNA/PAH's by ☐ 8270C ☒ 8270C SIM	Oil and Grease (EPA 1664/9071) ☐ Petroleum ☐ Total	Pesticides ☐ EPA 8081 PCBs ☒ EPA 8082	CAM17-Metals (EPA 6010/7470/7471)	Metals: ☐ 6010B ☐ 200.7 ☐ Lead ☐ LUFT ☐ RCRA ☐ Other: ___	Metals: ☐ 6020 ☐ 200.8 (ICP-MS): ___	☐ W.E.T (STLC) ☐ W.E.T (DI) ☐ TCLP	Hex. Chrom by ☐ EPA 7196 ☐ or EPA 7199	pH ☐ 9040 ☐ SM4500	☐ Spec. Cond. ☐ Alkalinity ☐ TSS ☐ SS ☐ TDS	Anions: ☐ Cl ☐ SO_4 ☐ NO_3 ☐ F ☐ Br ☐ NO_2 ☐ PO_4	☐ Perchlorate by EPA 314.0	COD ☐ EPA 410.4 ☐ SM5220D ☐ Turbidity
1DW-Soil	9/26	1030	S		X			X		X		X	X									
~~1DW-Water~~			W		X			X					X	MK								

720-88803 Chain of Custody

Project Info.

Project Name/ #: LPC OU-SM
PO#: WG2565/02
Credit Card Y/N: If yes, please call with payment information ASAP

Sample Receipt

of Containers:
Head Space:
Temp: 12°

10 Day | 5 Day | 4 Day | 3 Day | 2 Day | 1 Day | Other:

Report: ☐ Routine ☐ Level 3 ☐ Level 4 ☐ EDD ☐ EDF
Special Instructions / Comments: ☐ Global ID ___

Terms and Conditions on reverse

1) Relinquished by:	2) Relinquished by:	3) Relinquished by:
Signature: [signature] Time: 1200	Signature: Time:	Signature: Time:
Printed Name: MIRANDA KAHRILAS Date: 9/26	Printed Name: Date:	Printed Name: Date:
Company: GEOSYNTEC	Company:	Company:

1) Received by:	2) Received by:	3) Received by:
Signature: [signature] Time: 1625	Signature: Time:	Signature: Time:
Printed Name: [signature] Date: 9-26-18	Printed Name: Date:	Printed Name: Date:
Company: TAP Trans	Company:	Company:

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88803-2

Login Number: 88803
List Number: 1
Creator: Bullock, Tracy

List Source: TestAmerica Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Manifest

SOIL SAFE OF CA – TPST
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transport Truck #:	Facility #:	Approval Number:	Load #
/ /			A07		

Generator and/or Consultant

Generator's Name and Billing Address:
VISITACION INVESTMENT, LLC
ATTN: HOWARD PEARCE
150 EXECUTIVE PARK BLVD., SUITE 4000
SAN FRANCISCO, CA 94134

Generator's Phone #: 415-468-6676
Person to Contact:
FAX#:
Customer Account Number

Consultant's Name and Billing Address:

Consultant's Phone #:
Person to Contact:
FAX#:
Customer Account Number

Generation Site (Transport from): *(name & address)*
UPC OU-SM
FORMER SOUTHERN PACIFIC RAILYARD
SAN FRANCISCO, CA 94134

Site Phone #:
Person to Contact:
FAX#:

Designated Facility (Transport to): *(name & address)*
SOIL SAFE
12328 HIBISCUS AVENUE
ADELANTO, CA 92301

Facility Phone #: (800) 862-8001
Person to Contact: JOE PROVANSAL
FAX#: (760) 246-8004

Transporter Name and Mailing Address:
BELSHIRE
25971 TOWNE CENTRE DRIVE
FOOTHILL RANCH, CA 92610
BESI: 299951

Transporter's Phone #: 949-460-5200
CAR000183913
Person to Contact: LARRY MOOTHART
450647
FAX#: 949-460-5210
Customer Account Number

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ❑ Organic ❑ Clay ❑ Other ❑	0 - 10% ❑ 10 - 20% ❑ 20% - over ❑	Gas ❑ Diesel ❑ Other ❑	2 DM	Soil			
Sand ❑ Organic ❑ Clay ❑ Other ❑	0 - 10% ❑ 10 - 20% ❑ 20% - over ❑	Gas ❑ Diesel ❑ Other ❑					

List any exception to items listed above: Scale Ticket #

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils descried in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☒ Consultant ❑ HOWARD PEARCE
Signature and date:
Month 11 Day 13 Year 16

Transporter

Transporter's certification: I/We acknowledge receipt of the soil referenced above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that the soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: Ron Green
Signature and date: Ron Green
Month 11 Day 13 Year 18

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: J. PROVANSAL
Signature and date:

Please print or type.

FACILITY COPY

PROFORMA SOCAL • (760) 246-2826

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CAD009111212	1	(415) 468-6676	012772123 FLE

GENERATOR

5. Generator's Name and Mailing Address
Visitacion Investment, LLC
Attn: Howard Pearce
150 Executive Park Blvd., Suite 4000
San Francisco, CA 94134
Generator's Phone: (415) 468-6676

Generator's Site Address (if different than mailing address)
Schlage Lock Facility (Former)
2401 Bayshore Blvd.
San Francisco, CA 94134-2901

6. Transporter 1 Company Name
BELSHIRE
U.S. EPA ID Number
CAR000183913

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
DeMenno Kerdoon
2000 N. Alameda St.
Compton, CA 90222
Facility's Phone: (310) 537-7100
U.S. EPA ID Number
CAT080013352

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
X	1. NA3082, Hazardous Waste, Liquid, N.O.S., (Tetrachloroethene, Trichloroethene), 9, PG III	1	DM	30	G	F002	134	
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information
ERG#: 171
Groundwater impacted with PCE and TCE
WEAR ALL APPROPRIATE PROTECTIVE CLOTHING
BEST: 299860

FOLD LA LINE AF SIDE MATT TA

INT'L

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: HOWARD PEARCE
Signature: [signature]
Month: 11 Day: 13 Year: 18

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Ron green
Signature: Ron Green
Month: 01 Day: 13 Year: 18

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name:
Signature:
Month: Day: Year:

EPA Form 8700-22 (Rev. 12-17) Previous editions are obsolete.

DESIGNATED FACILITY TO EPA's e-MANIFEST SYSTEM

APPENDIX D

Boring Logs

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

PROJECT Brisbane UPC
PROJECT LOCATION Brisbane, CA
PROJECT NUMBER WG2565

KEY SHEET - CLASSIFICATIONS AND SYMBOLS

GS FORM: 01-KEY/SYMBOLS

EMPIRICAL CORRELATIONS WITH STANDARD PENETRATION RESISTANCE N VALUES *

	N VALUE * (BLOWS/FT)	CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH (TONS/SQ FT)
FINE GRAINED SOILS	0 - 2	VERY SOFT	<0.25
	3 - 4	SOFT	0.25 - 0.50
	5 - 8	FIRM	0.50 - 1.00
	9 - 15	STIFF	1.00 - 2.00
	16 - 30	VERY STIFF	2.00 - 4.00
	31 - 50	HARD	>4.00
	>50	VERY HARD	

	N VALUE * (BLOWS/FT)	RELATIVE DENSITY
COARSE GRAINED SOILS	0 - 4	VERY LOOSE
	5 - 10	LOOSE
	11 - 30	MEDIUM DENSE
	31 - 50	DENSE
	>50	VERY DENSE

* ASTM D 1586; NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 IN. O.D., 1.4 IN. I.D. SAMPLER ONE FOOT.

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

MAJOR DIVISIONS			SYMBOLS	DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL COARSER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO.4 SIEVE	CLEAN GRAVELS — LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES — APPRECIABLE AMOUNT OF FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO.4 SIEVE	CLEAN SANDS — LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES — APPRECIABLE AMOUNT OF FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL FINER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

NOTE: DUAL SYMBOLS USED FOR BORDERLINE CLASSIFICATIONS

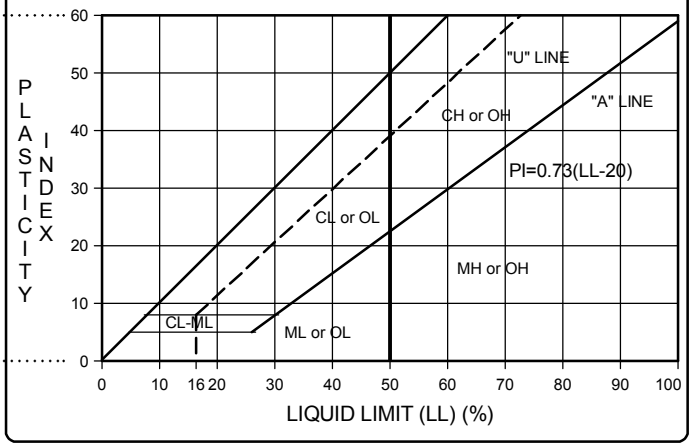
PARTICLE SIZE IDENTIFICATION

USCS (SOILS ONLY) *		SEDIMENTARY (ROCK ONLY)	
BOULDER	>300 mm	BOULDER	>256 mm
COBBLE	75 - 300 mm	COBBLE	64 - 256 mm
GRAVEL: COARSE	20 - 75 mm	PEBBLE	4 - 64 mm
GRAVEL: FINE	4.75 - 20 mm	GRANULE	2 - 4 mm
		SAND: V. COARSE	1 - 2 mm
SAND: COARSE	2 - 4.75 mm	SAND: COARSE	0.5 - 1 mm
SAND: MEDIUM	0.42 - 2 mm	SAND: MEDIUM	0.25 - 0.5 mm
SAND: FINE	0.074 - 0.42 mm	SAND: FINE	0.125 - 0.25 mm
		SAND: V. FINE	0.063 - 0.125 mm
SILT/CLAY	<0.074 mm	SILT	0.004 - 0.063 mm
		CLAY	<0.004 mm

* WELL GRADED - HAVING WIDE RANGE OF GRAIN SIZES AND APPRECIABLE AMOUNTS OF ALL INTERMEDIATE PARTICLE SIZES
* POORLY GRADED - PREDOMINANTLY ONE GRAIN SIZE, OR HAVING A RANGE OF SIZES WITH SOME INTERMEDIATE SIZES MISSING

PERCENTAGE OF PARTICLE TYPE IN DECREASING ORDER OF PARTICLE SIZE (GRAVEL,SAND,FINES)

PLASTICITY CHART



OTHER MATERIAL SYMBOLS

- Conglomerate/ Agglomerate
- Sandstone
- Silty Sandstone
- Clayey Sandstone
- Sandy Siltstone
- Siltstone
- Claystone
- Clayey Siltstone/ Silty Claystone
- Sandy Claystone
- Granitic/Intrusive
- Volcanic/Extrusive
- Metamorphic
- Limestone
- Dolomite
- Glacial Till
- Landslide Debris
- Marker Bed
- Artificial Fill
- Refuse
- Concrete/Asphalt

WELL SYMBOLS

- CONCRETE
- GROUT
- BENTONITE SEAL
- TRANSITION SAND
- SAND/GRAVEL PACK
- NATIVE/SLUFF
- CENTRALIZER

SAMPLE TYPE AND OTHER SYMBOLS

- BULK SAMPLE
- STANDARD PENETRATION TEST
- MODIFIED CALIFORNIA SAMPLE
- CORE SAMPLE
- SHELBY TUBE
- DRIVE SAMPLE

- Water Level at Time Drilling, or as Shown
- Static Water Level
- Pump Inlet
- Loss of Drilling Fluid
- MSL: Mean Sea Level
- AGS: Above Ground Surface
- BGS: Below Ground Surface
- BTOC: Below Top of Casing
- HSA: Hollow Stem Auger

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A1 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry, [20,60,20], loose.			DG-A1S-0.5-1			0.0		
							0.0		
						54/60	0.0		
	(3') CLAYEY SAND with GRAVEL (SC): very dark grayish brown (10YR 3/2) to yellowish brown (10YR 5/4), moist, [20,60,20], medium dense.			DG-A1S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085937
EQUIPMENT Geoprobe 6610 **EASTING** 6011451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A2 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL with SILT (GW-GM): gray (10YR 5/1), dry, [80,10,10], loose.			DG-A2S-0.5-1					
	(1.3') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): dark yellowish brown (10YR 3/4), dry, [30,60,10], loose.			DG-A2S-3.5-4		44/60			
5	(4.3') WELL-GRADED GRAVEL (GW): gray (10YR 5/1), dry, [90,10,0], loose.								
	(6.1') FAT CLAY (CH): yellowish brown (10YR 5/6), dry, [0,0,100], high plasticity, firm.					23/60			
10	(9') POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4) to dark gray (10YR 4/1), moist, [0,100,0], loose.					50/60			
15	(14') ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,0,100], low plasticity, peat-like, woody fibers present.								
	(17') FAT CLAY (CH): black (10YR 2/1), moist, [0,0,100], high plasticity, firm.					54/60			
	(18.8') SANDY LEAN CLAY (CL): very dark brown (10YR 2/2), moist, [0,30,70], medium plasticity, firm.			DG-A2S-19.5-20					
20	(20') Boring terminated.								
25									

CONTRACTOR PeneCore **NORTHING** 2085937
EQUIPMENT Geoprobe 6610 **EASTING** 6011351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A3 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 15 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND (SW): black (10YR 2/1), dry, [10,85,5], loose.			DG-A3S-0.5-1			0.0		
							0.0		
	(1.5') SILTY SAND with GRAVEL (SM): dark brown (10YR 3/3), dry, [20,60,20], dense.						0.0		
						43/60			
				DG-A3S-3.5-4			0.0		
5	(4.3') SILTY SAND (SM): dark yellowish brown (10YR 4/4), moist to wet, [0,75,25], loose.								
	(5.5') black (10YR 2/1), [0,60,40].								
						35/60			
10				DG-A3S-9.5-10					
							0.0		
	(12.5') ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,5,95], soft.					17/60	0.0		
15	(15') Boring terminated.								
20									
25									

CONTRACTOR PeneCore **NORTHING** 2085937
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A4 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): pale brown (10YR 6/3) to very dark gray (10YR 3/1), dry, [60,30,10], loose.			DG-A4S-0.5-1			0.0		
	(1.5') WELL-GRADED SAND with GRAVEL (SW): very dark grayish brown (10YR 3/2), dry, [15,80,5], medium dense.					45/60	0.0		
	(3.3') FAT CLAY with GRAVEL (CH): very dark grayish brown (10YR 3/2), moist, [20,0,80], firm.			DG-A4S-3.5-4			0.0		
5	(5.8') brick @3-6; changes color below brick to brown (10YR 4/3).						0.0		
	(8') WELL-GRADED GRAVEL (GW): gray (10YR 5/1), dry, [90,10,0], loose.					31/60	0.0		
10	(10') FAT CLAY with GRAVEL (CH): very dark grayish brown (10YR 3/2), moist, [20,0,80], firm.						0.0		
	(11.3') ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,0,100], firm, peat-like, fibrous.					45/60	0.0		
	(13.3') FAT CLAY (CH): black (10YR 2/1), moist, [0,0,100], high plasticity, firm.						0.0		
15							0.0		
	(17.5') POORLY GRADED SAND (SP): dark grayish brown (10YR 4/2), moist to wet, [0,100,0], medium dense.					58/60	0.0		
20	(20') Boring terminated.			DG-A4S-19.5-20			0.0		
25									

CONTRACTOR PeneCore **NORTHING** 2085937
EQUIPMENT Geoprobe 6610 **EASTING** 6011151
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A5 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry, [20,60,20], loose.			DG-A5S-0.5-1			0.0		
							0.0		
						44/60			
	(3') very pale brown (10YR 7/3).						0.0		
				DG-A5S-3.5-4					
	(4') grayish brown (10YR 5/2), [20,50,30].						0.0		
5									
							0.0		
							0.0		
	(7.5') dark gray (10YR 4/1), wet.					24/60			
10									
	(10.3') ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,0,100], soft.						0.0		
	(10.8') LEAN CLAY (CL): gray (10YR 5/1), moist, [0,0,100], soft.						0.0		
						40/60			
							0.0		
	(14') ORGANIC SOIL with SAND (OL): black (10YR 2/1), moist, [0,20,80], soft.						0.0		
15									
	(15.5') SILTY SAND (SM): gray (10YR 5/1), wet, [0,60,40], dense.						0.0		
							0.0		
						48/60			
				DG-A5S-19.5-20					
20	(20') Boring terminated.								
25									

CONTRACTOR PeneCore **NORTHING** 2085937
EQUIPMENT Geoprobe 6610 **EASTING** 6011051
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A6 **SHEET** 1 OF 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SANDY SILT (ML): gray (10YR 6/1), dry, [0,40,60], soft.			DG-A6S-0.5-1			0.0		
							0.0		
	(2.5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): very dark grayish brown (10YR 3/2) to very dark gray (10YR 3/1), dry, [60,30,10], loose.					39/60			
				DG-A6S-3.5-4			0.0		
5							0.0		
							0.0		
							0.0		
	(7.5') WELL-GRADED SAND with SILT (SW-SM): very dark brown (10YR 2/2), moist, [0,90,10], medium dense.					45/60			
10	(9.2') FAT CLAY (CH): very dark brown (10YR 2/2), moist, [0,5,95], high plasticity, firm, piece of fibrous material, Young Bay Mud.								
	(11.5') FAT CLAY with SAND (CH): black (10YR 2/1) to wet, [0,25,75], high plasticity, soft.					60/60			
15									
	(15.6') SILTY SAND (SM): dark grayish green (GLEY1 4/5GY), moist, [0,80,20].					50/60			
				DG-A6S-19.5-20					
20	(20') Boring terminated.								
25									

CONTRACTOR PeneCore **NORTHING** 2085937
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A7 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): gray (10YR 6/1), dry, [20,60,20], loose.			DG-A7S-0.5-1			0.0		
	(1') yellowish brown (10YR 5/4).						0.0		
						45/60	0.0		
	(3.8') SANDY LEAN CLAY (CL): dark yellowish brown (10YR 3/4) to yellowish brown (10YR 5/8), moist, [0,5,9] to [0,35,65], low to medium plasticity, firm.			DG-A7S-3.5-4			0.0		
5	(5') gray (10YR 5/1).						0.0		
							0.0		
							0.0		
						36/60	0.0		
	(7.5') gravel and cobbles for 0.5'.								
	(8') SANDY ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,30,70], firm.						0.0		
10	(9.5') SANDY LEAN CLAY (CL): very dark gray (10YR 3/1), moist, [0,30,70], low plasticity, firm.			DG-A7S-10-10.5			0.0		
							0.0		
						58/60	0.0		
	(13.5') SILTY SAND (SM): dark gray (10YR 4/1) to yellowish brown (10YR 5/8), wet, [0,60,40], loose.						0.0		
15							0.0		
						58/60			
							0.0		
20	(20') Boring terminated.						0.0		
25									

CONTRACTOR PeneCore **NORTHING** 2085937
EQUIPMENT Geoprobe 6610 **EASTING** 6010851
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-A8 **SHEET** 1 OF 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 17.5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): light brownish gray (10YR 6/2), dry, [20,60,20], loose.			DG-A8S-0.5-1			0.0		
							0.0		
	(2') very dark grayish brown (10YR 3/2).					40/60	0.0		
				DG-A8S-3.5-4			0.0		
5	(4.5') LEAN CLAY with SAND (CL): very dark gray (10YR 3/1), moist, [5,15,80], firm.						0.0		
	(6.7') ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,0,100], soft.					38/60	0.0		
							0.0		
	(8.7') SANDY LEAN CLAY (CL): black (10YR 2/1), moist, [0,40,60], low plasticity, firm.						0.0		
10							0.0		
	(11.5') SILTY SAND (SM): dark gray (10YR 4/1), moist, [0,60,40], dense.					52/60	0.0		
	(14') dark yellowish brown (10YR 4/6).						0.0		
15	(15') wet.						0.0		
						30/30	0.0		
				DG-A8S-17-17.5			0.0		
	(17.5') Boring terminated.								
20									
25									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085937
EASTING 6010751
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B1 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 5/3), moist, [20,60,20], medium dense.			DG-B1S-0.5-1			0.0		
							0.0		
						48/60	0.0		
				DG-B1S-3.5-4					
							0.0		
	(4.3') CLAYEY SAND with GRAVEL (SC): dark yellowish brown (10YR 4/4), moist, [20,60,20], medium dense.								
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085837
EASTING 6011451
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B2 **SHEET** 1 OF 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-B2S-0.5-1			0.0		
	(1.2') SILTY SAND (SM): brown (10YR 4/3), moist, [0,80,20], loose.						0.0		
	(2.6') FAT CLAY (CH): very dark brown (10YR 2/2), moist, [0,0,100], high plasticity, firm.			DG-B2S-3.5-4		40/60	0.0		
	(4.3') WELL-GRADED GRAVEL with SAND (GW): gray (10YR 5/1) to light yellowish brown (10YR 6/4), moist, [80,20,0], loose.						0.0		
5							0.0		
							0.0		
						27/60	0.0		
							0.0		
10							0.0		
	(10.7') FAT CLAY with SAND (CH): dark grayish brown (10YR 4/2), moist, [0,20,80], high plasticity, firm.					26/60	0.0		
							0.0		
15	(14.9') FAT CLAY (CH): gray (10YR 5/1), moist, [0,0,100], high plasticity, firm.						0.0		
	(15.5') ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,0,100], firm, peat-like, fibrous.					60/60	0.0		
							0.0		
20	(20') Boring terminated.			DG-B2S-19.5-20					
25									

CONTRACTOR PeneCore **NORTHING** 2085837
EQUIPMENT Geoprobe 6610 **EASTING** 6011351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B3 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark brown (7.5YR 3/3), dry, [15,65,20], loose.			DG-B3S-0.5-1			0.0		
							0.0		
						42/60	0.0		
				DG-B3S-3.5-4					
	(3.75') concrete for 0.25'.						0.0		
	(4') SILTY SAND (SM): very dark gray (10YR 3/1), moist, [0,60,40], medium dense.								
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085837
EASTING 6011251
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B4 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): gray (10YR 6/1), dry, [10,70,20], loose.			DG-B4S-0.5-1			0.0		
							0.0		
						30/60	0.0		
				DG-B4S-3.5-4			0.0		
	(4') yellowish brown (10YR 5/4). (4.25') brick for 0.25'. (4.5') brown (10YR 4/3), [0,60,40].								
5	(5.1') LEAN CLAY with SAND (CL): brown (10YR 4/3) to dark gray (10YR 4/1), moist, [0,20,80], high plasticity, soft.						0.0		
	(6') wet, gravel for 0.25'.						0.0		
						37/60	0.0		
	(9') LEAN CLAY (CL): black (10YR 2/1), dry, [0,0,100], non-plastic, firm.						0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085837
EQUIPMENT Geoprobe 6610 **EASTING** 6011151
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B5 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
0	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2), dry, [15,65,20], loose.			DG-B5S-0.5-1		30/60	0.0		
							0.0		
							0.0		
				DG-B5S-3.5-4			0.0		
	(4') LEAN CLAY with GRAVEL (CL): dark gray (10YR 4/1), wet, [15,5,80], medium plasticity, firm.						0.0		
5							0.0		
							0.0		
						18/60			
							0.0		
							0.0		
10	(9.5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark gray (10YR 4/1), wet, [70,20,10], medium dense.						0.0		
						6/60			
15	(15') no recovery.								
						0/60			
20	(20') Boring terminated.								
25									

CONTRACTOR PeneCore **NORTHING** 2085837
EQUIPMENT Geoprobe 6610 **EASTING** 6011051
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B6 **SHEET** 1 OF 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') GRAVELLY SILT (ML): brown (10YR 4/3), dry, [30,5,65], soft.			DG-B6S-0.5-1			0.0		
	(1.2') SILTY SAND with GRAVEL (SM): very dark grayish brown (10YR 3/2), dry, [20,60,20], medium dense.						0.0		
	(2.2') SILTY SAND (SM): yellowish brown (10YR 5/4), moist, [0,80,20], dense.					39/60	0.0		
	(3.5') SILTY GRAVEL with SAND (GM): very dark grayish green (GLEY1 3/10Y), moist, [70,15,15], loose.			DG-B6S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085837
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B7 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): light gray (10YR 7/1), dry, [20,60,20], loose.			DG-B7S-0.5-1			0.0		
							0.0		
						40/60	0.0		
				DG-B7S-3.5-4			0.0		
5	(4.5') LEAN CLAY (CL): dark gray (10YR 4/1), moist, [5,5,90], non-plastic to low plasticity, firm.						0.0		
							0.0		
						38/60	0.0		
							0.0		
10	(9.7') ORGANIC SOIL (OL): black (10YR 2/1), moist, [0,0,100] to [0,30,70], soft.						0.0		
							0.0		
						50/60	0.0		
							0.0		
15	(15') SILTY SAND (SM): dark gray (10YR 4/1) to brownish yellow (10YR 6/6), wet, [0,60,40], loose.			DG-B7S-14.5-15			0.0		
							0.0		
						48/60	0.0		
20	(20') Boring terminated.								
25									

CONTRACTOR PeneCore **NORTHING** 2085837
EQUIPMENT Geoprobe 6610 **EASTING** 6010851
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B8 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): grayish brown (10YR 5/2), dry, [20,5,75], soft, with wood pieces.			DG-B8S-0.5-1			0.0		
	(1.2') SILTY GRAVEL with SAND (GM): very dark gray (10YR 3/1) to olive (5Y 5/3), dry, [60,20,20], medium dense.						0.0		
	(2.6') FAT CLAY (CH): greenish black (GLEY1 2.5/10GY), moist, [0,10,90], high plasticity, firm, Young Bay Mud.			DG-B8S-3.5-4		41/60	0.0		
	(4') SILTY GRAVEL (GM): very dark gray (GLEY1 3/N), wet, [70,10,20], loose.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085837
EASTING 6010751
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B9 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): yellowish brown (10YR 5/4), dry, [10,60,30], loose.			DG-B9S-0.5-1			0.0		
							0.0		
	(2') light brownish gray (10YR 6/2).								
	(2.5') SILTY SAND with GRAVEL (SM): brown (10YR 5/3), [20,60,20].					40/60	0.0		
				DG-B9S-3.5-4			0.0		
	(4.3') LEAN CLAY (CL): gray (10YR 5/1), moist, [0,5,95], low plasticity, firm.								
5	(5') SILTY SAND (SM): dark gray (10YR 4/1) to black (10YR 2/1), wet, [0,60,40], loose.						0.0		
							0.0		
						38/60	0.0		
				DG-B9S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085837
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-B10 **SHEET** 1 OF 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): gray (10YR 5/1), dry, [10,60,30], loose.			DG-B10S-0.5-1			0.0		
	(1.1') ORGANIC SOIL (OL): very dark grayish brown (10YR 3/2), moist, [0,10,90], soft.						0.0		
						38/60	0.0		
	(3.5') ORGANIC SOIL with SAND (OL): very dark gray (10YR 3/1), wet, [0,20,80], soft.			DG-B10S-3.5-4					
	(4') SILTY SAND (SM): dark gray (10YR 4/1), wet, [0,60,40], loose.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085813
EQUIPMENT Geoprobe 6610 **EASTING** 6010538
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C1 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), moist, [20,60,20], medium dense.			DG-C1S-0.5-1			0.0		
							0.0		
						51/60	0.0		
				DG-C1S-3.5-4					
							0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085737
EASTING 6011451
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C2 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 5/3), dry, [20,60,20], loose.			DG-C2S-0.5-1			0.0 0.0		
	(2.6') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): very dark grayish brown (10YR 3/2), moist, [20,70,10].			DG-C2S-3.5-4		40/60	0.0 0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085737
EASTING 6011351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C3 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3) to grayish brown (10YR 5/2), dry, [25,55,20], loose.			DG-C3S-0.5-1			0.0		
							0.0		
							0.0		
						42/60			
				DG-C3S-3.5-4			0.0		
	(4.25') dark brown (10YR 3/3).								
5	(5') wet.						0.0		
	(6.5') SILT (ML): dark gray (10YR 4/1), wet, [0,5,95], soft.						0.0		
						32/60	0.0		
							0.0		
				DG-C3S-9.5-10					
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085737
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C4 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): gray (10YR 5/1), dry, [5,60,35], loose.			DG-C4S-0.5-1			0.0		
	(1.5') black (10YR 2/1).					46/60	0.0		
				DG-C4S-3.5-4			0.0		
	(4') CLAY SAND (SC): yellowish brown (10YR 5/6), moist, [0,60,40], loose.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085737
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C5 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): pale brown (10YR 6/3), dry, [15,65,20], loose.			DG-C5S-0.5-1			0.0		
							0.0		
						30/60	0.0		
	(3') black (10YR 2/1).			DG-C5S-3.5-4			0.0		
5	(5') LEAN CLAY (CL): brownish yellow (10YR 6/6), moist, [0,5,95], medium plasticity, firm.						0.0		
							0.0		
						16/60			
							0.0		
				DG-C5S-9-9.5					
	(9.5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): brown (10YR 5/3), wet, [70,20,10], loose.								
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085737
EQUIPMENT Geoprobe 6610 **EASTING** 6011051
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C6 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SANDY SILT with GRAVEL (ML): brown (10YR 4/3) to dark grayish brown (10YR 4/2), dry, [20,20,60], soft.			DG-C6S-0.5-1			0.0		
	(1.5') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): very dark grayish brown (10YR 3/2), dry to moist with depth, [25,65,10], loose.					35/60	0.0		
	(3.5') SILTY SAND with GRAVEL (SM): very dark gray (10YR 3/1), moist, [30,50,20], medium dense.			DG-C6S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085737
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C7 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 15 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 5/3) to gray (10YR 5/1), dry, [15,65,20], loose, light yellowish brown (10YR 6/4).			DG-C7S-0.5-1			0.0		
							0.0		
						52/60	0.0		
	(3.3') SILTY SAND (SM): dark gray (10YR 4/1), wet, [0,60,40], loose.			DG-C7S-3.5-4			0.0		
5							0.0		
							0.0		
	(7.5') SILTY SAND with GRAVEL (SM): gray (10YR 5/1), wet, [20,60,20], medium dense.					48/60	0.0		
	(9') SILTY SAND (SM): very dark gray (10YR 3/1), wet, [0,70,30], loose.			DG-C7S-9.5-10			0.0		
10							0.0		
						59/60	0.0		
	(12.5') LEAN CLAY (CL): dark gray (10YR 4/1), moist, [0,0,100], medium plasticity, firm.						0.0		
15	(15') Boring terminated.								
20									
25									

CONTRACTOR PeneCore **NORTHING** 2085737
EQUIPMENT Geoprobe 6610 **EASTING** 6010851
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C8 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): gray (10YR 5/1), dry, [15,10,75], soft.			DG-C8S-0.5-1			0.0		
	(1.2') SILTY GRAVEL with SAND (GM): very dark brown (10YR 2/2), moist, [60,20,20], medium dense.						0.0		
	(2.4') SILTY SAND with GRAVEL (SM): black (10YR 2/1), dry,[15,70,15], loose.			DG-C8S-3.5-4		33/60	0.0		
	(4') FAT CLAY (CH): greenish black (GLEY1 2.5/10GY), moist, [0,0,100], high plasticity, hard.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085737
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C9 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry, [20,60,20], loose.			DG-C9S-0.5-1			0.0		
	(1.4') SILTY SAND (SM): very dark gray (10YR 3/1), moist, [5,75,20], medium dense.					30/60	0.0		
							0.0		
				DG-C9S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085737
EASTING 6010651
ANGLE Vertical

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-C10 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): dark yellowish brown (10YR 3/4), dry, [25,0,75], soft.			DG-C10S-0.5-1			0.0		
	(1.6') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): brown (10YR 4/3), moist, [60,30,10], medium dense.					39/60	0.0		
	(3.5') SILTY GRAVEL (GM): very dark grayish brown (10YR 3/2), moist, [75,5,20], loose.			DG-C10S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085737
EASTING 6010551
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D1 **SHEET** 1 **OF** 1
START DATE 8/20/2018 **ELEVATION DATA**
FINISH DATE 8/20/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 15 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	SAMPLE ID	RECOVERY	PID READING (ppm)	COMMENTS
	(0') SILTY SAND (SM): dark grayish brown (10YR 4/2), dry, [10,70,20], loose.	DG-D1S-0.5-1		0.0	
	(1.5') dark yellowish brown (10YR 3/6), dry.			0.0	
	(2') SILTY SAND with GRAVEL (SM): very dark grayish brown (10YR 3/2), dry, [20,60,20], loose.		37/60	0.0	
		DG-D1S-3.5-4		0.0	
5	(5') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): very dark grayish brown (10YR 3/2), dry, [40,50,10], loose.		28/60		
	(8.5') WELL-GRADED GRAVEL (GW): light gray (10YR 7/1), dry, [90,10,0], loose.				
10	(10') WELL-GRADED GRAVEL with SAND (GW): dark brown (10YR 3/3), wet, [80,20,0], loose.	DG-D1S-9.5-10		0.0	
				0.0	
			18/60		
	(13') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark brown (10YR 3/3), wet, [60,30,10], loose.			0.0	
15	(15') Boring terminated.			0.0	
20					
25					

CONTRACTOR PeneCore **NORTHING** 2085637
EQUIPMENT Geoprobe 6610 **EASTING** 6011451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D2 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark brown (10YR 3/3), dry, [20,60,20], loose.			DG-D2S-0.5-1			0.0		
	(1.5') LEAN CLAY (CL): dark brown (10YR 3/3), moist, [0,0,100], medium plasticity, firm.						0.0		
						30/60	0.0		
				DG-D2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085637
EASTING 6011351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D3 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 13.5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 5/3), dry, [20,60,20], dense.			DG-D3S-0.5-1			0.0 0.0		
	(2.5') brown (10YR 4/3) and very pale brown (10YR 8/2), from 4-4.25'.			DG-D3S-3.5-4		40/60	0.0 0.0		
5	(5') wet.						0.0		
						26/60	0.0 0.0		
10	(10') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark gray (10YR 4/1), wet, [70,20,10], dense.			DG-D3S-9.5-10		23/42	0.0 0.0 0.0		
	(13.5') Boring terminated - refusal.								
15									
20									
25									

CONTRACTOR PeneCore **NORTHING** 2085637
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL (GW): light gray (10YR 7/1), dry, [90,10,0], loose.			DG-D4S-0.5-1			0.0		
	(1.5') WELL-GRADED SAND with GRAVEL (SW): grayish brown (10YR 5/2) to black (10YR 2/1), moist, [30,70,0], loose.						0.0		
						38/60	0.0		
				DG-D4S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085637
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D5 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2), dry, [15,65,20], loose.			DG-D5S-0.5-1			0.0		
							0.0		
						36/60	0.0		
				DG-D5S-3.5-4					
							0.0		
5	(4.8') CLAYEY SAND to SANDY CLAY (SC-CL): dark grayish brown (10YR 4/2), wet, [0,40,60], soft.						0.0		
							0.0		
						43/60			
							0.0		
	(9') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085637
EASTING 6011051
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D6 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SANDY SILT with GRAVEL (ML): grayish brown (10YR 5/2), dry to moist with depth, [20,60,20], soft.			DG-D6S-0.5-1			0.0		
							0.0		
	(2.4') SILTY SAND (SM): very dark gray (10YR 3/1), moist, [0,80,20], medium dense.					31/60			
				DG-D6S-3.5-4			0.0		
							0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085637
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D7 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-D7S-0.5-1			0.0		
	(1.8') WELL-GRADED SAND (SW): very dark gray (10YR 3/1) to dark yellowish brown (10YR 4/4), moist, [0,95,5], medium dense.					41/60	0.0 0.0		
	(3.4') SILTY SAND (SM): very dark gray (10YR 3/1), moist, [0,70,30], medium dense.			DG-D7S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085637
EASTING 6010851
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D8 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): very dark gray (10YR 3/1), dry to moist with depth, [20,60,20], medium dense.			DG-D8S-0.5-1					
	(1.6') WELL-GRADED SAND with SILT (SW-SM): dark yellowish brown (10YR 3/4), moist, [10,80,10], medium dense.					44/60			
	(3.6') WELL-GRADED GRAVEL with SAND (GW): very dark grayish brown (10YR 3/2), moist, [70,30,0], loose.			DG-D8S-3.5-4					Sample at 3.5-4 ft likely contaminated by cooler ice melting - jar full with water
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085637
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D9 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): gray (10YR 5/1), moist, [0,60,40], loose.			DG-D9S-0.5-1			0.0		
							0.0		
	(2.5') LEAN CLAY with SAND (CL): dark brown (10YR 3/3), moist, [5,20,75], low plasticity, firm.					26/60	0.0		
				DG-D9S-3.5-4			0.0		
5	(5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark gray (10YR 4/1), wet, [70,20,10], loose.						0.0		
							0.0		
	(7.5') LEAN CLAY (CL): dark greenish gray (GLEY1 4/5G_1), moist, [0,0,100], medium plasticity, firm.					28/60	0.0		
	(9') SILTY SAND (SM): dark gray (10YR 4/1), moist, [0,70,30], loose.			DG-D9S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085637
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-D10 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): brown (10YR 4/3), dry, [20,5,75], soft.			DG-D10S-0.5-1			0.0		
	(1.3') SILTY SAND with GRAVEL (SM): very dark gray (10YR 3/1), dry, [20,60,20], medium dense.						0.0		
						37/60	0.0		
	(3.3') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): very dark gray (10YR 3/1), moist, [70,20,10], medium dense.			DG-D10S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085637
EQUIPMENT Geoprobe 6610 **EASTING** 6010551
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-DE-89 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): light yellowish brown (10YR 6/4), dry, [10,60,30], medium dense.			DG-DE-89S-0.5-1			0.0		
							0.0		
	(2.5') black (10YR 2/1).					36/60	0.0		
				DG-DE-89S-3.5-4			0.0		
5	(5') SILTY SAND with GRAVEL (SM): , [20,60,20].						0.0		
	(5.5') LEAN CLAY (CL): yellowish brown (10YR 5/6) to grayish brown (10YR 5/2), moist, [0,5,95], low plasticity, firm.						0.0		
	(7.5') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.					38/60	0.0		
				DG-DE-89S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085594
EASTING 6010701
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E1 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): dark gray (10YR 4/1), dry, [10,70,20], loose.			DG-E1S-0.5-1			0.0		
	(1.2') brown (10YR 4/3).						0.0		
	(2.6') dark yellowish brown (10YR 3/6), moist.			DG-E1S-3.5-4		42/60	0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085537
EASTING 6011451
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E2 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): dark gray (10YR 4/1), dry, [10,60,30], loose.			DG-E2S-0.5-1			0.0		
							0.0		
	(2.4') very dark brown (10YR 2/2).					34/60	0.0		
				DG-E2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085537
EASTING 6011351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E3 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): yellowish brown (10YR 5/4) to brown (10YR 5/3), dry, [20,60,20], loose.			DG-E3S-0.5-1			0.0		
							0.0		
	(2.5') brown (10YR 4/3).					40/60	0.0		
				DG-E3S-3.5-4			0.0		
	(4.5') dark reddish brown (5YR 2/5/2).								
5	(5') wet.						0.0		
							0.0		
	(7.5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark gray (10YR 4/1), moist, [70,20,10], loose.					24/60			
							0.0		
							0.0		
				DG-E3S-9.5-10			0.0		
10	(10') wet, [80,10,10].						0.0		Unable to collect sample deeper than 10 ft bgs due to coarse soil (80% coarse gravel and cobbles)
							0.0		
							0.0		
						15/60			
							0.0		
	(14.6') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.								
							0.0		
							0.0		
						12/60			
							0.0		
							0.0		
20	(20') Boring terminated.								
25									

CONTRACTOR PeneCore **NORTHING** 2085537
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND with GRAVEL (SW): pale brown (10YR 6/3), dry, [30,65,5], loose.			DG-E4S-0.5-1			0.0		
							0.0		
	(2.5') WELL-GRADED SAND with SILT (SW-SM): very dark gray (10YR 3/1), moist, [10,80,10], medium dense.					26/60	0.0		
				DG-E4S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085537
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E5 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark gray (10YR 4/1), dry, [20,60,20], loose.			DG-E5S-0.5-1			0.0		
							0.0		
						40/60	0.0		
				DG-E5S-3.5-4					
	(4') black (10YR 2/1), wet, [30,55,15].						0.0		
5									
	(5.4') SANDY LEAN CLAY (CL): yellowish brown (10YR 5/4), wet, [0,40,60], soft.						0.0		
							0.0		
						50/60	0.0		
				DG-E5S-9-9.5			0.0		
	(9.2') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.								
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085537
EQUIPMENT Geoprobe 6610 **EASTING** 6011051
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E6 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): brown (10YR 4/3), dry, [20,5,75], soft.			DG-E6S-0.5-1			0.0		
	(1.6') SILTY SAND with GRAVEL (SM): very dark grayish brown (10YR 3/2), moist, [30,50,20], loose.					26/60	0.0 0.0		
	(3.3') SILTY SAND (SM): black (10YR 2/1), moist, [0,60,40], medium dense, small shell pieces scattered throughout.			DG-E6S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085537
EASTING 6010951
ANGLE Vertical

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E7 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): pale brown (10YR 6/3) to dark gray (10YR 4/1), dry to moist, [5,60,35], loose.			DG-E7S-0.5-1			0.0		
							0.0		
						42/60			
				DG-E7S-3.5-4			0.0		
	(4.2') LEAN CLAY (CL): dark gray (10YR 4/1), wet, [5,5,90], medium plasticity, soft.						0.0		
5	(5') CLAYEY SAND (SC): dark gray (10YR 4/1), wet, [0,60,40], loose.						0.0		
	(6.8') SILTY SAND with GRAVEL (SM): dark gray (10YR 4/1), wet, [20,60,20], loose.						0.0		
						28/60			
							0.0		
				DG-E7S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085537
EASTING 6010851
ANGLE Vertical

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E8 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): grayish brown (10YR 5/2), dry, [25,0,75], soft.			DG-E8S-0.5-1					
	(1') SILTY GRAVEL with SAND (GM): dark gray (10YR 4/1), dry, [60,20,20], medium dense.						0.0		
	(2.2') SILTY SAND (SM): very dark gray (10YR 3/1), moist, [0,70,30], medium dense.					31/60	0.0 0.0		
	(3.2') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): very dark grayish brown (10YR 3/2), moist, [60,30,10], loose.			DG-E8S-3.5-4			0.0		
	(4.3') SILTY SAND (SM): black (10YR 2/1), moist, [0,70,30], dense.								
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085537
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E9 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): gray (10YR 5/1), dry, [20,60,20], loose.			DG-E9S-0.5-1			0.0		
							0.0		
	(2.5') WELL-GRADED SAND with GRAVEL (SW): dark brown (10YR 3/3), dry, [20,80,0], medium dense.					20/60	0.0		
				DG-E9S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085537
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E10 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): dark grayish brown (10YR 4/2), dry, [20,5,75], soft.			DG-E10S-0.5-1			0.0		
	(1.4') GRAVELLY SILT (ML): dark grayish brown (10YR 4/2), dry, [30,10,60], soft.						0.0		
	(2.5') WELL-GRADED GRAVEL (GW): gray (10YR 5/1), dry, [90,5,5], very loose.			DG-E10S-3.5-4		36/60	0.0		
	(4.1') FAT CLAY (CH): very dark grayish brown (10YR 3/2), moist, [0,5,95], firm, Young Bay Mud.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085537
EQUIPMENT Geoprobe 6610 **EASTING** 6010551
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-E11 **SHEET** 1 OF 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): light gray (10YR 7/1), dry, [10,55,35], loose.			DG-E11S-0.5-1			0.0		
	(1.9') SANDY LEAN CLAY (CL): dark brown (10YR 3/3), dry, [10,30,60], firm.					39/60	0.0		
				DG-E11S-3.5-4			0.0		
5	(4.9') SANDY LEAN CLAY (CL): very dark gray (10YR 3/1), wet, [0,40,60], low plasticity, soft.						0.0		
						28/60	0.0		
				DG-E11S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085537
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F1 **SHEET** 1 **OF** 1
START DATE 8/20/2018 **ELEVATION DATA**
FINISH DATE 8/20/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 15 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): gray (10YR 5/1), dry, [5,75,20], loose.			DG-F1S-0.5-1			0.0		
	(1.4') dark yellowish brown (10YR 3/4).						0.0		
	(2.5') dark brown (10YR 3/3).					43/60	0.0		
				DG-F1S-3.5-4			0.0		
5	(5') SILTY SAND with GRAVEL (SM): dark brown (10YR 3/3), dry, [15,65,20], loose.								
						39/60	0.0		
							0.0		
10	(10') WELL-GRADED SAND with SILT and GRAVEL (GW-GM): very dark gray (10YR 3/1), wet, [30,60,10], loose.			DG-F1S-9.5-10			0.0		
							0.0		
						16/60	0.0		
							0.0		
15	(15') Boring terminated.								
20									
25									

CONTRACTOR PeneCore **NORTHING** 2085437
EQUIPMENT Geoprobe 6610 **EASTING** 6011451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F2 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): very dark grayish brown (10YR 3/2), dry, [10,60,30], loose.			DG-F2S-0.5-1			0.0		
							0.0		
	(2.5') very dark brown (10YR 2/2).					33/60	0.0		
				DG-F2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085437
EASTING 6011351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F3 **SHEET** 1 OF 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 20 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): pale brown (10YR 6/3), dry, [20,60,20], loose.			DG-F3S-0.5-1			0.0		
							0.0		
						20/60			
				DG-F3S-3.5-4					
	(4') pieces of brick.								
5	(5') dark brown (10YR 3/3).						0.0		
							0.0		
						14/60			
	(9.5') yellowish brown (10YR 5/6).			DG-F3S-9.5-10					
10							0.0		
	(10.4') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
						38/60	0.0		
15							0.0		
	(16') SILTY SAND (SM): dark gray (10YR 4/1), wet, [5,65,30], loose.								
						25/60	0.0		
20	(20') Boring terminated.								
25									

CONTRACTOR PeneCore **NORTHING** 2085437
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F4 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND with GRAVEL (SW): dark grayish brown (10YR 4/2), dry, [30,65,5], loose.			DG-F4S-0.5-1			0.0		
							0.0		
						14/60			
				DG-F4S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085437
EQUIPMENT Geoprobe 6610 **EASTING** 6011151
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F5 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): gray (10YR 6/1), dry, [20,60,20], loose.			DG-F5S-0.5-1			0.0		
							0.0		
	(2.5') dark gray (10YR 4/1) to black (10YR 2/1).					32/60	0.0		
				DG-F5S-3.5-4			0.0		
	(4.4') SANDY SILT (ML): yellowish brown (10YR 5/4), wet, [0,40,60], soft.								
5							0.0		
							0.0		
						60/60			
	(8') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
							0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085437
EQUIPMENT Geoprobe 6610 **EASTING** 6011051
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F6 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL (GW): gray (10YR 5/1), dry, [100,0,0], very loose.			DG-F6S-0.5-1			0.0		
	(1.1') SILTY GRAVEL with SAND (GM): very dark grayish brown (10YR 3/2), moist, [60,20,20], medium dense.						0.0		
	(2.4') WELL-GRADED GRAVEL with SAND (GW): light gray (10YR 7/1), wet, [80,20,0], very loose, concrete accretions.					42/60	0.0		
	(3.8') SILTY GRAVEL with SAND (GM): dark grayish brown (10YR 4/2), wet, [50,30,20], medium dense.			DG-F6S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085437
EASTING 6010951
ANGLE Vertical

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F7 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): dark gray (10YR 4/1) to very dark brown (10YR 2/2), dry, [10,70,20], medium dense.			DG-F7S-0.5-1			0.0		
	(1.8') moist.					39/60	0.0		
				DG-F7S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085437
EASTING 6010851
ANGLE Vertical

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F8 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): grayish brown (10YR 5/2), dry, [20,5,75], soft.			DG-F8S-0.5-1			0.0		
	(1.6') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark grayish brown (10YR 4/2) to black (10YR 2/1), moist, [60,30,10], medium dense.					32/60	0.0 0.0		
	(3.5') POORLY GRADED SAND (SP): dark yellowish brown (10YR 4/4), moist, [0,100,0], dense.			DG-F8S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085437
EASTING 6010751
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F9 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): gray (10YR 6/1) to yellowish brown (10YR 5/6), dry, [15,65,20], loose, black (10YR 2/1).			DG-F9S-0.5-1			0.0		
							0.0		
						36/60	0.0		
				DG-F9S-3.5-4					
	(4') SILTY SAND (SM): very dark grayish brown (10YR 3/2), moist, [0,60,40], loose.						0.0		
	(4.5') [10,60,30], from 4.5-5'.								
5	(5') dark grayish brown (10YR 4/2).						0.0		
							0.0		
	(7.5') SANDY LEAN CLAY with GRAVEL (CL): dark gray (10YR 4/1), wet, [20,25,55], low plasticity, firm.					28/60	0.0		
				DG-F9S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085437
EQUIPMENT Geoprobe 6610 **EASTING** 6010651
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F10 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): dark grayish brown (10YR 4/2), dry, [20,5,75], soft.			DG-F10S-0.5-1			0.0		
	(1.1') SILTY GRAVEL with SAND (GM): gray (10YR 5/1), dry, [70,15,15], loose.						0.0		
	(2.6') CLAYEY GRAVEL (GC): very dark grayish brown (10YR 3/2), dry, [80,0,20], dense.			DG-F10S-3.5-4		38/60	0.0		
	(4') WELL-GRADED GRAVEL (GW): light gray (10YR 7/2), dry, [100,0,0], very loose.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085437
EQUIPMENT Geoprobe 6610 **EASTING** 6010551
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-F11 **SHEET** 1 OF 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2) to gray (10YR 5/1), dry, [20,60,20], loose, dark yellowish brown (10YR 3/4) to dark gray (10YR 4/1).			DG-F11S-0.5-1			0.0		
							0.0		
	(2.3') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): , dry, [70,20,10], loose, solidified oil from 18 to bottom of core, wet liquid oil at 25.					34/60	0.0		
				DG-F11S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085437
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-FG-9/10 **SHEET** 1 OF 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') CONCRETE.								
	(0.3') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [15,60,25], medium dense.			DG-FG-9/10S-0.5-1			0.0		
	(1') LEAN CLAY with GRAVEL (CL): dark brown (10YR 3/3), moist, [15,10,75], low plasticity, firm.						0.0		
						30/60	0.0		
	(3.5') very dark grayish brown (10YR 3/2).			DG-FG-9/10S-3.5-4			0.0		
5	(5') SILTY SAND (SM): dark gray (10YR 4/1), wet, [0,60,40], loose.						0.0		
	(7') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.					23/60	0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085387
EQUIPMENT Geoprobe 6610 **EASTING** 6010613
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G1 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-G1S-0.5-1			0.0		
						37/60	0.0		
							0.0		
				DG-G1S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085337
EASTING 6011451
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G2 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): very dark grayish brown (10YR 3/2), dry, [10,75,15], loose.			DG-G2S-0.5-1			0.0		
	(1') very dark brown (10YR 2/2), moist.						0.0		
						40/60	0.0		
				DG-G2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085337
EASTING 6011351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G3 **SHEET** 1 OF 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 15 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): pale brown (10YR 6/3), dry, [15,65,20], medium dense.			DG-G3S-0.5-1			0.0		
							0.0		
	(2.5') brown (10YR 4/3).					36/60	0.0		
				DG-G3S-3.5-4			0.0		
5	(5') [25,55,20].						0.0		
							0.0		
	(7.5') dark yellowish brown (10YR 4/6).					23/60	0.0		
							0.0		
10	(10') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.			DG-G3S-9.5-10			0.0		
							0.0		
						52/60	0.0		
15	(15') Boring terminated.						0.0		
20									
25									

CONTRACTOR PeneCore **NORTHING** 2085337
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): gray (10YR 6/1) to very dark gray (10YR 3/1), dry to moist, [30,60,10], loose.			DG-G4S-0.5-1		20/60	0.0 0.0 0.0 0.0		No acetate liner used for this boring, driller error.
				DG-G4S-3.5-4					
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085337
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G5 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): light gray (10YR 7/2), dry, [20,60,20], loose.			DG-G5S-0.5-1			0.0		
							0.0		
	(1.5') yellowish brown (10YR 5/6), [10,70,20].						0.0		
						25/60			
							0.0		
				DG-G5S-3.5-4					
							0.0		
5	(4.8') WELL-GRADED GRAVEL with SAND and SILT (GW-GM): dark gray (10YR 4/1), wet, [60,30,10], loose.						0.0		
	(6') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.					33/60			
							0.0		
							0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085337
EASTING 6011051
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G6 **SHEET** 1 OF 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SANDY SILT (ML): brown (10YR 5/3), dry, [10,30,60], soft.			DG-G6S-0.5-1			0.0		
	(1.2') very dark grayish brown (10YR 3/2).						0.0		
	(1.5') WELL-GRADED SAND with SILT (SW-SM): dark brown (10YR 3/3), moist, [0,90,10], loose.					40/60	0.0		
	(3.5') SILTY GRAVEL (GM): dark brown (10YR 3/3), moist, [60,10,30], loose.			DG-G6S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085337
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G7 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): gray (10YR 6/1), dry, [5,70,25], loose.			DG-G7S-0.5-1			0.0		
	(1.75') yellowish brown (10YR 5/6).						0.0		
	(2.5') SANDY LEAN CLAY with GRAVEL (CL): dark grayish brown (10YR 4/2), moist, [15,25,60], low plasticity, firm.			DG-G7S-3.5-4		36/60	0.0		
5	(4.5') GRAVEL and COBBLES (GP): black (10YR 2/1), gravel and cobbles.						0.0		
	(7.5') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.					36/60	0.0		
10	(10') Boring terminated.						0.0		
15									

CONTRACTOR PeneCore **NORTHING** 2085337
EQUIPMENT Geoprobe 6610 **EASTING** 6010851
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G8 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): brown (10YR 5/3), dry, [20,5,75], very soft.			DG-G8S-0.5-1			0.0		
	(1.6') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark grayish brown (10YR 4/2) to dark yellowish brown (10YR 3/4), moist, [70,20,10], medium dense.					34/60	0.0		
	(3.6') SILTY SAND (SM): black (10YR 2/1), moist, [0,80,20], dense.			DG-G8S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085337
EASTING 6010751
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G9 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry, [20,60,20], medium dense.			DG-G9S-0.5-1			0.0		
	(2.1') SILTY SAND (SM): black (10YR 2/1), wet, [0,70,30], medium dense.					40/60	0.0		
				DG-G9S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085337
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G10 **SHEET** 1 **OF** 1
START DATE 9/26/2018
FINISH DATE 9/26/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2), dry, [20,60,20], loose, piece of wood at bottom.			DG-G10S-0.5-1		10/18	<1		
	(3.5') rock (potentially quartzite) encountered at just under 3.5'.			DG-G10S-3.5-4		4/18			
5	(5') Boring terminated.						<1		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT CME
DRILL MTHD HSA
DIAMETER 6
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085337
EASTING 6010551
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-G11 **SHEET** 1 OF 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): light gray (10YR 7/1), dry, [10,60,30], loose.			DG-G11S-0.5-1			0.0		
							0.0		
	(2') dark yellowish brown (10YR 3/6).					32/60	0.0		
				DG-G11S-3.5-4			0.0		
	(4') SILTY SAND with GRAVEL (SM): very pale brown (10YR 7/4), [20,60,20].								
5	(5') SANDY LEAN CLAY (CL): very dark gray (10YR 3/1), moist, [10,20,70], low plasticity, firm.						0.0		
							0.0		
						30/60	0.0		
							0.0		
	(9') ORGANIC SOIL (OL): very dark grayish brown (10YR 3/2), moist, [0,0,100], low plasticity, soft.			DG-G11S-9.5-10					
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085337
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H1 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 15 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3) to dark brown (10YR 3/3), dry, [20,60,20], loose.			DG-H1S-0.5-1			0.0		
						36/60	0.0		
				DG-H1S-3.5-4			0.0		
							0.0		
5	(5') yellowish brown (10YR 5/4) to light gray (10YR 7/2).						0.0		
						19/60	0.0		
							0.0		
							0.0		
10	(10') wet, [15,80,5], increasing sand 60 to 80%.						0.0		
							0.0		
						21/60	0.0		
							0.0		
15	(15') Boring terminated.								
20									
25									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085237
EASTING 6011451
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H2 **SHEET** 1 OF 1
START DATE 8/20/2018 **ELEVATION DATA**
FINISH DATE 8/20/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): pale brown (10YR 6/3), dry, [10,60,30], loose.			DG-H2S-0.5-1			0.0		
	(1.6') SILTY SAND with GRAVEL (SM): dark brown (10YR 3/3), dry, [30,55,15], loose.						0.0		
							0.0		
						37/60			
				DG-H2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085237
EQUIPMENT Geoprobe 6610 **EASTING** 6011351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H3 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): pale brown (10YR 6/3), moist, [5,60,35], medium dense.			DG-H3S-0.5-1			0.0		
							0.0		
						36/60	0.0		
				DG-H3S-3.5-4			0.0		
5	(5.1') gravel to 5.5' bgs.								
	(5.5') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
							0.0		
						33/60			
							0.0		
				DG-H3S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085237
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): yellowish brown (10YR 5/4) to very dark gray (10YR 3/1), dry to moist, [30,60,10], loose.			DG-H4S-0.5-1		46/60			
	(3.5') SANDY LEAN CLAY (CL): very dark brown (10YR 2/2), wet, [0,30,70].			DG-H4S-3.5-4					
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085237
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H5 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2).			DG-H5S-0.5-1			0.0		
							0.0		
							0.0		
						36/60			
	(3') dark gray (10YR 4/1).			DG-H5S-3.5-4			0.0		
5	(5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark gray (10YR 4/1), wet, [60,30,10], loose.						0.0		
	(6') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
						50/60			
							0.0		
							0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085237
EASTING 6011051
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H6 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') Cobbles (6).								
	(0.5') CLAYEY SAND (SC): dark yellowish brown (10YR 4/4), moist, [0,60,40], dense.			DG-H6S-0.5-1			0.0		
							0.0		
						24/60			
				DG-H6S-3.5-4			0.0		
							0.0		
5	(5') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
						6/60			
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085237
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H7 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): very dark grayish brown (10YR 3/2), dry, [20,60,20], medium dense.			DG-H7S-0.5-1			0.0		
							0.0		Small amount of dried oil at 1.3 ft below top of core
						26/60	0.0		
	(3.6') FAT CLAY (CH): dark brown (10YR 3/3), moist, [10,0,90], firm.			DG-H7S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085237
EASTING 6010851
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H8 **SHEET** 1 **OF** 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): very dark gray (10YR 3/1), moist, [10,70,20], medium dense.			DG-H8S-0.5-1			0.0		
	(1.6') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): brown (10YR 4/3), moist, [60,30,10], medium dense.					25/60	0.0 0.0		
	(3.3') SILTY SAND (SM): black (10YR 2/1), wet, [0,85,15].			DG-H8S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085237
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H9 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): brown (10YR 5/3), moist, [5,55,40], medium dense.			DG-H9S-0.5-1			0.0		
						36/60	0.0		
				DG-H9S-3.5-4			0.0		
5	(5') WELL-GRADED GRAVEL with SAND (GW): dark gray (10YR 4/1), wet, [80,15,5], loose.						0.0		
	(5.5') LEAN CLAY with SAND (CL): very dark greenish gray (GLEY1 3/5GY), moist, [5,20,75], low plasticity, firm.					19/60	0.0		
							0.0		
				DG-H9S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085237
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H10 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): gray (10YR 6/1), dry, [20,5,75], soft.			DG-H10S-0.5-1			0.0		
	(1.5') SILTY SAND with GRAVEL (SM): very dark grayish brown (10YR 3/2), dry, [20,60,20], medium dense.					24/60	0.0		
	(3.4') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2), dry, [40,40,20], loose.			DG-H10S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085237
EASTING 6010551
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H11 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): brown (10YR 4/3) to dark gray with depth dry, [10,70,20], loose.			DG-H11S-0.5-1					
	(2.6') POORLY GRADED SAND with SILT (SP-SM): dark yellowish brown (10YR 3/6) to very dark brown (10YR 2/2), [0,90,10], medium dense.			DG-H11S-3.5-4		33/60			
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085237
EASTING 6010451
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-H12 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark brown (10YR 3/3), dry, [20,60,20], loose.			DG-H12S-0.5-1			0.0		
	(1.5') WELL-GRADED GRAVEL with SILT (GW-GM): very dark brown (10YR 2/2) to light gray (10YR 7/1), dry, [80,10,10], loose.					31/60	0.0		
	(3.2') FAT CLAY (CH): black (10YR 2/1), moist, [0,10,90], high plasticity, firm.			DG-H12S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085237
EQUIPMENT Geoprobe 6610 **EASTING** 6010351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I1 **SHEET** 1 **OF** 1
START DATE 8/20/2018 **ELEVATION DATA**
FINISH DATE 8/20/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 5/3) to grayish brown (10YR 5/2), dry, [20,60,20], loose.			DG-I1S-0.5-1		29/60	0.0		
				DG-I1S-3.5-4					
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085137
EQUIPMENT Geoprobe 6610 **EASTING** 6011451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I2 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): pale brown (10YR 6/3), dry, [40,50,10], loose.			DG-I2S-0.5-1			0.0		
							0.0		
	(1.25') black (10YR 2/1).								
	(1.5') brown (10YR 4/3).						0.0		
						34/60	0.0		
				DG-I2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085137
EQUIPMENT Geoprobe 6610 **EASTING** 6011351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I3 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): very pale brown (10YR 7/3) to dark gray (10YR 4/1), dry, [20,60,20], loose, to black (10YR 2/1).			DG-I3S-0.5-1			0.0		
							0.0		
						24/60	0.0		
				DG-I3S-3.5-4			0.0		
	(3.75') bricks for 0.25'.								
5	(4.7') SILTY SAND (SM): very dark grayish brown (10YR 3/2), moist, [0,60,40], medium dense.						0.0		
	(5') LEAN CLAY (CL): dark grayish brown (10YR 4/2), moist, [0,5,95], firm. (5.5') gravel and cobbles for 0.5'.								
	(6') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
						35/60			
							0.0		
							0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085137
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry, [15,55,30], loose.			DG-I4S-0.5-1			0.0		
	(1.3') WELL-GRADED GRAVEL with SAND (GW): very dark gray (10YR 3/1), moist, [55,45,0], loose.						0.0		
	(2.6') SILTY SAND (SM): very dark gray (10YR 3/1), wet, [0,60,40], medium dense.					31/60	0.0		
				DG-I4S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085137
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I5 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): light gray (10YR 7/1), dry, [20,60,20], loose.			DG-I5S-0.5-1					
	(2') very dark grayish brown (10YR 3/2).					41/60			
	(3.5') black (10YR 2/1).			DG-I5S-3.5-4					
	(4') brown (10YR 4/3), [0,60,40].								
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085137
EASTING 6011051
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I6 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SANDY SILT (ML): gray (10YR 6/1), dry, [5,35,60], soft.			DG-I6S-0.5-1			0.0		
	(1.3') POORLY GRADED SAND with SILT (SP-SM): dark yellowish brown (10YR 4/4), moist, [0,90,10], loose.					30/60	0.0		
	(3.2') LEAN CLAY with SAND (CL): black (10YR 2/1), moist, [0,20,80], low plasticity, firm.			DG-I6S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085137
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I7 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): yellowish brown (10YR 5/4), dry, [20,60,20], loose.			DG-I7S-0.5-1			0.0		
							0.0		
	(2') dark grayish brown (10YR 4/2), moist, [0,60,40].					36/60	0.0		
				DG-I7S-3.5-4					
							0.0		
5	(5') SILTY GRAVEL (GM): dark gray (10YR 4/1), wet, [80,0,20], loose.						0.0		
	(6') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
						36/60			
							0.0		
							0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085137
EASTING 6010851
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I8 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY GRAVEL (GM): reddish gray (5YR 5/2), dry, [80,0,20], very loose.			DG-I8S-0.5-1			0.0		
	(1.2') SILTY SAND with GRAVEL (SM): very dark gray (10YR 3/1), moist, [25,60,15], medium dense.					33/60	0.0		
	(3.1') LEAN CLAY with SAND (CL): black (10YR 2/1), moist, [0,20,80], firm.			DG-I8S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085137
EASTING 6010751
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I9 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY GRAVEL with SAND (GM): brown (10YR 4/3), dry, [70,15,15], loose.			DG-I9S-0.5-1			8-9		2" wood at 11" below top of core; PID reading with wood in bag = 8-9 ppm, max 9.8 ppm; smells of lacquer
							0.0		
	(2.5') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): very dark gray (10YR 3/1), dry, [30,60,10], loose.					25/60			
				DG-I9S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085137
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I10 **SHEET** 1 **OF** 1
START DATE 8/23/2018
FINISH DATE 8/23/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') GRAVELLY SILT (ML): light brownish gray (10YR 6/2), dry, [40,0,60], soft.			DG-I10S-0.5-1			0.0		
	(1.6') SILTY GRAVEL with SAND (GM): light gray (10YR 7/1), dry, [60,20,20], loose.						0.0		
						30/60	0.0		
	(3.4') LEAN CLAY with GRAVEL (CL): dark yellowish brown (10YR 4/4), dry, [20,5,75], firm.			DG-I10S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085137
EASTING 6010551
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I11 **SHEET** 1 OF 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): pale brown (10YR 6/3) to yellowish brown (10YR 5/6), dry, [20,60,20], dense.			DG-I11S-0.5-1			0.0		
							0.0		
	(2.5') SILTY SAND (SM): dark brown (10YR 3/3), moist, [0,60,40].					42/60			
							0.0		
				DG-I11S-3.5-4			0.0		
	(4') SANDY LEAN CLAY with GRAVEL (CL): dark brown (10YR 3/3), moist, [20,25,55], firm.								
5	(5') greenish black (5GY 2/5/1).						0.0		
							0.0		
	(7.5') ORGANIC SOIL (OL): dark brown (10YR 3/3), moist, [0,0,100], non-plastic, soft.					29/60			
							0.0		
				DG-I11S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2085137
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-I12 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): very dark grayish brown (10YR 3/2) to grayish brown (10YR 5/2), dry, [20,60,20], loose.			DG-I12S-0.5-1			0.0		
	(1.9') POORLY GRADED SAND with SILT (SP-SM): dark brown (10YR 3/3) to greenish black (GLEY1 2.5/10GY) with small amount of weak red (5R (4/2), moist, [10,80,10], dense.			DG-I12S-3.5-4		31/60	0.0 0.0 0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085137
EASTING 6010351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J1 **SHEET** 1 **OF** 1
START DATE 8/20/2018
FINISH DATE 8/20/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
0	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3) to light gray (10YR 7/1), dry, [20,60,20], loose.			DG-J1S-0.5-1		32/60	0.0		
				DG-J1S-3.5-4					
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085037
EASTING 6011451
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J2 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark grayish brown (10YR 4/2), dry, [50,40,10], loose.			DG-J2S-0.5-1		31/60	0.0		
							0.0		
				DG-J2S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085037
EQUIPMENT Geoprobe 6610 **EASTING** 6011351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J3 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): very pale brown (10YR 7/3), dry, [20,60,20], loose.			DG-J3S-0.5-1			0.0		
							0.0		
	(2.25') bricks for 0.25'.					36/60	0.0		
	(2.7') SILTY to CLAYEY SAND (SM-SC): dark grayish brown (10YR 4/2), moist, [0,60,40], medium dense.			DG-J3S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085037
EASTING 6011251
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark yellowish brown (10YR 4/6), dry, [50,40,10], loose.			DG-J4S-0.5-1			0.0		
							0.0		
	(2.5') SILTY SAND (SM): very dark grayish brown (10YR 3/2), wet, [0,80,20], medium dense.					39/60			
				DG-J4S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085037
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J5 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): gray (10YR 6/1), dry, [20,60,20].			DG-J5S-0.5-1			0.0		
							0.0		
	(2') brown (10YR 4/3).					36/60	0.0		
	(3') very dark grayish brown (10YR 3/2).			DG-J5S-3.5-4					
	(4') brick for 4.						0.0		
5	(5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): very dark grayish brown (10YR 3/2), wet, [60,30,10], medium dense.						0.0		
				DG-J5S-7-7.5		24/60	0.0		
							0.0		
10	(10') Boring terminated.						0.0		
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085037
EASTING 6011051
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J6 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SANDY SILT (ML): dark grayish brown (10YR 4/2), dry, [10,30,60], soft.			DG-J6S-0.5-1			0.0		
	(1.6') SANDY SILT with GRAVEL (ML): brown (10YR 4/3) to gray (10YR 5/1), moist, [20,20,60], firm.						0.0		
						35/60	0.0		
	(3.4') SILTY SAND (SM): yellowish brown (10YR 5/6), moist, [0,60,40], dense.			DG-J6S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2085037
EASTING 6010951
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J7 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark gray (10YR 4/1), dry, [20,60,20], medium dense.			DG-J7S-0.5-1			0.0		
	(1.8') dark yellowish brown (10YR 3/4).					26/60	0.0		
				DG-J7S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085037
EASTING 6010851
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J8 **SHEET** 1 OF 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY GRAVEL (GM): weak red (2.5YR 5/2), dry, [80,0,20], loose.			DG-J8S-0.5-1			0.0		
	(1.2') WELL-GRADED GRAVEL (GW): weak red (2.5YR 5/2), dry, [95,0,5], loose.						0.0		
	(2.5') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), moist, [20,60,20], loose.					33/60	0.0		
	(3.8') SANDY SILT with GRAVEL (ML): black (10YR 2/1), dry, [20,20,60], soft.			DG-J8S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085037
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J9 **SHEET** 1 OF 1
START DATE 9/26/2018 **ELEVATION DATA**
FINISH DATE 9/26/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 8 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): very dark grayish brown (10YR 3/2), dry, [0,60,40], loose.			DG-J9S-0.5-1		12/18	0.0		
							0.0		
							0.0		
	(3.5') GRAVELLY LEAN CLAY (CL): yellowish brown (10YR 5/4), wet, [30,5,65], soft.			DG-J9S-3.5-4		9/18	0.0		
5							0.0		
							0.0		
	(6.5') SILTY GRAVEL (GM): gray (10YR 5/1), wet, [60,10,30], loose.								Water encountered
	(7.2') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.					14/18	0.0		
	(8') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085037
EQUIPMENT CME **EASTING** 6010651
DRILL MTHD HSA **ANGLE** Vertical
DIAMETER 6
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J10 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') GRAVELLY SILT (ML): dark brown (10YR 3/3), dry, [30,0,70], soft.			DG-J10S-0.5-1			0.0		
	(1.1') SILTY GRAVEL with SAND (GM): white (10YR 8/1), dry, [60,20,20], very loose.						0.0		
	(2.6') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): grayish brown (10YR 5/2), dry, [60,30,10], loose.			DG-J10S-3.5-4		29/60	0.0		
	(3.9') CLAYEY GRAVEL with SAND (GC): very dark grayish brown (10YR 3/2), dry, [50,20,30], loose.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085037
EQUIPMENT Geoprobe 6610 **EASTING** 6010551
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J11 **SHEET** 1 OF 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-J11S-0.5-1			0.0		
	(1.5') POORLY GRADED SAND with SILT (SP-SM): dark yellowish brown (10YR 3/4), dry, [0,90,10], dense.					37/60	0.0		
	(3.3') SILTY GRAVEL with SAND (GM): pale brown (10YR 6/3), moist, [60,20,20], loose.			DG-J11S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2085037
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-J12 **SHEET** 1 OF 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): reddish brown (5YR 4/3) to brown (10YR 4/3), dry, [20,60,20], loose.			DG-J12S-0.5-1			0.0 0.0		
	(2.6') POORLY GRADED SAND with SILT and GRAVEL (SP-SM): dark yellowish brown (10YR 3/4), moist, [20,70,10], medium dense.			DG-J12S-3.5-4		27/60	0.0		
	(3.9') FAT CLAY with SAND (CH): black (10YR 2/1) to dark yellowish brown (10YR 4/4), moist, [10,15,75], high plasticity, soft.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2085037
EASTING 6010351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K1 **SHEET** 1 **OF** 1
START DATE 8/20/2018 **ELEVATION DATA**
FINISH DATE 8/20/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): light gray (10YR 7/1), dry, [20,60,20], loose.			DG-K1S-0.5-1		60/60			
	(3.5') POORLY GRADED SAND with SILT and GRAVEL (SW-SM): brown (10YR 4/3), moist, [15,75,10], loose.			DG-K1S-3.5-4					
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Hand Auger **EASTING** 6011451
DRILL MTHD Hand Auger **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K2 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [15,55,30], loose.			DG-K2S-0.5-1			0.0		
	(1.3') WELL-GRADED SAND with GRAVEL (SW): , dry, [50,50,0], loose.						0.0		
						37/60	0.0		
				DG-K2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2084937
EASTING 6011351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K3 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): very pale brown (10YR 7/3), dry, [20,60,20], loose.			DG-K3S-0.5-1			0.0		
	(1') black (10YR 2/1).						0.0		
	(2.25') pieces of brick.					32/60	0.0		
	(2.5') SILTY SAND (SM): dark grayish brown (10YR 4/2), moist, [0,60,40], loose.			DG-K3S-3.5-4			0.0		
5	(5.5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): brown (10YR 4/3), wet, [70,20,10], loose.						0.0		
	(6') SILT (ML): dark gray (10YR 4/1), wet, [0,5,95], soft.					32/60	0.0		
							0.0		
10	(10') Boring terminated.						0.0		
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K4 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 4 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND with SILT and GRAVEL (SW-SM): very dark brown (10YR 2/2), moist, [20,70,10], loose.			DG-K4S-0.5-1			0.0		
							0.0		
	(2.2') WELL-GRADED SAND with SILT (SW-SM): very dark grayish brown (10YR 3/2), moist, [0,90,10], loose.					27/60	0.0		
				DG-K4S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6011151
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K5 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): very pale brown (10YR 7/3), dry, [20,60,20].			DG-K5S-0.5-1			0.0		
							0.0		
	(2.5') dark gray (10YR 4/1), [5,75,20].					42/60	0.0		
				DG-K5S-3.5-4					
	(4') black (10YR 2/1), [20,60,20].						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6011051
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K6 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): gray (10YR 6/1), dry, [20,5,75], very soft.			DG-K6S-0.5-1					
	(1') SILTY SAND with GRAVEL (SM): dark reddish brown (5YR 3/3) to very dark brown (10YR 2/2), dry, [20,60,20], medium dense.						0.0		
							0.0		
	(2.7') WELL-GRADED GRAVEL with SAND (GW): light gray (10YR 7/1), dry, [80,20,0], large concrete accretions.					27/60	0.0		
				DG-K6S-3.5-4					
	(3.9') POORLY GRADED SAND (SW): dark yellowish brown (10YR 3/4), moist, [5,95,0], medium dense.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K7 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL GRADED SAND with SILT and GRAVEL (SW-SM): very dark grayish brown (10YR 3/2), dry, [30,60,10], loose.			DG-K7S-0.5-1			0.0		
	(1.5') SANDY LEAN CLAY with GRAVEL (CL): dark brown (10YR 3/3) to black (10YR 2/1), dry, [20,30,50], medium plasticity, firm.					35/60	0.0		
				DG-K7S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6010851
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K8 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SANDY SILT with GRAVEL (ML): dark grayish brown (10YR 4/2), dry, [15,15,70], soft.			DG-K8S-0.5-1			0.0		
							0.0		
	(2.2') SILTY GRAVEL (GM): brown (10YR 5/3), dry, [80,0,20], very loose.					42/60	0.0		
				DG-K8S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K9 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND and GRAVEL (SM): dark gray (10YR 4/1), dry, [30,50,20], loose.			DG-K9S-0.5-1					
	(1.6') SILTY SAND (SM): dark grayish brown (10YR 4/2), moist, [0,80,20], loose.					31/60			
	(3.2') FAT CLAY (CH): dark brown (10YR 3/3), moist, [0,0,100], firm.			DG-K9S-3.5-4					
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084937
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K10 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): grayish brown (10YR 5/2), dry, [25,0,75], soft.			DG-K10S-0.5-1			0.0		
	(1.1') SILTY GRAVEL (GM): light gray (10YR 7/1), dry, [80,0,20], loose.						0.0		
	(2.4') SANDY SILT (ML): dark grayish olive (10YR 4/2), dry, [0,30,70], firm.					26/60	0.0		
	(3.7') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): very dark grayish brown (10YR 3/2), moist, [70,20,10], loose.			DG-K10S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6010551
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K11 **SHEET** 1 OF 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): pale brown (10YR 6/3), dry, [10,60,30], loose.			DG-K11S-0.5-1			0.0		
							0.0		
						26/60	0.0		
				DG-K11S-3.5-4					
							0.0		
	(4.3') SANDY LEAN CLAY with GRAVEL (CL): very dark gray (10YR 3/1), moist, [20,25,55], low plasticity, soft.								
5							0.0		
							0.0		
	(7.5') dark greenish gray (5GY 4/1).					15/60			
							0.0		
				DG-K11S-9.5-10			0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K12 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-K12S-0.5-1			0.0		
	(1.4') SANDY FAT CLAY with GRAVEL (CH): very dark gray (10YR 3/1) to black (10YR 2/1), dry, [20,20,60], firm.					29/60	0.0		
				DG-K12S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6010351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-K13 **SHEET** 1 OF 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with GRAVEL (ML): brown (10YR 4/3), dry, [20,5,75], soft.			DG-K13S-0.5-1			0.0		
	(1.3') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark brown (10YR 3/3), dry, [70,20,10], medium dense.					33/60	0.0		
	(3.2') FAT CLAY with GRAVEL (CH): very dark grayish brown (10YR 3/2) to brown (10YR 4/3), moist, [15,10,75], high plasticity, soft, color change with depth.			DG-K13S-3.5-4			0.0		
5	(5') Boring terminated.						0.0		
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084937
EQUIPMENT Geoprobe 6610 **EASTING** 6010251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L1 **SHEET** 1 **OF** 1
START DATE 8/20/2018 **ELEVATION DATA**
FINISH DATE 8/20/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 15 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): pale brown (10YR 6/3), dry, [10,75,15], loose.			DG-L1S-0.5-1			0.0		
	(0.6') light gray (10YR 7/1) with black (10YR 2/1), and light reddish brown (10YR 6/4).						0.0		
	(1.5') dark yellowish brown (10YR 4/4).					24/60	0.0		
	(1.8') light yellowish brown (10YR 6/4), gravel to bottom.			DG-L1S-3.5-4			0.0		
5							0.0		
	(5.8') SILTY GRAVEL with SAND (GM): yellowish brown (10YR 5/4), dry, [60,25,15], loose.						0.0		
	(7.5') light gray (10YR 7/1).					16/60	0.0		
							0.0		
10	(9.75') grayish brown (10YR 5/2), wet.			DG-L1S-10-10.5			0.0		Water at ~10 ft bgs
							0.0		
						18/60	0.0		
							0.0		
15	(15') Boring terminated.								
20									
25									

CONTRACTOR PeneCore **NORTHING** 2084837
EQUIPMENT Geoprobe 6610 **EASTING** 6011451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L2 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [15,55,30], loose.			DG-L2S-0.5-1			0.0		
	(1.5') WELL-GRADED GRAVEL with SAND (GW): dark brown (10YR 3/3) to dark yellowish brown (10YR 3/4), dry to moist, [55,45,0], loose.					45/60	0.0		
				DG-L2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084837
EQUIPMENT Geoprobe 6610 **EASTING** 6011351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L3 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2), dry, [30,55,15], loose.			DG-L3S-0.5-1			0.0		
							0.0		
	(2.5') very dark grayish brown (10YR 3/2), [20,60,20].			DG-L3S-3.5-4		36/60	0.0		
							0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2084837
EASTING 6011251
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): dark grayish brown (10YR 4/2), dry, [0,80,20], loose.			DG-L4S-0.5-1			0.0		
	(1.2') wet.						0.0		
	(2.4') SANDY SILT (ML): very dark grayish brown (10YR 3/2), wet, [5,45,50], low plasticity, firm.					43/60	0.0		
				DG-L4S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084837
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L5 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 6 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry, [20,60,20], loose.			DG-L5S-0.5-1			0.0		
							0.0		
	(2.5') dark gray (10YR 4/1).					40/60	0.0		
	(3') black (10YR 2/1), moist.			DG-L5S-3.5-4			0.0		
5	(4.8') gradual change to [30,55,25].								
	(5.1') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark gray (10YR 4/1), wet, [60,30,10], dense.								
	(6') Boring terminated - refusal.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084837
EQUIPMENT Geoprobe 6610 **EASTING** 6011051
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L6 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL (GW): light gray (10YR 7/1), dry, [100,0,0], very loose.			DG-L6S-0.5-1			0.0		
							0.0		
	(1.9') SANDY SILT with GRAVEL (ML): very dark gray (10YR 3/1), moist, [20,20,60], soft.					45/60	0.0		
				DG-L6S-3.5-4			0.0		
	(3.9') SILT with SAND (ML): black (10YR 2/1), moist, [0,20,80], soft.								
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2084837
EASTING 6010951
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L7 **SHEET** 1 **OF** 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2) to dark gray (10YR 4/1), dry, [20,60,20], medium dense.			DG-L7S-0.5-1			0.0		
							0.0		
						24/60	0.0		
	(2.8') WELL-GRADED GRAVEL with SILT (GW-GM): very pale brown (10YR 7/4), dry, [80,10,10], loose.			DG-L7S-3.5-4			0.0		
	(4') Boring terminated - refusal. Large piece of wood at bottom (no smell).								
5									
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084837
EQUIPMENT Geoprobe 6610 **EASTING** 6010851
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L8 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL (GW): light gray (10YR 7/1), dry, [100,0,0], loose.			DG-L8S-0.5-1			0.0		
	(1.1') GRAVELLY SILT (ML): dark grayish brown (10YR 4/2), dry, [20,10,70], soft.						0.0		
	(2.5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark grayish brown (10YR 4/2), dry, [70,20,10], loose.			DG-L8S-3.5-4		41/60	0.0		
	(4') FAT CLAY with GRAVEL (CH): very dark grayish brown (10YR 3/2), moist, [20,0,80], firm.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084837
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

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BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L9 **SHEET** 1 **OF** 1
START DATE 8/27/2018
FINISH DATE 8/27/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): light brownish gray (10YR 6/2) to very pale brown (10YR 7/3), dry, [20,60,20], loose.			DG-L9S-0.5-1			0.0		
							0.0		
	(2.5') brick for 2.					28/60	0.0		
	(3') SILTY GRAVEL (GM): very dark brown (10YR 2/2), moist, [70,10,20], medium dense.			DG-L9S-3.5-4			0.0		
5	(5') wet.						0.0		
	(5.5') FAT CLAY (CH): very dark greenish gray (GLEY1 5GY 3/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
						52/60	0.0		
							0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084837
EASTING 6010651
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L10 **SHEET** 1 OF 1
START DATE 8/23/2018 **ELEVATION DATA**
FINISH DATE 8/23/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILT with SAND (ML): dark grayish brown (10YR 4/2), dry, [0,25,75], soft.			DG-L10S-0.5-1			0.0		
	(1.3') SILTY GRAVEL with SAND (GM): dark yellowish brown (10YR 4/4), dry, [50,25,25], loose, at 16 inches bgs red brick (3 in).						0.0		
						33/60			
	(3.2') CLAYEY GRAVEL (GC): very dark gray (10YR 3/1), dry, [75,0,25], loose.			DG-L10S-3.5-4			0.0		
	(4.4') WELL-GRADED GRAVEL (GW): light gray (10YR 7/1), dry, [80,0,20], very loose.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084837
EQUIPMENT Geoprobe 6610 **EASTING** 6010551
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L11 **SHEET** 1 OF 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-L11S-0.5-1					
	(1.6') GRAVELLY LEAN CLAY (CL): dark brown (10YR 3/3), dry, [20,10,70], firm.					33/60			
	(3.2') SILTY GRAVEL with SAND (GM): gray (10YR 6/1), dry, [60,20,20], loose.			DG-L11S-3.5-4					
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084837
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L12 **SHEET** 1 **OF** 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): white (10YR 8/1) to dark yellowish brown (10YR 4/6), dry, [30,50,20], medium dense.			DG-L12S-0.5-1		28/60	0.0 0.0 0.0		
	(3.6') LEAN CLAY with SAND (CL): very dark brown (10YR 2/2), moist, [0,20,80], firm.			DG-L12S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084837
EASTING 6010351
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-L13 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2), dry, [25,50,25], loose.			DG-L13S-0.5-1			0.0		
							0.0		
	(2.8') FAT CLAY with GRAVEL (CH): very dark brown (10YR 2/2) to black (10YR 2/1), moist, [20,5,75], high plasticity, firm.			DG-L13S-3.5-4		26/60	0.0		
							0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084837
EASTING 6010251
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M1 **SHEET** 1 **OF** 1
START DATE 8/20/2018 **ELEVATION DATA**
FINISH DATE 8/20/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): pale brown (10YR 6/3), dry, [10,70,20], loose. (0.25') very pale brown (10YR 7/3), 1 pale brown (10YR 6/3), 3 very pale brown (10YR 7/3), 1.5 light gray (10YR 7/1).			DG-M1S-0.5-1			<1		
	(2.5') POORLY GRADED GRAVEL with SILT (GP-GM): very pale brown (10YR 7/3), dry, [80,10,10], loose.			DG-M1S-3.5-4		33/60			
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6011451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M2 **SHEET** 1 **OF** 1
START DATE 8/21/2018 **ELEVATION DATA**
FINISH DATE 8/21/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [15,55,30], loose.			DG-M2S-0.5-1			0.0		
	(1.4') WELL-GRADED GRAVEL with SAND (GW): dark brown (10YR 3/3) to dark yellowish brown (10YR 3/4), dry to moist, [50,45,5], loose.						0.0		
						41/60	0.0		
				DG-M2S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6011351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M3 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): dark gray (10YR 4/1), moist, [5,75,20], loose.			DG-M3S-0.5-1			0.0		
							0.0		
	(2.5') SILTY SAND with GRAVEL (SM): black (10YR 2/1), moist, [20,60,20], loose, has glass (10%).					41/60	0.0		
				DG-M3S-3.5-4			0.0		
5	(5') WELL-GRADED GRAVEL with SILT and SAND (GW-GM): dark gray (10YR 4/1), wet, [70,20,10], loose.						0.0		
							0.0		
				DG-M3S-7.5-8		30/60	0.0		
							0.0		
	(9.5') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.								
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6011251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M4 **SHEET** 1 **OF** 1
START DATE 8/21/2018
FINISH DATE 8/21/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED SAND with GRAVEL (SW): very dark grayish brown (10YR 3/2), dry, [30,65,5], loose.			DG-M4S-0.5-1			0.0		
	(1.1') SILTY SAND (SM): very dark grayish brown (10YR 3/2) to black (10YR 2/1), wet, [0,70,30], medium dense.						0.0		
						39/60	0.0		
				DG-M4S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084737
EASTING 6011151
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M5 **SHEET** 1 **OF** 1
START DATE 8/22/2018
FINISH DATE 8/22/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-M5S-0.5-1			0.0		
							0.0		
	(2.5') SILTY SAND (SM): very dark grayish brown (10YR 3/2), moist, [0,60,40], medium dense.					30/60	0.0		
				DG-M5S-3.5-4					
	(3.8') SILTY SAND with GRAVEL (SM): black (10YR 2/1), moist to wet, [20,60,20], medium dense.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084737
EASTING 6011051
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M6 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') WELL-GRADED GRAVEL (GW): very dark gray (10YR 3/1), dry, [100,0,0], loose.			DG-M6S-0.5-1			0.0		
	(1.1') SILTY SAND with GRAVEL (SM): grayish brown (10YR 5/2), dry, [30,40,30], medium dense.						0.0		
	(2.4') SILTY SAND (SM): very dark grayish brown (10YR 3/2), moist, [0,60,40], dense.					37/60	0.0		
	(3.5') SANDY LEAN CLAY (CL): dark yellowish brown (10YR 3/4), moist, [0,40,60], medium plasticity, firm.			DG-M6S-3.5-4			0.0		
5	(5') Boring terminated.								Decomposing wood (2" thick) at bottom of core
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6010951
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M7 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 10 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND (SM): light brownish gray (10YR 6/2), dry, [5,55,40] to [0,60,40], loose.			DG-M7S-0.5-1			0.0		
	(1') yellowish brown (10YR 5/6).						0.0		
						52/60	0.0		
	(3') dark grayish brown (10YR 4/2), wet.			DG-M7S-3.5-4			0.0		
5	(5') dark gray (10YR 4/1).						0.0		
						60/60	0.0		
	(7.5') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
10	(10') Boring terminated.						0.0		
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

NORTHING 2084737
EASTING 6010851
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M8 **SHEET** 1 **OF** 1
START DATE 8/22/2018 **ELEVATION DATA**
FINISH DATE 8/22/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): gray (10YR 6/1), dry, [30,30,40], loose.			DG-M8S-0.5-1			0.0		
	(1.5') SILTY SAND with GRAVEL (SM): brown (10YR 4/3), dry, [20,60,20], loose.					28/60	0.0		
	(3.4') FAT CLAY (CH): dark yellowish brown (10YR 3/4), moist, [0,0,100], high plasticity, firm.			DG-M8S-3.5-4			0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6010751
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M9 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2) to very dark brown (10YR 2/2), dry, [20,60,20], loose.			DG-M9S-0.5-1			0.0		2" dried oil at 11" below top of core
							0.0		
						31/60			
	(3.2') SILTY GRAVEL with SAND (GM): gray (10YR 5/1), dry, [70,15,15], loose.			DG-M9S-3.5-4			0.0		
							0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6010651
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

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GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M10 **SHEET** 1 **OF** 1
START DATE 8/24/2018
FINISH DATE 8/24/2018
LOCATION Brisbane, CA
PROJECT Brisbane UPC
PROJECT NUMBER WG2565
ELEVATION DATA
GROUND SURFACE ft msl
DATUM
TOTAL DEPTH 5 ft bgs
DEPTH TO WATER

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [20,60,20], loose.			DG-M10S-0.5-1					
	(2.5') SILTY GRAVEL with SAND (GM): light brownish gray (10YR 6/2), moist, [70,15,15], loose.			DG-M10S-3.5-4		24/60			
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore
EQUIPMENT Geoprobe 6610
DRILL MTHD Direct Push
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849
NORTHING 2084737
EASTING 6010551
ANGLE Vertical

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M11 **SHEET** 1 **OF** 1
START DATE 8/24/2018 **ELEVATION DATA**
FINISH DATE 8/24/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 10 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): light gray (10YR 7/1) to yellowish brown (10YR 5/4), dry, [20,60,20], loose.			DG-M11S-0.5-1			0.0		
							0.0		
						33/60			
							0.0		
				DG-M11S-3.5-4					
							0.0		
5	(5') FAT CLAY (CH): dark gray (10YR 4/1), wet, [0,0,100], high plasticity, soft, Young Bay Mud.						0.0		
						54/60			
							0.0		
	(9.3') SANDY SILT (ML): black (10YR 2/1), wet, [0,40,60], non-plastic, soft.						0.0		
10	(10') Boring terminated.								
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6010451
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER M. Kahrilas **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M12 **SHEET** 1 **OF** 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark grayish brown (10YR 4/2), dry, [30,50,20], medium dense.			DG-M12S-0.5-1					
	(1.7') large cobbles and gravel (2 thick zone).					38/60			
	(2.7') large cobbles and gravel (2 thick zone).			DG-M12S-3.5-4					
	(4') WELL-GRADED SAND with SILT (SW-SM): dark yellowish brown (10YR 3/4), moist, [0,90,10], medium dense, little ceramic pieces (20%).								
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6010351
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M13 **SHEET** 1 OF 1
START DATE 8/27/2018 **ELEVATION DATA**
FINISH DATE 8/27/2018 **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark yellowish brown (10YR 3/6), dry, [30,50,20], medium dense.			DG-M13S-0.5-1			0.0		
							0.0		
	(2.4') WELL-GRADED GRAVEL with SILT (GW-GM): very pale brown (10YR 7/3), dry, [80,10,10], loose.					27/60	0.0		
				DG-M13S-3.5-4					
	(4') GRAVELLY LEAN CLAY (CL): black (10YR 2/1), moist, [30,10,60], medium plasticity, firm.						0.0		
5	(5') Boring terminated.								
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6010251
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

Geosyntec consultants
1111 Broadway, 6th Fl
Oakland, CA 94607
Phone: (510) 836-3034
Fax: (510) 836-3036

GS FORM: BORE_HYDROPUNCH

BOREHOLE RECORD

BORING DG-M14 **SHEET** 1 **OF** 1
START DATE **ELEVATION DATA**
FINISH DATE **GROUND SURFACE** ft msl
LOCATION Brisbane, CA **DATUM**
PROJECT Brisbane UPC **TOTAL DEPTH** 5 ft bgs
PROJECT NUMBER WG2565 **DEPTH TO WATER**

DEPTH (ft)	MATERIAL DESCRIPTION	GRAPHIC LOG	GROUNDWATER	SAMPLE ID	TYPE	RECOVERY	PID READING (ppm)	TIME	COMMENTS
	(0') SILTY SAND with GRAVEL (SM): dark brown (10YR 3/3), dry, [20,60,20], loose.			DG-M14S-0.5-1			0.0		
	(2.4') LEAN CLAY with SAND (CL): black (10YR 2/1) with some dark greenish gray (GLEY1 4/5GY), moist, [10,15,75], medium plasticity, firm.			DG-M14S-3.5-4		20/60	0.0 0.0		
5	(5') Boring terminated.						0.0		Two cores taken due to low recovery
10									
15									

CONTRACTOR PeneCore **NORTHING** 2084737
EQUIPMENT Geoprobe 6610 **EASTING** 6010151
DRILL MTHD Direct Push **ANGLE** Vertical
DIAMETER 2
LOGGER K. Belli **REVIEWER** G. Thrupp, P.G. No. 5849

REMARKS

SEE KEY SHEET FOR SYMBOLS AND ABBREVIATIONS

BORE_HYDROPUNCH GEOS BRISBANE UPC.GPJ GEOSNTEC.GDT 10/22/18

APPENDIX E

Photograph Log

APPENDIX – SITE PHOTOGRAPHS

SITE: San Mateo Portion of UPC OU, Brisbane, CA
SUBJECT: Data Gap Investigation Report
DATES: 8/20/18-8/27/18, 9/26/18



PHOTOGRAPH 1.

View: The truck mounted direct push drill rig used from August 20th through August 27th, 2017 at the site.



PHOTOGRAPH 2.

View: The track mounted direct push drill rig used from August 20th through August 24th at the site.

APPENDIX – SITE PHOTOGRAPHS

SITE: San Mateo Portion of UPC OU, Brisbane, CA
SUBJECT: Data Gap Investigation Report
DATES: 8/20/18-8/27/18, 9/26/18



PHOTOGRAPH 3.

View: DG-M1 from 0 (bottom) to 5 (top) feet below ground surface (bgs). Poorly graded gravel with silt overlaid by silty sand.



PHOTOGRAPH 4.

View: DG-L1 from 0 (bottom) to 15 (top) feet bgs. Silty gravel with sand overlaid by silty sand. The depth to groundwater was approximately 10 feet bgs.

APPENDIX – SITE PHOTOGRAPHS

SITE: San Mateo Portion of UPC OU, Brisbane, CA
SUBJECT: Data Gap Investigation Report
DATES: 8/20/18-8/27/18, 9/26/18



PHOTOGRAPH 5.

View: DG-K1 from 0 (top) to 5 (bottom) feet bgs. This boring was hand augured due to poor recovery. Poorly graded sand with silt and gravel overlaid by silty sand with gravel.



PHOTOGRAPH 6.

View: DG-E3 from 0 (bottom) to 20 (top) feet bgs. Native soil was encountered at approximately 14.5 feet bgs, overlaid by well-graded gravel with silt and sand, overlaid by silty sand with gravel.

APPENDIX – SITE PHOTOGRAPHS

SITE: San Mateo Portion of UPC OU, Brisbane, CA
SUBJECT: Data Gap Investigation Report
DATES: 8/20/18-8/27/18, 9/26/18



PHOTOGRAPH 7.

View: DG-I3 from 0 (bottom) to 10 (top) feet bgs. Native soil is approximately 6 feet bgs. Note the brick present at approximately 3.75 feet bgs.



PHOTOGRAPH 8.

View: Example of a temporary well installed and the set up for purging the groundwater prior to collecting the sample.

APPENDIX – SITE PHOTOGRAPHS

SITE: San Mateo Portion of UPC OU, Brisbane, CA
SUBJECT: Data Gap Investigation Report
DATES: 8/20/18-8/27/18, 9/26/18



PHOTOGRAPH 9.

View: THE CME-75 rig with hollow stem augers that was used at DG-J9 and DG-G10 after refusal with direct push methods. Rig was used on September 26th, 2018.



PHOTOGRAPH 10.

View: DG-G10 split spoon samples taken from 0.5-2 feet bgs (left) and 3.5 to 5 feet bgs (right).

APPENDIX F

Laboratory Analytical Reports for Soil and Grab Groundwater Samples

(Separate File)

APPENDIX G

Groundwater Well Monitoring Field Sheets

WELL GAUGING DATA

Project # 180814CR-1 Date 8/14/18 Client Geosyntec

Site Schlage OU & San Francisco Portion of UPC OU

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or (TOC)	PSI (Artesian wells) Notes
BMW-1	1122	2					6.67	57.16		
BMW-2	1129	2					3.55	59.88		
LF-2B	1041	2					0.52	46.91		
MK-3B	0936	2					2.11	42.76		
MK-4B	1117	2					7.59	35.91		
MK-5B	1003	2					0.65	25.74		
MK-6B	0922	2					4.71	50.22		
MW-2B	0955	2					0.46	40.80		
MW-6B	1140	2					3.83	35.38		
MW-11B	0930	2					3.32	39.50		
SW-09B	1217	1/4"					-6.25	artesian		0
SW-09LA	1212	1/4"					8.01	40.71		
SW-09UA	1208	1/4"					7.32	23.82		
SW-12BR	0830	1					>-10.00	artesian		1
SW-12LAR	0820	1					1.97	43.62		
SW-12UAR	0824	1					1.98	28.69		
SW-14B	0903	1/4"					7-10.00	artesian	↓	2

WELL GAUGING DATA

Project # 180814CR-1 Date 8/14/18 Client Geosyntec

Site Shlage OU & San Francisco Portion of UPC OU

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	PSI (artesian wells) Notes
SW-14LA	0855	1/4"					0.65	40.44		
SW-14UA	0850	1/4"					1.10	18.54		
SW-18B	1055	2					>10.00	artesian		0
SW-18LA	1101	1					3.13	40.91		
GWE-1	*well casing filled in with dirt									
GWE-2	*unable to locate well									
GWE-3	1633	4					3.46	13.58		
GWE-4	1228	4					3.02	8.83		
MK-2A	0950	2					4.62	16.37		
MK-4A	1111	2					12.32	16.59		
MK-5AR	1008	2					5.84	11.79		
MK-6A	0924	2					~~12.36~~ 12.34	23.38		
MW-3A	1156	2					dry	4.69		obstruction at 4.69'
MW-4A	0940	2					6.92	17.34		
MW-6AR	1134	2					8.17	15.96		
MW-7A	1036	2					5.91	13.15		
MW-8A	1017	2					5.51	11.40		

WELL GAUGING DATA

Project # 180814CR-1 Date 8/14/18 Client Geosyntec

Site Solage OU & San Francisco Portion of UPC OU

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
SW-18UA	* unable to locate well									

WELLHEAD INSPECTION CHECKLIST

Date 8/14/18 Client Geosyntec

Site Address Schlage OU & San Francisco Portion of UPC OU

Job Number 180814CR-1 Technician Colin Rowland

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Debris Removed From Wellbox	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
BMW-1	X							
BMW-2	X							
LF-2B	X							
MK-3B	X							
MK-4B	X							
MK-5B	X							
MK-6B	X							
MW-2B	X							
MW-6B	X							
MW-11B	X							
SW-09B	X							
SW-09LA	X							
SW-09UA	X							
SW-12BR	X							
SW-12LAR	X							
SW-12UAR	X							
SW-14B							X	
SW-14LA							X	

NOTES: SW-14: ~~1/2 bolts missing (3/14")~~ (12) 1/2 tabs stripped

WELLHEAD INSPECTION CHECKLIST

Date 8/14/18 Client Geosyntec

Site Address Schlage OU & San Francisco Portion of UPC OU

Job Number 180814CR-1 Technician Colin Rowland

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Debris Removed From Wellbox	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)
SW-14UA							X	
SW-18B	X							
SW-18LA	X							
AWE-1							X	
AWE-2								
AWE-3							X	
AWE-4							X	
MK-2A	X							
MK-4A	X							
MK-5AR							X	
MK-6A	X							
MW-3A	X (M)						X	
MW-4A	X							
MW-6AR	X							
MW-7A	X							
MW-8A							X	
SW-18UA								

NOTES: MK-5AR: lid missing to standpipe MW-8A: lid missing to standpipe

AWE-4: vault lid missing

AWE-1: vault and well casing completely filled in with dirt

AWE-3: vault full w/dirt, had to dig out

MW-3A: tree growing into standpipe, can't fully open. Obstruction at 4.69'

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814CR-1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/14/18
Well I.D.: GWE-1	Well Diameter: 2 3 4 6 8 ____
Total Well Depth:	Depth to Water Pre: Post:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other_____

Sampling Method: Dedicated Tubing | Disp Bailer | New Tubing | Other_____

Flow Rate: _____mL/min Pump Depth:_____ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
* well casing filled with dirt, had to dig out vault to find buried well								DTW(ft) if req'd
								Sheen or Odor Present: Yes / No (circle)

Did well dewater? Yes No Amount actually evacuated: gals. or (mL)

Sampling Time: Sampling Date:

Sample I.D.: Laboratory: TA-SF

Analyzed for: VOCs / Nitrate as N / Diss. Gases / TOC / CAM17 Metals / CrVI / TPH-G / TPH-D / 1,2,3 TCP (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature:_____

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814 CR-1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/14/18
Well I.D.: GWE-2	Well Diameter: 2 3 4 6 8 ____
Total Well Depth:	Depth to Water Pre: Post:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other_____
Sampling Method: Dedicated Tubing | Disp Bailer | New Tubing | Other_____

Flow Rate: _____mL/min Pump Depth:_____ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
*unable to locate well								DTW(ft) if req'd
								Sheen or Odor Present: Yes / No (circle)

Did well dewater? Yes No Amount actually evacuated: gals. or (mL)

Sampling Time: Sampling Date:

Sample I.D.: Laboratory: TA-SF

Analyzed for: VOCs / Nitrate as N / Diss. Gases / TOC / CAM17 Metals / CrVI / TPH-G / TPH-D / 1,2,3 TCP (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature:_____

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814CR-1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/15/18
Well I.D.: GWE-3	Well Diameter: 2 3 (4) 6 8 ____
Total Well Depth: 13.58	Depth to Water Pre: 3.52 Post: 3.57
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ____
Sampling Method: Dedicated Tubing | Disp Bailer | (New Tubing) | Other ____

Flow Rate: 100 mL/min Pump Depth: 9 ft. (ref. (PVC) or Grade)

Time (start 1004)	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1007	17.6	6.86	5399	67	0.97	-116.5	300	DTW(ft) if req'd 3.54 | cloudy
1010	17.7	6.85	5573	66	0.92	-119.0	600	3.54
1013	17.8	6.85	5639	63	0.96	-119.1	900	3.54
1016	17.9	6.85	5688	63	1.22	-118.0	1200	3.55
1019	18.2	6.86	5710	64	1.58	-117.8	1500	3.56
1022	18.2	6.85	5739	64	2.09	-117.1	1800	3.56
1025	18.0	6.84	5753	63	2.26	-115.0	2100	3.57
1028	18.0	6.84	5750	61	2.38	-113.4	2400	3.57 ✓
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 2400 gals. or mL

Sampling Time: 1029 Sampling Date: 8/15/18

Sample I.D.: GWE-3 Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: [signature]

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814CR-1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/15/18
Well I.D.: GWE-4	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 8.83	Depth to Water Pre: 3.15 Post: 3.15
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___
Sampling Method: Dedicated Tubing | Disp Bailer | (New Tubing) | Other ___

Flow Rate: 100 mL/min Pump Depth: 7 ft. (ref. (PVC) or Grade) S1 = 5'-16"

Time (start @ 1131)	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1134	17.6	6.76	3996	103	1.32	-105.7	300	DTW(ft) if req'd 3.15 cloudy
1137	18.1	6.71	3804	68	1.59	-98.6	600	3.15 ↓
1140	18.2	6.69	3646	63	1.97	-96.7	900	3.15 ↓
1343	17.6	6.68	3383	41	1.08	-94.3	1200	3.15 clear
1346	17.3	6.68	3321	37	1.01	-92.7	1500	3.15 ↓
1349	17.1	6.67	3287	35	0.96	-91.0	1800	3.15 ↓
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1800 gals. or mL

Sampling Time: 1350 Sampling Date: 8/15/18

Sample I.D.: GWE-4 Laboratory: TA-SF

Analyzed for: (VOCs) Nitrate as N / Diss. Gases / TOC (CAM17 Metals / CrVI / TPH-G / TPH-D / 1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.: DUP-2 @ 1355

BLAINE TECH SERVICES, INC. SAN JOSE SACRAMENTO LOS ANGELES SAN DIEGO SEATTLE www.blainetech.com

Technician Signature: [signature]

FB-2 @ 1430
for VOCs and 1,2,3 TCP

TB-2 @ 1500

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814CR-1	Client: Geosyntec@Schlage ~~OU & San Francisco~~ portion of UPC OU (2) BELOW GRADE WP SUMP SUBMERGED FLOW
Sampler: CR	Start Date: 8/14/18
Well I.D.: MK-2A	Well Diameter: (2") 3 4 6 8 ____
Total Well Depth: 16.37	Depth to Water Pre: 4.62 Post: 4.81
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or (YSI Pro Plus)

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ____
Sampling Method: Dedicated Tubing | Disp Bailer | (New Tubing) | Other ____

Flow Rate: 100 mL/min Pump Depth: 10 ft. (ref. PVC or Grade) SI = 3'-13'

start @ 1343 Time	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1346	15.2	6.71	1060	37	2.19	196.4	300	DTW(ft) if req'd 4.72 clear, no sheen, no odor
1349	15.3	6.67	977	35	2.37	188.4	600	4.75
1352	15.4	6.65	956	41	2.55	183.0	900	4.77
1355	15.3	6.65	952	39	2.63	176.6	1200	4.80
1358	15.2	6.64	950	38	2.74	174.1	1500	4.81
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1500 gals. or mL

Sampling Time: 1359 Sampling Date: 8/14/18

Sample I.D.: MK-2A Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: Li Rae

FB-1 @ 1415
(for VOCs and 1,2,3 TCP)

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814-CB1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: JS	Start Date: 8/14/18
Well I.D.: MK-4A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 16.59	Depth to Water Pre: 12.46 Post: 12.56
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or (YSI Pro Plus)

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___

Sampling Method: (Dedicated Tubing) | Disp Bailer | New Tubing | Other ___

Flow Rate: 100 mL/min Pump Depth: 13.5 ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1150	19.9	7.11	1833	8	0.78	-59.4	300	DTW(ft) if req'd 12.44 / Clear
1153	20.2	6.94	1793	7	0.57	-63.1	600	12.48 / Clear
1156	20.2	6.86	1732	7	0.49	-63.6	900	12.50 / Clear
1159	20.4	6.78	1665	6	0.43	-66.2	1200	12.52 / Clear
1202	20.3	6.76	1638	5	0.41	-68.3	1500	12.55 / Clear
1205	20.3	6.74	1621	5	0.38	-71.2	1800	12.56 / Clear
								Sheen or Odor Present: Yes / (No) (circle)

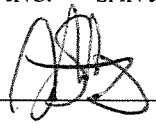
Did well dewater? Yes (No) Amount actually evacuated: 1800 gals. or (mL)

Sampling Time: 1207 Sampling Date: 8/14/18

Sample I.D.: MK-4A Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: 

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814CR-1	Client: Geosyntec@~~Schlage OU & San Francisco portion of~~ UPC OU
Sampler: CR	Start Date: 8/14/18
Well I.D.: MK-SAR	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 11.79	Depth to Water Pre: 5.84 Post: 6.06
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or (YSI Pro Plus)

Purge Method: 2" Grundfos Pump | Watterra | (~~Peristaltic Pump~~) | Bladder Pump | Other ___
Sampling Method: Dedicated Tubing | Disp Bailer | (New Tubing) | Other ___

Flow Rate: 100 mL/min Pump Depth: 9 ft. (ref. (PVC) or Grade)

Start @ 1435 Time	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1438	17.8	6.65	3427	19	7.30	-156.2	300	DTW(ft) if req'd 6.02 | clear
1441	18.0	6.67	3488	18	4.70	-158.9	600	6.04 | "
1444	18.2	6.68	3474	16	3.13	-160.2	900	6.05 | "
1447	18.2	6.68	3463	15	2.90	-162.3	1200	6.05 | "
1450	18.3	6.69	3457	15	2.77	-163.1	1500	6.06 | ↓
								Sheen or Odor Present: Yes (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1500 gals. or mL

Sampling Time: 1451 Sampling Date: 8/14/18

Sample I.D.: MK-SAR Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.: Dup-1 @ 1456

TB-1 @ 1500

Technician Signature: [signature]

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814-CR1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: JS	Start Date: 8/15/18
Well I.D.: MK-6A	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 23.38	Depth to Water Pre: 12.34 Post: 12.36
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___
Sampling Method: (Dedicated Tubing) | Disp Bailer | New Tubing | Other ___

Flow Rate: 100 mL/min Pump Depth: 15 ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1008	19.5	6.96	2822	7	0.98	-87.2	300	DTW(ft) if req'd 12.36 / clear
1011	20.2	7.05	2966	6	0.72	-117.9	600	12.36 / clear
1014	20.2	7.06	3036	6	0.60	-131.3	900	12.36 / clear
1017	20.8	7.07	3043	6	0.51	-140.6	1200	12.36 / clear
1020	20.4	7.07	3071	6	0.43	-145.2	1500	12.36 / clear
1023	20.5	7.07	3082	5	0.38	-147.9	1800	12.36 / clear
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1800 gals. or mL

Sampling Time: 1024 Sampling Date: 8/15/18

Sample I.D.: MK-6A Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / TPH-G / TPH-D / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: _____

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814CR-1	Client:Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/14/18
Well I.D.: MW-3A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth:	Depth to Water Pre: Post:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other_____

Sampling Method: Dedicated Tubing | Disp Bailer | New Tubing | Other_____

Flow Rate: _____mL/min Pump Depth:_____ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
*obstruction in well at 4.69' attempted to								DTW(ft) if req'd
remove debris with no luck								
								Sheen or Odor Present: Yes / No (circle)

Did well dewater? Yes No Amount actually evacuated: gals. or (mL)

Sampling Time: Sampling Date:

Sample I.D.: Laboratory: TA-SF

Analyzed for: VOCs / Nitrate as N / Diss. Gases / TOC / CAM17 Metals / CrVI / TPH-G / TPH-D / 1,2,3 TCP (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature:_____

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814-CR1	Client:Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: JS	Start Date: 8/15/18
Well I.D.: MW-4A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 17.34	Depth to Water Pre: 7.15 Post: 7.24
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ____
Sampling Method: (Dedicated Tubing) | Disp Bailer | New Tubing | Other ____

Flow Rate: 100 mL/min Pump Depth: 9.5 ft. (ref. PVC or Grade) Screen 2-12'

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1347	18.5	6.62	2016	98	0.57	-81.6	300	DTW(ft) if req'd 7.20 / Clear
1350	18.6	6.59	2005	96	0.38	-87.2	600	7.20 / Clear
1353	18.4	6.56	1987	88	0.27	-89.6	900	7.21 / clear
1356	18.3	6.55	1973	81	0.24	-92.7	1200	7.23 / clear
1359	18.4	6.56	1961	78	0.22	-95.3	1500	7.24 / Clear
1402	18.4	6.56	1948	75	0.21	-97.1	1800	7.24 / Clear
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1800 gals. or mL

Sampling Time: 1403 Sampling Date: 8/15/18

Sample I.D.: MW-4A Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: _____

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814-GR1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: JS	Start Date: 8/15/18
Well I.D.: MW-6AR	Well Diameter: (2) 3 4 6 8 ___
Total Well Depth: 15.96	Depth to Water Pre: 8.30 Post: 8.51
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or (YSI Pro Plus)

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___
Sampling Method: (Dedicated Tubing) | Disp Bailer | New Tubing | Other ___

Flow Rate: 100 mL/min Pump Depth: 11 ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1055	22.0	6.85	5110	57	0.45	-128.6	300	DTW(ft) if req'd 8.33 / Clear
1058	22.4	6.88	5361	48	0.40	-125.2	600	8.38 / Clear
1101	22.2	6.90	6081	40	0.36	-128.9	900	8.41 / Clear
1104	22.3	6.90	6154	36	0.29	-130.6	1200	8.44 / Clear
1107	22.3	6.90	6208	30	0.24	-132.9	1500	8.48 / Clear
1110	22.3	6.91	6221	28	0.21	-135.1	1800	8.51 / Clear
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1800 gals. or mL

Sampling Time: 1112 Sampling Date: 8/15/18

Sample I.D.: MW-6AR Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: 

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814CR-1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/15/18
Well I.D.: MW-7A	Well Diameter: (2) 3 4 6 8 ____
Total Well Depth: 13.15	Depth to Water Pre: 6.11 Post: 6.41
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or (YSI Pro Plus)

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ____
Sampling Method: (Dedicated Tubing) | Disp Bailer | New Tubing | Other ____

Flow Rate: 100 mL/min Pump Depth: 10' ft. (ref. (PVC) or Grade) S1 = 3'-13'

Time (Start @ 1224)	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1227	19.4	6.47	15,996	35	0.90	-140.2	300	DTW(ft) if req'd 6.36 clear
1230	19.7	6.56	16,384	31	0.66	-147.1	600	6.35
1233	19.4	6.59	16,541	32	0.63	-150.2	900	6.39
1236	19.1	6.60	16,579	30	0.61	-151.5	1200	6.40
1239	19.0	6.61	16,471	29	0.57	-150.9	1500	6.41
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1500 gals. or mL

Sampling Time: 1240 Sampling Date: 8/15/18

Sample I.D.: MW-7A Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: [signature]

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814 CR-1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/15/18
Well I.D.: MW-8A	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 11.40	Depth to Water Pre: 5.61 Post: 5.64
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___
Sampling Method: Dedicated Tubing | Disp Bailer | (New Tubing) | Other ___

Flow Rate: 100 mL/min Pump Depth: 8.5' ft. (ref. (PVC) or Grade) S1 = 3'-13'

Time (start @ 1059)	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Observations
1102	18.2	6.22	3223	11	1.83	-48.6	300	DTW(ft) if req'd 5.62 / clear
1105	18.1	6.22	3185	10	2.17	-48.8	600	5.63
1108	18.4	6.21	3159	11	1.27	-48.8	900	5.63
1111	18.5	6.20	3141	10	1.11	-48.7	1200	5.63
1114	18.3	6.18	3125	9	1.03	-48.4	1500	5.63
1117	18.3	6.17	3112	9	0.95	-48.1	1800	5.64
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 1800 gals. or mL

Sampling Time: 1118 Sampling Date: 8/15/18

Sample I.D.: MW-8A Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature: Li Rel

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180814 CR-1	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: CR	Start Date: 8/14/18
Well I.D.: SW-18UA	Well Diameter: 2 3 4 6 8 ____
Total Well Depth:	Depth to Water Pre: Post:
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other_____

Sampling Method: Dedicated Tubing | Disp Bailer | New Tubing | Other_____

Flow Rate: _____mL/min Pump Depth:_____ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
* unable to locate well								DTW(ft) if req'd
								Sheen or Odor Present: Yes / No (circle)

Did well dewater? Yes No Amount actually evacuated: gals. or (mL)

Sampling Time: Sampling Date:

Sample I.D.: Laboratory: TA-SF

Analyzed for: VOCs / Nitrate as N / Diss. Gases / TOC / CAM17 Metals / CrVI / TPH-G / TPH-D / 1,2,3 TCP (circle)

Equipment Blank I.D.: @ Time Duplicate I.D.:

Technician Signature:_____

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME Schlage OU and San Francisco Portion of UPC OU				**PROJECT NUMBER** 180814-CR1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
YSI ProPlus	16M101741	8/15/18 0815	pH: 7 10 4	pH: 7.01 10.00 3.99	✓	21.2	JS
↓	↓	↓	Cond: 3900µS	Cond: 3901µS	✓	21.0	JS
			ORP: 236.5mV	ORP: 236.8mV	✓	21.0	JS
			D.O: 100%	D.O: 99.8%	✓	21.2	JS

Technician Signature:_____

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME Schlage OU and San Francisco Portion of UPC OU				PROJECT NUMBER 180814CR-1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
YSI ProPlus	13E102999	8/14/18 1315	D.O. 100%	99.9%	✓	18.9	CR
			pH 7, 10, 4	7.01, 10.00, 4.00	✓	18.2	CR
			Cond 3800 µs	3898 µs	✓	19.1	CR
			ORP 233	233.0	✓	18.3	CR
YSI ProPlus	13E102999	8/15/18 0700	D.O. 100%	100.0%	✓	15.6	CR
			pH 7, 10, 4	7.01, 10.01, 4.00	✓	12.4	CR
			Cond 3907 µs	3908	✓	12.6	CR
			ORP 247	246.8	✓	12.2	CR

Technician Signature: _____

WELL GAUGING DATA

Project # 180830-WP1 Date 9/30/18 Client Geosyntec

Site Geosyntec @ Brisbane UPC OU-SM DGA WP Implementation

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or (TOC)	Notes
GWE-1	0915	4	~	~	~	~	4.90	12.54		
GWE-2	0920	4	~	~	~	~	2.60	6.75		
GWE-3	0933	4	~	~	~	~	4.25	13.60	↓	
SW-184	0925	Unable to locate well								

WELLHEAD INSPECTION CHECKLIST

Client Geosyntec Date 9/30/15

Site Address Geosyntec @ Brisbane LRC 04-SM DGA WP Implementation

Job Number 180830-031 Technician WS

Well ID	Well Inspected - No Corrective Action Required	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
GWE-1						X		
GWE-2						X		
GWE-3	X							
SW-1BUA							X	

NOTES: Wellbox lid destroyed, Grip cap missing, Bladder deflated & reinflated after sampling/gauging (GWE-1)

Unable to locate SW1BUA

Pag-out GWE-2

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME Grossyntec @ Brisbane UPC 04-SM DGA WP				PROJECT NUMBER 180880-WS1			
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP.	INITIALS
YSI Pro Plus	10B100495	8/30/18 0946	pH 4.00 7.00 10.00	4.00 7.00 10.00	✓	18.0	WS
			Cond 3900 ORP	3900 240	✓	18.0	WS
			DO 100%	100%	✓	18.0	WS
PID	095-521521	8/30/18 0955	100ppm ISO	100ppm	✓	18.2	WS

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180830-005	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: WS	Start Date: 8/30/18
Well I.D.: GWE-1	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 12.54	Depth to Water Pre: 4.90 Post: 4.90
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___
Sampling Method: Dedicated Tubing | Disp Bailer | (New Tubing) | Other ___

Flow Rate: 100 mL/min Pump Depth: 8' ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1118	22.2	7.36	43306	16	0.76	-141	300	DTW(ft) if req'd 4.90
1121	22.2	7.24	4116	15	0.59	-142	600	4.90
1124	22.1	7.12	3965	15	0.38	-143	900	4.90
1127	22.0	7.08	3861	16	0.33	-144	1200	4.90
1130	22.0	7.05	3800	16	0.28	-146	1500	4.90
1133	22.0	7.03	3782	15	0.29	-147	1800	4.90
1136	22.0	7.03	3765	15	0.28	-148	2100	4.90
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 2100 gals. or mL

Sampling Time: 1145 Sampling Date: 8/30/18

Sample I.D.: GWE-1 Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: — @ Time — Duplicate I.D.: —

Technician Signature:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 190850-2051	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: WS	Start Date: 8/30/19
Well I.D.: GWE-2	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 6.75	Depth to Water Pre: 2.60 Post: 2.60
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___
Sampling Method: Dedicated Tubing | Disp Bailer | (New Tubing) | Other ___

Flow Rate: 100 mL/min Pump Depth: 5' ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1000	21.5	7.22	10710	29	0.83	-98	300	DTW(ft) if req'd 2.60
1003	21.5	7.07	10485	24	0.66	-99	600	2.60
1006	21.5	6.90	10312	22	0.51	-99	900	2.60
1009	21.6	6.84	10214	24	0.47	-101	1200	2.60
1012	21.6	6.78	10112	23	0.44	-101	1500	2.60
1015	21.6	6.73	10080	22	0.43	-102	1800	2.60
1018	21.6	6.70	10006	23	0.41	-104	2100	2.60
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 2100 gals. or mL

Sampling Time: 1025 Sampling Date: 8/30/19

Sample I.D.: GWE-2 Laboratory: TA-SF

Analyzed for: (VOCs) / Nitrate as N / Diss. Gases / TOC / (CAM17 Metals) / (CrVI) / (TPH-G) / (TPH-D) / (1,2,3 TCP) (circle)

Equipment Blank I.D.: — @ Time — Duplicate I.D.: —

Technician Signature: [signature]

LOW FLOW WELL MONITORING DATA SHEET

Project #: 180880-0081	Client: Geosyntec@Brisbane UPC OU-SM DGA WP Implementation
Sampler: US	Start Date: 8/30/18
Well I.D.: GWE-3	Well Diameter: 2 3 (4) 6 8 ___
Total Well Depth: 13.60	Depth to Water Pre: 4.25 Post: 4.25
Depth to Free Product: —	Thickness of Free Product (feet): —
Referenced to: (PVC) Grade	Flow Cell Type: YSI 556 or YSI Pro Plus

Purge Method: 2" Grundfos Pump | Watterra | (Peristaltic Pump) | Bladder Pump | Other ___

Sampling Method: (Dedicated Tubing) | Disp Bailer | New Tubing | Other ___

Flow Rate: 100 mL/min Pump Depth: 11' ft. (ref. (PVC) or Grade)

Time	Temp. (°C or °F)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or (mL))	Observations
1043	20.7	7.11	10368	24	0.49	-114	300	DTW(ft) if req'd 4.25
1046	20.7	7.06	10157	19	0.87	-118	600	4.25
1049	20.8	7.04	10064	20	0.49	-108	900	4.25
1052	21.0	7.03	10018	21	0.37	-102	1200	4.25
1055	21.0	7.03	9995	20	0.31	-98	1500	4.25
1058	21.1	7.03	9972	19	0.30	-95	1800	4.25
1101	21.1	7.03	9965	20	0.30	-94	2100	4.25
								Sheen or Odor Present: Yes / (No) (circle)

Did well dewater? Yes (No) Amount actually evacuated: 2100 gals. or mL

Sampling Time: 1105 Sampling Date: 8/30/18

Sample I.D.: GWE-3 Laboratory: TA-SF

Analyzed for: VOCs / Nitrate as N / Diss. Gases / TOC / CAM17 Metals / CrVI / TPH-G / TPH-D / (1,2,3 TCP) (circle)

Equipment Blank I.D.: — @ Time — Duplicate I.D.: —

Technician Signature: [signature]

APPENDIX H

Analytical Laboratory Reports for Monitoring Well Samples

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-88028-1
Client Project/Site: Brisbane UPC OU-SM DGA WP Implementation
Revision: 1

For:
Geosyntec Consultants, Inc.
1111 Broadway
6th Floor
Oakland, California 94607

Attn: Mr. Tony Smith

Authorized for release by:
11/6/2018 3:59:43 PM

Micah Smith, Project Manager II
(916)374-4302
micah.smith@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

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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Definitions/Glossary

Client: Geosyntec Consultants, Inc. TestAmerica Job ID: 720-88028-1
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
H	Sample was prepped or analyzed beyond the specified holding time
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 720-88028-1

Laboratory: TestAmerica Pleasanton

Narrative

Job Narrative
720-88028-1

Comments
This report was revised on 11/6/18 to correct the method reference for the Volatile Organic Compounds by (GC/MS SIM) to reference method SRL 524M-TCP.

Receipt
The samples were received on 8/14/2018 5:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.6° C.

GC/MS VOA
Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 720-249587 recovered above the upper control limit for Dichlorodifluoromethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: MK-2A (720-88028-1), FB-1 (720-88028-2), MK-5AR (720-88028-3), DUP-1 (720-88028-4) and TB-1 (720-88028-5).

Method(s) 8260B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 720-249587 recovered outside control limits for the following analytes: Vinyl acetate. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method(s) 8260B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 720-249587 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 524.2: The sample was collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was greater than 2 and the following sample was analyzed after 24 hrs from sampling: FB-1 (720-88028-2). pH =4

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page..

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Client Sample ID: MK-2A — Lab Sample ID: 720-88028-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.33		0.010		mg/L	1		6010B	Total/NA
Cobalt	0.079		0.0020		mg/L	1		6010B	Total/NA
Nickel	0.049		0.010		mg/L	1		6010B	Total/NA

Client Sample ID: FB-1 — Lab Sample ID: 720-88028-2

No Detections.

Client Sample ID: MK-5AR — Lab Sample ID: 720-88028-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	250		54		ug/L	1		8015B	Total/NA
Arsenic	0.13		0.010		mg/L	1		6010B	Total/NA
Barium	0.079		0.010		mg/L	1		6010B	Total/NA
Lead	0.0081		0.0050		mg/L	1		6010B	Total/NA
Zinc	0.024		0.020		mg/L	1		6010B	Total/NA

Client Sample ID: DUP-1 — Lab Sample ID: 720-88028-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	240		54		ug/L	1		8015B	Total/NA
Arsenic	0.13		0.010		mg/L	1		6010B	Total/NA
Barium	0.079		0.010		mg/L	1		6010B	Total/NA
Lead	0.0081		0.0050		mg/L	1		6010B	Total/NA
Zinc	0.026		0.020		mg/L	1		6010B	Total/NA

Client Sample ID: TB-1 — Lab Sample ID: 720-88028-5

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MK-2A
Date Collected: 08/14/18 13:59
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/16/18 03:05	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 03:05	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/16/18 03:05	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 03:05	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/16/18 03:05	1
1,1-Dichloroethane	ND		0.50		ug/L			08/16/18 03:05	1
1,1-Dichloroethene	ND		0.50		ug/L			08/16/18 03:05	1
1,1-Dichloropropene	ND		0.50		ug/L			08/16/18 03:05	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/16/18 03:05	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/16/18 03:05	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/16/18 03:05	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/16/18 03:05	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/16/18 03:05	1
1,2-Dichloroethane	ND		0.50		ug/L			08/16/18 03:05	1
1,2-Dichloropropane	ND		0.50		ug/L			08/16/18 03:05	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/16/18 03:05	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/16/18 03:05	1
1,3-Dichloropropane	ND		1.0		ug/L			08/16/18 03:05	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/16/18 03:05	1
2,2-Dichloropropane	ND		0.50		ug/L			08/16/18 03:05	1
2-Chlorotoluene	ND		0.50		ug/L			08/16/18 03:05	1
2-Hexanone	ND		50		ug/L			08/16/18 03:05	1
4-Chlorotoluene	ND		0.50		ug/L			08/16/18 03:05	1
4-Isopropyltoluene	ND		1.0		ug/L			08/16/18 03:05	1
Acetone	ND		50		ug/L			08/16/18 03:05	1
Benzene	ND		0.50		ug/L			08/16/18 03:05	1
Bromobenzene	ND		1.0		ug/L			08/16/18 03:05	1
Bromoform	ND		1.0		ug/L			08/16/18 03:05	1
Bromomethane	ND		1.0		ug/L			08/16/18 03:05	1
Carbon disulfide	ND		5.0		ug/L			08/16/18 03:05	1
Carbon tetrachloride	ND		0.50		ug/L			08/16/18 03:05	1
Chlorobenzene	ND		0.50		ug/L			08/16/18 03:05	1
Chlorobromomethane	ND		1.0		ug/L			08/16/18 03:05	1
Chloroethane	ND		1.0		ug/L			08/16/18 03:05	1
Chloroform	ND		1.0		ug/L			08/16/18 03:05	1
Chloromethane	ND		1.0		ug/L			08/16/18 03:05	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 03:05	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 03:05	1
Chlorodibromomethane	ND		0.50		ug/L			08/16/18 03:05	1
Dibromomethane	ND		0.50		ug/L			08/16/18 03:05	1
Dichlorobromomethane	ND		0.50		ug/L			08/16/18 03:05	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/16/18 03:05	1
Ethylbenzene	ND		0.50		ug/L			08/16/18 03:05	1
Hexachlorobutadiene	ND		1.0		ug/L			08/16/18 03:05	1
Isopropylbenzene	ND		0.50		ug/L			08/16/18 03:05	1
Methylene Chloride	ND		5.0		ug/L			08/16/18 03:05	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/16/18 03:05	1
Naphthalene	ND		1.0		ug/L			08/16/18 03:05	1
n-Butylbenzene	ND		1.0		ug/L			08/16/18 03:05	1

Client Sample ID: MK-2A
Date Collected: 08/14/18 13:59
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/16/18 03:05	1
sec-Butylbenzene	ND		1.0		ug/L			08/16/18 03:05	1
Styrene	ND		0.50		ug/L			08/16/18 03:05	1
tert-Butylbenzene	ND		1.0		ug/L			08/16/18 03:05	1
Tetrachloroethene	ND		0.50		ug/L			08/16/18 03:05	1
Toluene	ND		0.50		ug/L			08/16/18 03:05	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 03:05	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 03:05	1
Trichloroethene	ND		0.50		ug/L			08/16/18 03:05	1
Trichlorofluoromethane	ND		1.0		ug/L			08/16/18 03:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/16/18 03:05	1
Vinyl acetate	ND	*	10		ug/L			08/16/18 03:05	1
Vinyl chloride	ND		0.50		ug/L			08/16/18 03:05	1
Xylenes, Total	ND		0.50		ug/L			08/16/18 03:05	1
Ethylene Dibromide	ND		0.50		ug/L			08/16/18 03:05	1
2-Butanone (MEK)	ND		50		ug/L			08/16/18 03:05	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/16/18 03:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*100*		*67 - 130*		*08/16/18 03:05*	*1*
Toluene-d8 (Surr)	*101*		*70 - 130*		*08/16/18 03:05*	*1*
Dibromofluoromethane (Surr)	*106*		*70 - 130*		*08/16/18 03:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*125*		*72 - 130*		*08/16/18 03:05*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 16:36	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/17/18 04:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*65 - 140*		*08/17/18 04:32*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		53		ug/L		08/15/18 19:47	08/17/18 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*91*		*23 - 156*	*08/15/18 19:47*	*08/17/18 17:45*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Arsenic	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Barium	**0.33**		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Beryllium	ND		0.0020		mg/L		08/16/18 15:58	08/20/18 12:12	1
Cadmium	ND		0.0025		mg/L		08/16/18 15:58	08/20/18 12:12	1
Chromium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Cobalt	**0.079**		0.0020		mg/L		08/16/18 15:58	08/20/18 12:12	1

Client Sample ID: MK-2A
Date Collected: 08/14/18 13:59
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-1
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/16/18 15:58	08/20/18 12:12	1
Lead	ND		0.0050		mg/L		08/16/18 15:58	08/20/18 12:12	1
Molybdenum	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Nickel	**0.049**		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Selenium	ND		0.020		mg/L		08/16/18 15:58	08/20/18 12:12	1
Silver	ND		0.0050		mg/L		08/16/18 15:58	08/20/18 12:12	1
Thallium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Vanadium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:12	1
Zinc	ND		0.020		mg/L		08/16/18 15:58	08/20/18 12:12	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/14/18 16:09	1

Client Sample ID: FB-1
Date Collected: 08/14/18 14:15
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/15/18 22:03	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/15/18 22:03	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/15/18 22:03	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/15/18 22:03	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/15/18 22:03	1
1,1-Dichloroethane	ND		0.50		ug/L			08/15/18 22:03	1
1,1-Dichloroethene	ND		0.50		ug/L			08/15/18 22:03	1
1,1-Dichloropropene	ND		0.50		ug/L			08/15/18 22:03	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/15/18 22:03	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/15/18 22:03	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/15/18 22:03	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/15/18 22:03	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/15/18 22:03	1
1,2-Dichloroethane	ND		0.50		ug/L			08/15/18 22:03	1
1,2-Dichloropropane	ND		0.50		ug/L			08/15/18 22:03	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/15/18 22:03	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/15/18 22:03	1
1,3-Dichloropropane	ND		1.0		ug/L			08/15/18 22:03	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/15/18 22:03	1
2,2-Dichloropropane	ND		0.50		ug/L			08/15/18 22:03	1
2-Chlorotoluene	ND		0.50		ug/L			08/15/18 22:03	1
2-Hexanone	ND		50		ug/L			08/15/18 22:03	1
4-Chlorotoluene	ND		0.50		ug/L			08/15/18 22:03	1
4-Isopropyltoluene	ND		1.0		ug/L			08/15/18 22:03	1
Acetone	ND		50		ug/L			08/15/18 22:03	1
Benzene	ND		0.50		ug/L			08/15/18 22:03	1
Bromobenzene	ND		1.0		ug/L			08/15/18 22:03	1
Bromoform	ND		1.0		ug/L			08/15/18 22:03	1
Bromomethane	ND		1.0		ug/L			08/15/18 22:03	1
Carbon disulfide	ND		5.0		ug/L			08/15/18 22:03	1
Carbon tetrachloride	ND		0.50		ug/L			08/15/18 22:03	1
Chlorobenzene	ND		0.50		ug/L			08/15/18 22:03	1
Chlorobromomethane	ND		1.0		ug/L			08/15/18 22:03	1
Chloroethane	ND		1.0		ug/L			08/15/18 22:03	1
Chloroform	ND		1.0		ug/L			08/15/18 22:03	1
Chloromethane	ND		1.0		ug/L			08/15/18 22:03	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/15/18 22:03	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/15/18 22:03	1
Chlorodibromomethane	ND		0.50		ug/L			08/15/18 22:03	1
Dibromomethane	ND		0.50		ug/L			08/15/18 22:03	1
Dichlorobromomethane	ND		0.50		ug/L			08/15/18 22:03	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/15/18 22:03	1
Ethylbenzene	ND		0.50		ug/L			08/15/18 22:03	1
Hexachlorobutadiene	ND		1.0		ug/L			08/15/18 22:03	1
Isopropylbenzene	ND		0.50		ug/L			08/15/18 22:03	1
Methylene Chloride	ND		5.0		ug/L			08/15/18 22:03	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/15/18 22:03	1
Naphthalene	ND		1.0		ug/L			08/15/18 22:03	1
n-Butylbenzene	ND		1.0		ug/L			08/15/18 22:03	1

Client Sample ID: FB-1 **Lab Sample ID: 720-88028-2**
Date Collected: 08/14/18 14:15 **Matrix: Water**
Date Received: 08/14/18 17:45

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/15/18 22:03	1
sec-Butylbenzene	ND		1.0		ug/L			08/15/18 22:03	1
Styrene	ND		0.50		ug/L			08/15/18 22:03	1
tert-Butylbenzene	ND		1.0		ug/L			08/15/18 22:03	1
Tetrachloroethene	ND		0.50		ug/L			08/15/18 22:03	1
Toluene	ND		0.50		ug/L			08/15/18 22:03	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/15/18 22:03	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/15/18 22:03	1
Trichloroethene	ND		0.50		ug/L			08/15/18 22:03	1
Trichlorofluoromethane	ND		1.0		ug/L			08/15/18 22:03	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/15/18 22:03	1
Vinyl acetate	ND	*	10		ug/L			08/15/18 22:03	1
Vinyl chloride	ND		0.50		ug/L			08/15/18 22:03	1
Xylenes, Total	ND		0.50		ug/L			08/15/18 22:03	1
Ethylene Dibromide	ND		0.50		ug/L			08/15/18 22:03	1
2-Butanone (MEK)	ND		50		ug/L			08/15/18 22:03	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/15/18 22:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*97*		*67 - 130*		*08/15/18 22:03*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*08/15/18 22:03*	*1*
Dibromofluoromethane (Surr)	*100*		*70 - 130*		*08/15/18 22:03*	*1*
1,2-Dichloroethane-d4 (Surr)	*113*		*72 - 130*		*08/15/18 22:03*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND	H	0.0050		ug/L			08/17/18 05:05	1

Client Sample ID: MK-5AR
Date Collected: 08/14/18 14:51
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/16/18 03:35	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 03:35	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/16/18 03:35	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 03:35	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/16/18 03:35	1
1,1-Dichloroethane	ND		0.50		ug/L			08/16/18 03:35	1
1,1-Dichloroethene	ND		0.50		ug/L			08/16/18 03:35	1
1,1-Dichloropropene	ND		0.50		ug/L			08/16/18 03:35	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/16/18 03:35	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/16/18 03:35	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/16/18 03:35	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/16/18 03:35	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/16/18 03:35	1
1,2-Dichloroethane	ND		0.50		ug/L			08/16/18 03:35	1
1,2-Dichloropropane	ND		0.50		ug/L			08/16/18 03:35	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/16/18 03:35	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/16/18 03:35	1
1,3-Dichloropropane	ND		1.0		ug/L			08/16/18 03:35	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/16/18 03:35	1
2,2-Dichloropropane	ND		0.50		ug/L			08/16/18 03:35	1
2-Chlorotoluene	ND		0.50		ug/L			08/16/18 03:35	1
2-Hexanone	ND		50		ug/L			08/16/18 03:35	1
4-Chlorotoluene	ND		0.50		ug/L			08/16/18 03:35	1
4-Isopropyltoluene	ND		1.0		ug/L			08/16/18 03:35	1
Acetone	ND		50		ug/L			08/16/18 03:35	1
Benzene	ND		0.50		ug/L			08/16/18 03:35	1
Bromobenzene	ND		1.0		ug/L			08/16/18 03:35	1
Bromoform	ND		1.0		ug/L			08/16/18 03:35	1
Bromomethane	ND		1.0		ug/L			08/16/18 03:35	1
Carbon disulfide	ND		5.0		ug/L			08/16/18 03:35	1
Carbon tetrachloride	ND		0.50		ug/L			08/16/18 03:35	1
Chlorobenzene	ND		0.50		ug/L			08/16/18 03:35	1
Chlorobromomethane	ND		1.0		ug/L			08/16/18 03:35	1
Chloroethane	ND		1.0		ug/L			08/16/18 03:35	1
Chloroform	ND		1.0		ug/L			08/16/18 03:35	1
Chloromethane	ND		1.0		ug/L			08/16/18 03:35	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 03:35	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 03:35	1
Chlorodibromomethane	ND		0.50		ug/L			08/16/18 03:35	1
Dibromomethane	ND		0.50		ug/L			08/16/18 03:35	1
Dichlorobromomethane	ND		0.50		ug/L			08/16/18 03:35	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/16/18 03:35	1
Ethylbenzene	ND		0.50		ug/L			08/16/18 03:35	1
Hexachlorobutadiene	ND		1.0		ug/L			08/16/18 03:35	1
Isopropylbenzene	ND		0.50		ug/L			08/16/18 03:35	1
Methylene Chloride	ND		5.0		ug/L			08/16/18 03:35	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/16/18 03:35	1
Naphthalene	ND		1.0		ug/L			08/16/18 03:35	1
n-Butylbenzene	ND		1.0		ug/L			08/16/18 03:35	1

Client Sample ID: MK-5AR
Date Collected: 08/14/18 14:51
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/16/18 03:35	1
sec-Butylbenzene	ND		1.0		ug/L			08/16/18 03:35	1
Styrene	ND		0.50		ug/L			08/16/18 03:35	1
tert-Butylbenzene	ND		1.0		ug/L			08/16/18 03:35	1
Tetrachloroethene	ND		0.50		ug/L			08/16/18 03:35	1
Toluene	ND		0.50		ug/L			08/16/18 03:35	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 03:35	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 03:35	1
Trichloroethene	ND		0.50		ug/L			08/16/18 03:35	1
Trichlorofluoromethane	ND		1.0		ug/L			08/16/18 03:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/16/18 03:35	1
Vinyl acetate	ND	*	10		ug/L			08/16/18 03:35	1
Vinyl chloride	ND		0.50		ug/L			08/16/18 03:35	1
Xylenes, Total	ND		0.50		ug/L			08/16/18 03:35	1
Ethylene Dibromide	ND		0.50		ug/L			08/16/18 03:35	1
2-Butanone (MEK)	ND		50		ug/L			08/16/18 03:35	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/16/18 03:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*98*		*67 - 130*		*08/16/18 03:35*	*1*
Toluene-d8 (Surr)	*101*		*70 - 130*		*08/16/18 03:35*	*1*
Dibromofluoromethane (Surr)	*107*		*70 - 130*		*08/16/18 03:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*130*		*72 - 130*		*08/16/18 03:35*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 17:06	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/17/18 05:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*65 - 140*		*08/17/18 05:01*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**250**		54		ug/L		08/15/18 19:47	08/17/18 18:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*88*		*23 - 156*	*08/15/18 19:47*	*08/17/18 18:10*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Arsenic	**0.13**		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Barium	**0.079**		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Beryllium	ND		0.0020		mg/L		08/16/18 15:58	08/20/18 12:17	1
Cadmium	ND		0.0025		mg/L		08/16/18 15:58	08/20/18 12:17	1
Chromium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Cobalt	ND		0.0020		mg/L		08/16/18 15:58	08/20/18 12:17	1

Client Sample ID: MK-5AR
Date Collected: 08/14/18 14:51
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-3
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/16/18 15:58	08/20/18 12:17	1
Lead	**0.0081**		0.0050		mg/L		08/16/18 15:58	08/20/18 12:17	1
Molybdenum	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Nickel	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Selenium	ND		0.020		mg/L		08/16/18 15:58	08/20/18 12:17	1
Silver	ND		0.0050		mg/L		08/16/18 15:58	08/20/18 12:17	1
Thallium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Vanadium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:17	1
Zinc	**0.024**		0.020		mg/L		08/16/18 15:58	08/20/18 12:17	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/14/18 16:09	1

Client Sample ID: DUP-1
Date Collected: 08/14/18 14:56
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/16/18 04:05	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 04:05	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/16/18 04:05	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 04:05	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/16/18 04:05	1
1,1-Dichloroethane	ND		0.50		ug/L			08/16/18 04:05	1
1,1-Dichloroethene	ND		0.50		ug/L			08/16/18 04:05	1
1,1-Dichloropropene	ND		0.50		ug/L			08/16/18 04:05	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/16/18 04:05	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/16/18 04:05	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/16/18 04:05	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/16/18 04:05	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/16/18 04:05	1
1,2-Dichloroethane	ND		0.50		ug/L			08/16/18 04:05	1
1,2-Dichloropropane	ND		0.50		ug/L			08/16/18 04:05	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/16/18 04:05	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/16/18 04:05	1
1,3-Dichloropropane	ND		1.0		ug/L			08/16/18 04:05	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/16/18 04:05	1
2,2-Dichloropropane	ND		0.50		ug/L			08/16/18 04:05	1
2-Chlorotoluene	ND		0.50		ug/L			08/16/18 04:05	1
2-Hexanone	ND		50		ug/L			08/16/18 04:05	1
4-Chlorotoluene	ND		0.50		ug/L			08/16/18 04:05	1
4-Isopropyltoluene	ND		1.0		ug/L			08/16/18 04:05	1
Acetone	ND		50		ug/L			08/16/18 04:05	1
Benzene	ND		0.50		ug/L			08/16/18 04:05	1
Bromobenzene	ND		1.0		ug/L			08/16/18 04:05	1
Bromoform	ND		1.0		ug/L			08/16/18 04:05	1
Bromomethane	ND		1.0		ug/L			08/16/18 04:05	1
Carbon disulfide	ND		5.0		ug/L			08/16/18 04:05	1
Carbon tetrachloride	ND		0.50		ug/L			08/16/18 04:05	1
Chlorobenzene	ND		0.50		ug/L			08/16/18 04:05	1
Chlorobromomethane	ND		1.0		ug/L			08/16/18 04:05	1
Chloroethane	ND		1.0		ug/L			08/16/18 04:05	1
Chloroform	ND		1.0		ug/L			08/16/18 04:05	1
Chloromethane	ND		1.0		ug/L			08/16/18 04:05	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 04:05	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 04:05	1
Chlorodibromomethane	ND		0.50		ug/L			08/16/18 04:05	1
Dibromomethane	ND		0.50		ug/L			08/16/18 04:05	1
Dichlorobromomethane	ND		0.50		ug/L			08/16/18 04:05	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/16/18 04:05	1
Ethylbenzene	ND		0.50		ug/L			08/16/18 04:05	1
Hexachlorobutadiene	ND		1.0		ug/L			08/16/18 04:05	1
Isopropylbenzene	ND		0.50		ug/L			08/16/18 04:05	1
Methylene Chloride	ND		5.0		ug/L			08/16/18 04:05	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/16/18 04:05	1
Naphthalene	ND		1.0		ug/L			08/16/18 04:05	1
n-Butylbenzene	ND		1.0		ug/L			08/16/18 04:05	1

Client Sample ID: DUP-1
Date Collected: 08/14/18 14:56
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/16/18 04:05	1
sec-Butylbenzene	ND		1.0		ug/L			08/16/18 04:05	1
Styrene	ND		0.50		ug/L			08/16/18 04:05	1
tert-Butylbenzene	ND		1.0		ug/L			08/16/18 04:05	1
Tetrachloroethene	ND		0.50		ug/L			08/16/18 04:05	1
Toluene	ND		0.50		ug/L			08/16/18 04:05	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 04:05	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 04:05	1
Trichloroethene	ND		0.50		ug/L			08/16/18 04:05	1
Trichlorofluoromethane	ND		1.0		ug/L			08/16/18 04:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/16/18 04:05	1
Vinyl acetate	ND	*	10		ug/L			08/16/18 04:05	1
Vinyl chloride	ND		0.50		ug/L			08/16/18 04:05	1
Xylenes, Total	ND		0.50		ug/L			08/16/18 04:05	1
Ethylene Dibromide	ND		0.50		ug/L			08/16/18 04:05	1
2-Butanone (MEK)	ND		50		ug/L			08/16/18 04:05	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/16/18 04:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*100*		*67 - 130*		*08/16/18 04:05*	*1*
Toluene-d8 (Surr)	*101*		*70 - 130*		*08/16/18 04:05*	*1*
Dibromofluoromethane (Surr)	*107*		*70 - 130*		*08/16/18 04:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*130*		*72 - 130*		*08/16/18 04:05*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 17:37	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/17/18 05:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*82*		*65 - 140*		*08/17/18 05:30*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**240**		54		ug/L		08/15/18 19:47	08/17/18 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*87*		*23 - 156*	*08/15/18 19:47*	*08/17/18 18:34*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Arsenic	**0.13**		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Barium	**0.079**		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Beryllium	ND		0.0020		mg/L		08/16/18 15:58	08/20/18 12:21	1
Cadmium	ND		0.0025		mg/L		08/16/18 15:58	08/20/18 12:21	1
Chromium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Cobalt	ND		0.0020		mg/L		08/16/18 15:58	08/20/18 12:21	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Client Sample ID: DUP-1
Date Collected: 08/14/18 14:56
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-4
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/16/18 15:58	08/20/18 12:21	1
Lead	**0.0081**		0.0050		mg/L		08/16/18 15:58	08/20/18 12:21	1
Molybdenum	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Nickel	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Selenium	ND		0.020		mg/L		08/16/18 15:58	08/20/18 12:21	1
Silver	ND		0.0050		mg/L		08/16/18 15:58	08/20/18 12:21	1
Thallium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Vanadium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 12:21	1
Zinc	**0.026**		0.020		mg/L		08/16/18 15:58	08/20/18 12:21	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/14/18 16:09	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Client Sample ID: TB-1
Date Collected: 08/14/18 15:00
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/15/18 22:34	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/15/18 22:34	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/15/18 22:34	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/15/18 22:34	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/15/18 22:34	1
1,1-Dichloroethane	ND		0.50		ug/L			08/15/18 22:34	1
1,1-Dichloroethene	ND		0.50		ug/L			08/15/18 22:34	1
1,1-Dichloropropene	ND		0.50		ug/L			08/15/18 22:34	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/15/18 22:34	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/15/18 22:34	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/15/18 22:34	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/15/18 22:34	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/15/18 22:34	1
1,2-Dichloroethane	ND		0.50		ug/L			08/15/18 22:34	1
1,2-Dichloropropane	ND		0.50		ug/L			08/15/18 22:34	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/15/18 22:34	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/15/18 22:34	1
1,3-Dichloropropane	ND		1.0		ug/L			08/15/18 22:34	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/15/18 22:34	1
2,2-Dichloropropane	ND		0.50		ug/L			08/15/18 22:34	1
2-Chlorotoluene	ND		0.50		ug/L			08/15/18 22:34	1
2-Hexanone	ND		50		ug/L			08/15/18 22:34	1
4-Chlorotoluene	ND		0.50		ug/L			08/15/18 22:34	1
4-Isopropyltoluene	ND		1.0		ug/L			08/15/18 22:34	1
Acetone	ND		50		ug/L			08/15/18 22:34	1
Benzene	ND		0.50		ug/L			08/15/18 22:34	1
Bromobenzene	ND		1.0		ug/L			08/15/18 22:34	1
Bromoform	ND		1.0		ug/L			08/15/18 22:34	1
Bromomethane	ND		1.0		ug/L			08/15/18 22:34	1
Carbon disulfide	ND		5.0		ug/L			08/15/18 22:34	1
Carbon tetrachloride	ND		0.50		ug/L			08/15/18 22:34	1
Chlorobenzene	ND		0.50		ug/L			08/15/18 22:34	1
Chlorobromomethane	ND		1.0		ug/L			08/15/18 22:34	1
Chloroethane	ND		1.0		ug/L			08/15/18 22:34	1
Chloroform	ND		1.0		ug/L			08/15/18 22:34	1
Chloromethane	ND		1.0		ug/L			08/15/18 22:34	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/15/18 22:34	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/15/18 22:34	1
Chlorodibromomethane	ND		0.50		ug/L			08/15/18 22:34	1
Dibromomethane	ND		0.50		ug/L			08/15/18 22:34	1
Dichlorobromomethane	ND		0.50		ug/L			08/15/18 22:34	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/15/18 22:34	1
Ethylbenzene	ND		0.50		ug/L			08/15/18 22:34	1
Hexachlorobutadiene	ND		1.0		ug/L			08/15/18 22:34	1
Isopropylbenzene	ND		0.50		ug/L			08/15/18 22:34	1
Methylene Chloride	ND		5.0		ug/L			08/15/18 22:34	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/15/18 22:34	1
Naphthalene	ND		1.0		ug/L			08/15/18 22:34	1
n-Butylbenzene	ND		1.0		ug/L			08/15/18 22:34	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Client Sample ID: TB-1
Date Collected: 08/14/18 15:00
Date Received: 08/14/18 17:45

Lab Sample ID: 720-88028-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/15/18 22:34	1
sec-Butylbenzene	ND		1.0		ug/L			08/15/18 22:34	1
Styrene	ND		0.50		ug/L			08/15/18 22:34	1
tert-Butylbenzene	ND		1.0		ug/L			08/15/18 22:34	1
Tetrachloroethene	ND		0.50		ug/L			08/15/18 22:34	1
Toluene	ND		0.50		ug/L			08/15/18 22:34	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/15/18 22:34	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/15/18 22:34	1
Trichloroethene	ND		0.50		ug/L			08/15/18 22:34	1
Trichlorofluoromethane	ND		1.0		ug/L			08/15/18 22:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/15/18 22:34	1
Vinyl acetate	ND	*	10		ug/L			08/15/18 22:34	1
Vinyl chloride	ND		0.50		ug/L			08/15/18 22:34	1
Xylenes, Total	ND		0.50		ug/L			08/15/18 22:34	1
Ethylene Dibromide	ND		0.50		ug/L			08/15/18 22:34	1
2-Butanone (MEK)	ND		50		ug/L			08/15/18 22:34	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/15/18 22:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*97*		*67 - 130*		*08/15/18 22:34*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/15/18 22:34*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*		*08/15/18 22:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*115*		*72 - 130*		*08/15/18 22:34*	*1*

Surrogate Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	TOL	DBFM	DCA
Lab Sample ID	Client Sample ID	(67-130)	(70-130)	(70-130)	(72-130)
720-88028-1	MK-2A	100	101	106	125
720-88028-2	FB-1	97	98	100	113
720-88028-3	MK-5AR	98	101	107	130
720-88028-4	DUP-1	100	101	107	130
720-88028-5	TB-1	97	99	98	115
720-88036-A-1 MS	Matrix Spike	98	102	107	122
720-88036-A-1 MSD	Matrix Spike Duplicate	99	102	104	123
LCS 720-249587/5	Lab Control Sample	97	99	105	112
LCSD 720-249587/6	Lab Control Sample Dup	98	100	102	110
MB 720-249587/4	Method Blank	96	99	102	115

Surrogate Legend

BFB = 4-Bromofluorobenzene
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8015B - Gasoline Range Organics - (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		BFB1
Lab Sample ID	Client Sample ID	(65-140)
440-218192-B-1 MS	Matrix Spike	111
440-218192-B-1 MSD	Matrix Spike Duplicate	105
720-88028-1	MK-2A	91
720-88028-3	MK-5AR	84
720-88028-4	DUP-1	82
LCS 440-493993/33	Lab Control Sample	105
MB 440-493993/34	Method Blank	94

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		TPH1
Lab Sample ID	Client Sample ID	(23-156)
720-88028-1	MK-2A	91
720-88028-3	MK-5AR	88
720-88028-4	DUP-1	87
LCS 720-249591/2-A	Lab Control Sample	103
LCSD 720-249591/3-A	Lab Control Sample Dup	101
MB 720-249591/1-A	Method Blank	96

Surrogate Legend

TPH = p-Terphenyl

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 720-249587/4
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/15/18 19:28	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/15/18 19:28	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/15/18 19:28	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/15/18 19:28	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/15/18 19:28	1
1,1-Dichloroethane	ND		0.50		ug/L			08/15/18 19:28	1
1,1-Dichloroethene	ND		0.50		ug/L			08/15/18 19:28	1
1,1-Dichloropropene	ND		0.50		ug/L			08/15/18 19:28	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/15/18 19:28	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/15/18 19:28	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/15/18 19:28	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/15/18 19:28	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/15/18 19:28	1
1,2-Dichloroethane	ND		0.50		ug/L			08/15/18 19:28	1
1,2-Dichloropropane	ND		0.50		ug/L			08/15/18 19:28	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/15/18 19:28	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/15/18 19:28	1
1,3-Dichloropropane	ND		1.0		ug/L			08/15/18 19:28	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/15/18 19:28	1
2,2-Dichloropropane	ND		0.50		ug/L			08/15/18 19:28	1
2-Chlorotoluene	ND		0.50		ug/L			08/15/18 19:28	1
2-Hexanone	ND		50		ug/L			08/15/18 19:28	1
4-Chlorotoluene	ND		0.50		ug/L			08/15/18 19:28	1
4-Isopropyltoluene	ND		1.0		ug/L			08/15/18 19:28	1
Acetone	ND		50		ug/L			08/15/18 19:28	1
Benzene	ND		0.50		ug/L			08/15/18 19:28	1
Bromobenzene	ND		1.0		ug/L			08/15/18 19:28	1
Bromoform	ND		1.0		ug/L			08/15/18 19:28	1
Bromomethane	ND		1.0		ug/L			08/15/18 19:28	1
Carbon disulfide	ND		5.0		ug/L			08/15/18 19:28	1
Carbon tetrachloride	ND		0.50		ug/L			08/15/18 19:28	1
Chlorobenzene	ND		0.50		ug/L			08/15/18 19:28	1
Chlorobromomethane	ND		1.0		ug/L			08/15/18 19:28	1
Chloroethane	ND		1.0		ug/L			08/15/18 19:28	1
Chloroform	ND		1.0		ug/L			08/15/18 19:28	1
Chloromethane	ND		1.0		ug/L			08/15/18 19:28	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/15/18 19:28	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/15/18 19:28	1
Chlorodibromomethane	ND		0.50		ug/L			08/15/18 19:28	1
Dibromomethane	ND		0.50		ug/L			08/15/18 19:28	1
Dichlorobromomethane	ND		0.50		ug/L			08/15/18 19:28	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/15/18 19:28	1
Ethylbenzene	ND		0.50		ug/L			08/15/18 19:28	1
Hexachlorobutadiene	ND		1.0		ug/L			08/15/18 19:28	1
Isopropylbenzene	ND		0.50		ug/L			08/15/18 19:28	1
Methylene Chloride	ND		5.0		ug/L			08/15/18 19:28	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/15/18 19:28	1
Naphthalene	ND		1.0		ug/L			08/15/18 19:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249587/4
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	ND		1.0		ug/L			08/15/18 19:28	1
N-Propylbenzene	ND		1.0		ug/L			08/15/18 19:28	1
sec-Butylbenzene	ND		1.0		ug/L			08/15/18 19:28	1
Styrene	ND		0.50		ug/L			08/15/18 19:28	1
tert-Butylbenzene	ND		1.0		ug/L			08/15/18 19:28	1
Tetrachloroethene	ND		0.50		ug/L			08/15/18 19:28	1
Toluene	ND		0.50		ug/L			08/15/18 19:28	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/15/18 19:28	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/15/18 19:28	1
Trichloroethene	ND		0.50		ug/L			08/15/18 19:28	1
Trichlorofluoromethane	ND		1.0		ug/L			08/15/18 19:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/15/18 19:28	1
Vinyl acetate	ND		10		ug/L			08/15/18 19:28	1
Vinyl chloride	ND		0.50		ug/L			08/15/18 19:28	1
Xylenes, Total	ND		0.50		ug/L			08/15/18 19:28	1
Ethylene Dibromide	ND		0.50		ug/L			08/15/18 19:28	1
2-Butanone (MEK)	ND		50		ug/L			08/15/18 19:28	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/15/18 19:28	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*96*		*67 - 130*		*08/15/18 19:28*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/15/18 19:28*	*1*
Dibromofluoromethane (Surr)	*102*		*70 - 130*		*08/15/18 19:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*115*		*72 - 130*		*08/15/18 19:28*	*1*

Lab Sample ID: LCS 720-249587/5
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	25.2		ug/L		101	77 - 120
1,1,1,2-Tetrachloroethane	25.0	27.5		ug/L		110	81 - 121
1,1,1-Trichloroethane	25.0	30.9		ug/L		124	74 - 130
1,1,2,2-Tetrachloroethane	25.0	21.7		ug/L		87	70 - 115
1,1,2-Trichloroethane	25.0	24.2		ug/L		97	80 - 117
1,1-Dichloroethane	25.0	26.3		ug/L		105	77 - 119
1,1-Dichloroethene	25.0	27.5		ug/L		110	69 - 119
1,1-Dichloropropene	25.0	26.7		ug/L		107	83 - 130
1,2,3-Trichlorobenzene	25.0	25.9		ug/L		104	87 - 123
1,2,4-Trichlorobenzene	25.0	26.6		ug/L		106	78 - 120
1,2,4-Trimethylbenzene	25.0	25.1		ug/L		101	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	24.7		ug/L		99	74 - 126
1,2-Dichlorobenzene	25.0	25.3		ug/L		101	77 - 117
1,2-Dichloroethane	25.0	28.6		ug/L		114	73 - 122
1,2-Dichloropropane	25.0	24.5		ug/L		98	79 - 119
1,3,5-Trimethylbenzene	25.0	25.3		ug/L		101	77 - 117
1,3-Dichlorobenzene	25.0	25.3		ug/L		101	76 - 116
1,3-Dichloropropane	25.0	25.0		ug/L		100	77 - 117

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249587/5
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	25.0	25.7		ug/L		103	76 - 116
2,2-Dichloropropane	25.0	33.7		ug/L		135	74 - 156
2-Chlorotoluene	25.0	24.5		ug/L		98	75 - 115
2-Hexanone	125	113		ug/L		90	63 - 140
4-Chlorotoluene	25.0	24.9		ug/L		100	73 - 119
4-Isopropyltoluene	25.0	25.9		ug/L		103	80 - 120
Acetone	125	106		ug/L		85	61 - 147
Benzene	25.0	25.1		ug/L		100	79 - 119
Bromobenzene	25.0	24.8		ug/L		99	77 - 117
Bromoform	25.0	28.3		ug/L		113	75 - 127
Bromomethane	25.0	25.7		ug/L		103	70 - 132
Carbon disulfide	25.0	31.1		ug/L		124	64 - 127
Carbon tetrachloride	25.0	31.5		ug/L		126	72 - 142
Chlorobenzene	25.0	25.2		ug/L		101	76 - 116
Chlorobromomethane	25.0	27.1		ug/L		108	81 - 122
Chloroethane	25.0	22.3		ug/L		89	70 - 131
Chloroform	25.0	28.1		ug/L		112	82 - 119
Chloromethane	25.0	23.6		ug/L		94	49 - 134
cis-1,2-Dichloroethene	25.0	26.3		ug/L		105	77 - 117
cis-1,3-Dichloropropene	25.0	26.6		ug/L		106	82 - 119
Chlorodibromomethane	25.0	29.0		ug/L		116	77 - 133
Dibromomethane	25.0	25.4		ug/L		102	79 - 117
Dichlorobromomethane	25.0	28.7		ug/L		115	81 - 130
Dichlorodifluoromethane	25.0	31.8		ug/L		127	21 - 150
Ethylbenzene	25.0	25.8		ug/L		103	77 - 117
Hexachlorobutadiene	25.0	28.8		ug/L		115	78 - 140
Isopropylbenzene	25.0	26.7		ug/L		107	77 - 130
m-Xylene & p-Xylene	25.0	26.1		ug/L		105	74 - 119
Methylene Chloride	25.0	24.9		ug/L		100	75 - 117
Methyl tert-butyl ether	25.0	26.0		ug/L		104	70 - 130
Naphthalene	25.0	23.8		ug/L		95	81 - 121
n-Butylbenzene	25.0	25.2		ug/L		101	78 - 119
N-Propylbenzene	25.0	25.0		ug/L		100	77 - 117
o-Xylene	25.0	26.0		ug/L		104	77 - 118
sec-Butylbenzene	25.0	25.0		ug/L		100	78 - 118
Styrene	25.0	24.7		ug/L		99	76 - 116
tert-Butylbenzene	25.0	25.0		ug/L		100	78 - 118
Tetrachloroethene	25.0	27.9		ug/L		112	81 - 130
Toluene	25.0	21.1		ug/L		84	75 - 120
trans-1,2-Dichloroethene	25.0	28.1		ug/L		112	79 - 117
trans-1,3-Dichloropropene	25.0	27.3		ug/L		109	76 - 122
Trichloroethene	25.0	27.3		ug/L		109	80 - 123
Trichlorofluoromethane	25.0	30.1		ug/L		120	75 - 141
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	31.8		ug/L		127	70 - 133
Vinyl acetate	25.0	32.2	*	ug/L		129	50 - 126
Vinyl chloride	25.0	25.1		ug/L		101	58 - 138
Ethylene Dibromide	25.0	26.1		ug/L		104	80 - 121

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249587/5
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-Butanone (MEK)			125	110		ug/L		88	66 - 133		
4-Methyl-2-pentanone (MIBK)			125	115		ug/L		92	66 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*97*		*67 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*105*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*112*		*72 - 130*

Lab Sample ID: LCSD 720-249587/6
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane			25.0	24.7		ug/L		99	77 - 120	2	20
1,1,1,2-Tetrachloroethane			25.0	27.4		ug/L		110	81 - 121	1	20
1,1,1-Trichloroethane			25.0	31.4		ug/L		126	74 - 130	2	20
1,1,2,2-Tetrachloroethane			25.0	21.8		ug/L		87	70 - 115	0	20
1,1,2-Trichloroethane			25.0	24.7		ug/L		99	80 - 117	2	20
1,1-Dichloroethane			25.0	26.1		ug/L		104	77 - 119	1	20
1,1-Dichloroethene			25.0	27.7		ug/L		111	69 - 119	1	20
1,1-Dichloropropene			25.0	26.6		ug/L		107	83 - 130	0	20
1,2,3-Trichlorobenzene			25.0	25.7		ug/L		103	87 - 123	1	20
1,2,4-Trichlorobenzene			25.0	26.5		ug/L		106	78 - 120	0	20
1,2,4-Trimethylbenzene			25.0	25.3		ug/L		101	75 - 115	0	20
1,2-Dibromo-3-Chloropropane			25.0	23.5		ug/L		94	74 - 126	5	20
1,2-Dichlorobenzene			25.0	25.0		ug/L		100	77 - 117	1	20
1,2-Dichloroethane			25.0	28.5		ug/L		114	73 - 122	0	20
1,2-Dichloropropane			25.0	24.5		ug/L		98	79 - 119	0	20
1,3,5-Trimethylbenzene			25.0	25.6		ug/L		102	77 - 117	1	20
1,3-Dichlorobenzene			25.0	25.1		ug/L		101	76 - 116	1	20
1,3-Dichloropropane			25.0	24.8		ug/L		99	77 - 117	1	20
1,4-Dichlorobenzene			25.0	25.5		ug/L		102	76 - 116	1	20
2,2-Dichloropropane			25.0	35.7		ug/L		143	74 - 156	6	20
2-Chlorotoluene			25.0	24.6		ug/L		98	75 - 115	1	20
2-Hexanone			125	111		ug/L		88	63 - 140	2	24
4-Chlorotoluene			25.0	25.0		ug/L		100	73 - 119	0	20
4-Isopropyltoluene			25.0	26.0		ug/L		104	80 - 120	0	20
Acetone			125	108		ug/L		86	61 - 147	2	30
Benzene			25.0	25.3		ug/L		101	79 - 119	1	20
Bromobenzene			25.0	24.7		ug/L		99	77 - 117	0	20
Bromoform			25.0	27.9		ug/L		112	75 - 127	1	20
Bromomethane			25.0	25.8		ug/L		103	70 - 132	0	20
Carbon disulfide			25.0	31.1		ug/L		124	64 - 127	0	20
Carbon tetrachloride			25.0	31.3		ug/L		125	72 - 142	1	20
Chlorobenzene			25.0	25.1		ug/L		101	76 - 116	0	20
Chlorobromomethane			25.0	26.9		ug/L		108	81 - 122	1	20
Chloroethane			25.0	23.0		ug/L		92	70 - 131	3	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249587/6
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform			25.0	27.8		ug/L		111	82 - 119	1	20
Chloromethane			25.0	24.0		ug/L		96	49 - 134	2	20
cis-1,2-Dichloroethene			25.0	26.1		ug/L		105	77 - 117	1	20
cis-1,3-Dichloropropene			25.0	26.8		ug/L		107	82 - 119	1	20
Chlorodibromomethane			25.0	29.3		ug/L		117	77 - 133	1	20
Dibromomethane			25.0	25.6		ug/L		103	79 - 117	1	20
Dichlorobromomethane			25.0	28.7		ug/L		115	81 - 130	0	20
Dichlorodifluoromethane			25.0	31.1		ug/L		124	21 - 150	2	20
Ethylbenzene			25.0	25.6		ug/L		102	77 - 117	1	20
Hexachlorobutadiene			25.0	28.3		ug/L		113	78 - 140	2	20
Isopropylbenzene			25.0	26.6		ug/L		107	77 - 130	0	20
m-Xylene & p-Xylene			25.0	26.0		ug/L		104	74 - 119	1	20
Methylene Chloride			25.0	25.4		ug/L		101	75 - 117	2	20
Methyl tert-butyl ether			25.0	25.9		ug/L		103	70 - 130	0	20
Naphthalene			25.0	23.7		ug/L		95	81 - 121	0	20
n-Butylbenzene			25.0	25.2		ug/L		101	78 - 119	0	20
N-Propylbenzene			25.0	24.9		ug/L		100	77 - 117	0	20
o-Xylene			25.0	25.8		ug/L		103	77 - 118	1	20
sec-Butylbenzene			25.0	25.1		ug/L		101	78 - 118	1	20
Styrene			25.0	24.7		ug/L		99	76 - 116	0	20
tert-Butylbenzene			25.0	25.2		ug/L		101	78 - 118	0	20
Tetrachloroethene			25.0	28.1		ug/L		112	81 - 130	0	20
Toluene			25.0	21.1		ug/L		84	75 - 120	0	20
trans-1,2-Dichloroethene			25.0	27.8		ug/L		111	79 - 117	1	20
trans-1,3-Dichloropropene			25.0	27.6		ug/L		110	76 - 122	1	20
Trichloroethene			25.0	27.0		ug/L		108	80 - 123	1	20
Trichlorofluoromethane			25.0	29.9		ug/L		120	75 - 141	1	20
1,1,2-Trichloro-1,2,2-trifluoroethane			25.0	32.4		ug/L		129	70 - 133	2	20
Vinyl acetate			25.0	32.1	*	ug/L		128	50 - 126	1	20
Vinyl chloride			25.0	26.1		ug/L		104	58 - 138	4	20
Ethylene Dibromide			25.0	26.2		ug/L		105	80 - 121	1	20
2-Butanone (MEK)			125	109		ug/L		87	66 - 133	0	22
4-Methyl-2-pentanone (MIBK)			125	112		ug/L		90	66 - 140	3	21

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*67 - 130*
Toluene-d8 (Surr)	*100*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*110*		*72 - 130*

Lab Sample ID: 720-88036-A-1 MS
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		25.0	31.2		ug/L		125	60 - 140
1,1,1,2-Tetrachloroethane	ND		25.0	33.5		ug/L		134	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88036-A-1 MS
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	2.4	F1	25.0	45.3	F1	ug/L		172	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	25.8		ug/L		103	60 - 140
1,1,2-Trichloroethane	ND		25.0	31.7		ug/L		127	60 - 140
1,1-Dichloroethane	1.0		25.0	34.4		ug/L		133	60 - 140
1,1-Dichloroethene	1.4		25.0	36.0		ug/L		139	60 - 140
1,1-Dichloropropene	ND	F1	25.0	35.0		ug/L		140	60 - 140
1,2,3-Trichlorobenzene	ND		25.0	31.1		ug/L		124	60 - 140
1,2,4-Trichlorobenzene	ND		25.0	30.9		ug/L		123	60 - 140
1,2,4-Trimethylbenzene	ND		25.0	29.5		ug/L		118	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	30.8		ug/L		123	60 - 140
1,2-Dichlorobenzene	ND		25.0	30.0		ug/L		120	60 - 140
1,2-Dichloroethane	ND	F1	25.0	40.9	F1	ug/L		164	60 - 140
1,2-Dichloropropane	ND		25.0	30.7		ug/L		123	60 - 140
1,3,5-Trimethylbenzene	ND		25.0	29.7		ug/L		119	60 - 140
1,3-Dichlorobenzene	ND		25.0	29.6		ug/L		118	60 - 140
1,3-Dichloropropane	ND		25.0	32.7		ug/L		131	60 - 140
1,4-Dichlorobenzene	ND		25.0	30.3		ug/L		121	60 - 140
2,2-Dichloropropane	ND	F1	25.0	45.0	F1	ug/L		180	60 - 140
2-Chlorotoluene	ND		25.0	28.5		ug/L		114	60 - 140
2-Hexanone	ND	F1	125	197	F1	ug/L		158	60 - 140
4-Chlorotoluene	ND		25.0	28.8		ug/L		115	60 - 140
4-Isopropyltoluene	ND		25.0	31.1		ug/L		124	60 - 140
Acetone	ND		125	153		ug/L		123	60 - 140
Benzene	ND		25.0	31.8		ug/L		127	60 - 140
Bromobenzene	ND		25.0	28.5		ug/L		114	60 - 140
Bromoform	ND	F1	25.0	35.7	F1	ug/L		143	56 - 140
Bromomethane	ND		25.0	32.7		ug/L		131	23 - 140
Carbon disulfide	ND	F1	25.0	36.7	F1	ug/L		147	38 - 140
Carbon tetrachloride	ND	F1	25.0	44.0	F1	ug/L		176	60 - 140
Chlorobenzene	ND		25.0	30.1		ug/L		120	60 - 140
Chlorobromomethane	ND		25.0	34.9		ug/L		139	60 - 140
Chloroethane	ND		25.0	29.5		ug/L		118	51 - 140
Chloroform	ND	F1	25.0	37.5	F1	ug/L		148	60 - 140
Chloromethane	ND	F1	25.0	34.6		ug/L		138	52 - 140
cis-1,2-Dichloroethene	5.6		25.0	40.6		ug/L		140	60 - 140
cis-1,3-Dichloropropene	ND		25.0	33.4		ug/L		134	60 - 140
Chlorodibromomethane	ND	F1	25.0	40.1	F1	ug/L		160	60 - 140
Dibromomethane	ND		25.0	34.9		ug/L		139	60 - 140
Dichlorobromomethane	ND	F1	25.0	38.5	F1	ug/L		154	60 - 140
Dichlorodifluoromethane	ND	F1	25.0	47.6	F1	ug/L		190	38 - 140
Ethylbenzene	ND		25.0	31.2		ug/L		125	60 - 140
Hexachlorobutadiene	ND		25.0	34.9		ug/L		139	60 - 140
Isopropylbenzene	ND		25.0	33.0		ug/L		132	60 - 140
m-Xylene & p-Xylene	ND		25.0	31.6		ug/L		126	60 - 140
Methylene Chloride	ND		25.0	31.1		ug/L		124	40 - 140
Methyl tert-butyl ether	ND		25.0	33.4		ug/L		133	60 - 138
Naphthalene	ND		25.0	29.6		ug/L		118	56 - 140
n-Butylbenzene	ND		25.0	29.9		ug/L		120	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88036-A-1 MS
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
N-Propylbenzene	ND		25.0	29.0		ug/L		116	60 - 140
o-Xylene	ND		25.0	31.6		ug/L		127	60 - 140
sec-Butylbenzene	ND		25.0	30.0		ug/L		120	60 - 140
Styrene	ND		25.0	28.7		ug/L		115	60 - 140
tert-Butylbenzene	ND		25.0	30.1		ug/L		120	60 - 140
Tetrachloroethene	18	F1	25.0	55.6	F1	ug/L		152	60 - 140
Toluene	ND		25.0	25.0		ug/L		100	60 - 140
trans-1,2-Dichloroethene	ND	F1	25.0	34.7		ug/L		138	60 - 140
trans-1,3-Dichloropropene	ND	F1	25.0	35.6	F1	ug/L		142	60 - 140
Trichloroethene	32	F1	25.0	67.9	F1	ug/L		145	60 - 140
Trichlorofluoromethane	ND	F1	25.0	45.4	F1	ug/L		182	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	F1	25.0	42.3	F1	ug/L		168	60 - 140
Vinyl acetate	ND	* F1	25.0	45.6	F1	ug/L		183	40 - 140
Vinyl chloride	ND	F1	25.0	33.8		ug/L		135	58 - 140
Ethylene Dibromide	ND	F1	25.0	35.1	F1	ug/L		141	60 - 140
2-Butanone (MEK)	ND		125	166		ug/L		132	60 - 140
4-Methyl-2-pentanone (MIBK)	ND	F1	125	196	F1	ug/L		157	58 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*67 - 130*
Toluene-d8 (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*107*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*122*		*72 - 130*

Lab Sample ID: 720-88036-A-1 MSD
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	ND		25.0	31.8		ug/L		127	60 - 140	2	20
1,1,1,2-Tetrachloroethane	ND		25.0	32.6		ug/L		130	60 - 140	3	20
1,1,1-Trichloroethane	2.4	F1	25.0	46.0	F1	ug/L		174	60 - 140	1	20
1,1,2,2-Tetrachloroethane	ND		25.0	25.9		ug/L		103	60 - 140	0	20
1,1,2-Trichloroethane	ND		25.0	31.5		ug/L		126	60 - 140	0	20
1,1-Dichloroethane	1.0		25.0	35.1		ug/L		136	60 - 140	2	20
1,1-Dichloroethene	1.4		25.0	35.8		ug/L		138	60 - 140	1	20
1,1-Dichloropropene	ND	F1	25.0	35.5	F1	ug/L		142	60 - 140	1	20
1,2,3-Trichlorobenzene	ND		25.0	30.6		ug/L		122	60 - 140	2	20
1,2,4-Trichlorobenzene	ND		25.0	30.3		ug/L		121	60 - 140	2	20
1,2,4-Trimethylbenzene	ND		25.0	29.7		ug/L		119	60 - 140	1	20
1,2-Dibromo-3-Chloropropane	ND		25.0	31.0		ug/L		124	60 - 140	1	20
1,2-Dichlorobenzene	ND		25.0	29.5		ug/L		118	60 - 140	2	20
1,2-Dichloroethane	ND	F1	25.0	40.0	F1	ug/L		160	60 - 140	2	20
1,2-Dichloropropane	ND		25.0	30.8		ug/L		123	60 - 140	0	20
1,3,5-Trimethylbenzene	ND		25.0	30.4		ug/L		121	60 - 140	2	20
1,3-Dichlorobenzene	ND		25.0	29.4		ug/L		118	60 - 140	0	20
1,3-Dichloropropane	ND		25.0	32.5		ug/L		130	60 - 140	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88036-A-1 MSD
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	ND		25.0	30.1		ug/L		120	60 - 140	1	20
2,2-Dichloropropane	ND	F1	25.0	47.3	F1	ug/L		189	60 - 140	5	20
2-Chlorotoluene	ND		25.0	28.7		ug/L		115	60 - 140	1	20
2-Hexanone	ND	F1	125	195	F1	ug/L		156	60 - 140	2	20
4-Chlorotoluene	ND		25.0	29.0		ug/L		116	60 - 140	1	20
4-Isopropyltoluene	ND		25.0	31.1		ug/L		124	60 - 140	0	20
Acetone	ND		125	169		ug/L		135	60 - 140	10	20
Benzene	ND		25.0	31.7		ug/L		127	60 - 140	0	20
Bromobenzene	ND		25.0	28.8		ug/L		115	60 - 140	1	20
Bromoform	ND	F1	25.0	35.3	F1	ug/L		141	56 - 140	1	20
Bromomethane	ND		25.0	34.3		ug/L		137	23 - 140	5	20
Carbon disulfide	ND	F1	25.0	36.7	F1	ug/L		147	38 - 140	0	20
Carbon tetrachloride	ND	F1	25.0	45.3	F1	ug/L		181	60 - 140	3	20
Chlorobenzene	ND		25.0	30.0		ug/L		120	60 - 140	0	20
Chlorobromomethane	ND		25.0	34.4		ug/L		137	60 - 140	1	20
Chloroethane	ND		25.0	31.0		ug/L		124	51 - 140	5	20
Chloroform	ND	F1	25.0	37.5	F1	ug/L		148	60 - 140	0	20
Chloromethane	ND	F1	25.0	36.3	F1	ug/L		145	52 - 140	5	20
cis-1,2-Dichloroethene	5.6		25.0	40.0		ug/L		138	60 - 140	1	20
cis-1,3-Dichloropropene	ND		25.0	33.6		ug/L		134	60 - 140	0	20
Chlorodibromomethane	ND	F1	25.0	38.6	F1	ug/L		154	60 - 140	4	20
Dibromomethane	ND		25.0	34.2		ug/L		137	60 - 140	2	20
Dichlorobromomethane	ND	F1	25.0	38.1	F1	ug/L		152	60 - 140	1	20
Dichlorodifluoromethane	ND	F1	25.0	50.5	F1	ug/L		202	38 - 140	6	20
Ethylbenzene	ND		25.0	31.2		ug/L		125	60 - 140	0	20
Hexachlorobutadiene	ND		25.0	34.4		ug/L		138	60 - 140	1	20
Isopropylbenzene	ND		25.0	33.4		ug/L		134	60 - 140	1	20
m-Xylene & p-Xylene	ND		25.0	31.5		ug/L		126	60 - 140	0	20
Methylene Chloride	ND		25.0	30.7		ug/L		123	40 - 140	1	20
Methyl tert-butyl ether	ND		25.0	33.4		ug/L		133	60 - 138	0	20
Naphthalene	ND		25.0	30.0		ug/L		120	56 - 140	1	20
n-Butylbenzene	ND		25.0	30.1		ug/L		120	60 - 140	1	20
N-Propylbenzene	ND		25.0	29.6		ug/L		118	60 - 140	2	20
o-Xylene	ND		25.0	31.6		ug/L		126	60 - 140	0	20
sec-Butylbenzene	ND		25.0	30.3		ug/L		121	60 - 140	1	20
Styrene	ND		25.0	28.1		ug/L		112	60 - 140	2	20
tert-Butylbenzene	ND		25.0	30.3		ug/L		121	60 - 140	1	20
Tetrachloroethene	18	F1	25.0	55.2	F1	ug/L		150	60 - 140	1	20
Toluene	ND		25.0	24.9		ug/L		100	60 - 140	0	20
trans-1,2-Dichloroethene	ND	F1	25.0	35.8	F1	ug/L		142	60 - 140	3	20
trans-1,3-Dichloropropene	ND	F1	25.0	35.5	F1	ug/L		142	60 - 140	0	20
Trichloroethene	32	F1	25.0	66.8		ug/L		140	60 - 140	2	20
Trichlorofluoromethane	ND	F1	25.0	46.3	F1	ug/L		185	60 - 140	2	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	F1	25.0	43.3	F1	ug/L		172	60 - 140	2	20
Vinyl acetate	ND	* F1	25.0	44.4	F1	ug/L		178	40 - 140	3	20
Vinyl chloride	ND	F1	25.0	37.3	F1	ug/L		149	58 - 140	10	20
Ethylene Dibromide	ND	F1	25.0	34.7		ug/L		139	60 - 140	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88036-A-1 MSD
Matrix: Water
Analysis Batch: 249587

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Butanone (MEK)	ND		125	172		ug/L		137	60 - 140	4	20
4-Methyl-2-pentanone (MIBK)	ND	F1	125	195	F1	ug/L		156	58 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene	*99*		*67 - 130*
Toluene-d8 (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*104*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*123*		*72 - 130*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 440-494008/5
Matrix: Water
Analysis Batch: 494008

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/17/18 01:31	1

Lab Sample ID: LCS 440-494008/4
Matrix: Water
Analysis Batch: 494008

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	0.00500	0.00405	J	ug/L		81	80 - 120

Lab Sample ID: 440-218081-B-4 DU
Matrix: Water
Analysis Batch: 494008

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
1,2,3-Trichloropropane	ND	*	ND		ug/L		NC	30

Lab Sample ID: MB 440-496081/5
Matrix: Water
Analysis Batch: 496081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 14:03	1

Lab Sample ID: LCS 440-496081/4
Matrix: Water
Analysis Batch: 496081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	0.00500	0.00433	J	ug/L		87	80 - 120

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 720-88059-J-3 DU
Matrix: Water
Analysis Batch: 496081

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
1,2,3-Trichloropropane	ND			ND		ug/L				NC	30

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-493993/34
Matrix: Water
Analysis Batch: 493993

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/17/18 01:11	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*65 - 140*		*08/17/18 01:11*	*1*

Lab Sample ID: LCS 440-493993/33
Matrix: Water
Analysis Batch: 493993

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)			800	734		ug/L		92	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*65 - 140*

Lab Sample ID: 440-218192-B-1 MS
Matrix: Water
Analysis Batch: 493993

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)	ND		800	696		ug/L		87	65 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*111*		*65 - 140*

Lab Sample ID: 440-218192-B-1 MSD
Matrix: Water
Analysis Batch: 493993

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		800	668		ug/L		83	65 - 140	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*65 - 140*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 720-249591/1-A
Matrix: Water
Analysis Batch: 249702

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249591

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		50		ug/L		08/15/18 19:47	08/17/18 10:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*96*		*23 - 156*	*08/15/18 19:47*	*08/17/18 10:45*	*1*

Lab Sample ID: LCS 720-249591/2-A
Matrix: Water
Analysis Batch: 249702

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249591

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics [C10-C28]			2500	2310		ug/L		92	34 - 115		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
p-Terphenyl	*103*		*23 - 156*

Lab Sample ID: LCSD 720-249591/3-A
Matrix: Water
Analysis Batch: 249702

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 249591

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]			2500	2050		ug/L		82	34 - 115	12	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
p-Terphenyl	*101*		*23 - 156*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-249671/1-A
Matrix: Water
Analysis Batch: 249814

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249671

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Arsenic	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Barium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Beryllium	ND		0.0020		mg/L		08/16/18 15:58	08/20/18 11:01	1
Cadmium	ND		0.0025		mg/L		08/16/18 15:58	08/20/18 11:01	1
Chromium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Cobalt	ND		0.0020		mg/L		08/16/18 15:58	08/20/18 11:01	1
Copper	ND		0.020		mg/L		08/16/18 15:58	08/20/18 11:01	1
Lead	ND		0.0050		mg/L		08/16/18 15:58	08/20/18 11:01	1
Molybdenum	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Nickel	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Selenium	ND		0.020		mg/L		08/16/18 15:58	08/20/18 11:01	1
Silver	ND		0.0050		mg/L		08/16/18 15:58	08/20/18 11:01	1

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: MB 720-249671/1-A
Matrix: Water
Analysis Batch: 249814

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249671

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Vanadium	ND		0.010		mg/L		08/16/18 15:58	08/20/18 11:01	1
Zinc	ND		0.020		mg/L		08/16/18 15:58	08/20/18 11:01	1

Lab Sample ID: LCS 720-249671/2-A
Matrix: Water
Analysis Batch: 249814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249671

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	1.00	0.934		mg/L		93	80 - 120
Arsenic	1.00	0.919		mg/L		92	80 - 120
Barium	1.00	0.968		mg/L		97	80 - 120
Beryllium	1.00	0.982		mg/L		98	80 - 120
Cadmium	1.00	0.936		mg/L		94	80 - 120
Chromium	1.00	0.974		mg/L		97	80 - 120
Cobalt	1.00	0.955		mg/L		95	80 - 120
Copper	1.00	0.964		mg/L		96	80 - 120
Lead	1.00	0.947		mg/L		95	80 - 120
Molybdenum	1.00	0.964		mg/L		96	80 - 120
Nickel	1.00	0.949		mg/L		95	80 - 120
Selenium	1.00	0.910		mg/L		91	80 - 120
Silver	0.500	0.464		mg/L		93	80 - 120
Thallium	1.00	0.951		mg/L		95	80 - 120
Vanadium	1.00	0.967		mg/L		97	80 - 120
Zinc	1.00	0.948		mg/L		95	80 - 120

Lab Sample ID: 720-88020-A-3-B MS
Matrix: Water
Analysis Batch: 249814

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 249671

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Barium	0.38		1.00	1.36		mg/L		97	75 - 125
Beryllium	0.0034		1.00	0.989		mg/L		99	75 - 125
Molybdenum	0.032		1.00	0.814		mg/L		78	75 - 125

Lab Sample ID: 720-88020-A-3-C MSD
Matrix: Water
Analysis Batch: 249814

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 249671

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Barium	0.38		1.00	1.37		mg/L		99	75 - 125	1	20
Beryllium	0.0034		1.00	1.00		mg/L		100	75 - 125	1	20
Molybdenum	0.032		1.00	0.837		mg/L		81	75 - 125	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 720-249773/1-A
Matrix: Water
Analysis Batch: 249850

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249773

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:18	1

Lab Sample ID: LCS 720-249773/2-A
Matrix: Water
Analysis Batch: 249850

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249773

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.0100	0.00927		mg/L		93	85 - 115

Lab Sample ID: 720-88028-1 MS
Matrix: Water
Analysis Batch: 249850

Client Sample ID: MK-2A
Prep Type: Total/NA
Prep Batch: 249773

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.0100	0.00949		mg/L		95	75 - 125

Lab Sample ID: 720-88028-1 MSD
Matrix: Water
Analysis Batch: 249850

Client Sample ID: MK-2A
Prep Type: Total/NA
Prep Batch: 249773

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.0100	0.00949		mg/L		95	75 - 125	0	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 720-249500/9
Matrix: Water
Analysis Batch: 249500

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/14/18 16:09	1

Lab Sample ID: LCS 720-249500/10
Matrix: Water
Analysis Batch: 249500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.252		mg/L		101	90 - 110

Lab Sample ID: LCSD 720-249500/11
Matrix: Water
Analysis Batch: 249500

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.250	0.253		mg/L		101	90 - 110	0	20

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: 720-88017-A-1 MS
Matrix: Water
Analysis Batch: 249500

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cr (VI)	ND		0.250	0.253		mg/L		101	85 - 115		

Lab Sample ID: 720-88017-A-1 MSD
Matrix: Water
Analysis Batch: 249500

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	ND		0.250	0.253		mg/L		101	85 - 115	0	20

GC/MS VOA

Analysis Batch: 249587

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	8260B	
720-88028-2	FB-1	Total/NA	Water	8260B	
720-88028-3	MK-5AR	Total/NA	Water	8260B	
720-88028-4	DUP-1	Total/NA	Water	8260B	
720-88028-5	TB-1	Total/NA	Water	8260B	
MB 720-249587/4	Method Blank	Total/NA	Water	8260B	
LCS 720-249587/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-249587/6	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88036-A-1 MS	Matrix Spike	Total/NA	Water	8260B	
720-88036-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 494008

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-2	FB-1	Total/NA	Water	SRL 524M-TCP	
MB 440-494008/5	Method Blank	Total/NA	Water	SRL 524M-TCP	
LCS 440-494008/4	Lab Control Sample	Total/NA	Water	SRL 524M-TCP	
440-218081-B-4 DU	Duplicate	Total/NA	Water	SRL 524M-TCP	

Analysis Batch: 496081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	SRL 524M-TCP	
720-88028-3	MK-5AR	Total/NA	Water	SRL 524M-TCP	
720-88028-4	DUP-1	Total/NA	Water	SRL 524M-TCP	
MB 440-496081/5	Method Blank	Total/NA	Water	SRL 524M-TCP	
LCS 440-496081/4	Lab Control Sample	Total/NA	Water	SRL 524M-TCP	
720-88059-J-3 DU	Duplicate	Total/NA	Water	SRL 524M-TCP	

GC VOA

Analysis Batch: 493993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	8015B	
720-88028-3	MK-5AR	Total/NA	Water	8015B	
720-88028-4	DUP-1	Total/NA	Water	8015B	
MB 440-493993/34	Method Blank	Total/NA	Water	8015B	
LCS 440-493993/33	Lab Control Sample	Total/NA	Water	8015B	
440-218192-B-1 MS	Matrix Spike	Total/NA	Water	8015B	
440-218192-B-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B	

GC Semi VOA

Prep Batch: 249591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	3510C	
720-88028-3	MK-5AR	Total/NA	Water	3510C	
720-88028-4	DUP-1	Total/NA	Water	3510C	
MB 720-249591/1-A	Method Blank	Total/NA	Water	3510C	
LCS 720-249591/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 720-249591/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

GC Semi VOA (Continued)

Analysis Batch: 249701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	8015B	249591
720-88028-3	MK-5AR	Total/NA	Water	8015B	249591
720-88028-4	DUP-1	Total/NA	Water	8015B	249591

Analysis Batch: 249702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 720-249591/1-A	Method Blank	Total/NA	Water	8015B	249591
LCS 720-249591/2-A	Lab Control Sample	Total/NA	Water	8015B	249591
LCSD 720-249591/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	249591

Metals

Prep Batch: 249671

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	3010A	
720-88028-3	MK-5AR	Total/NA	Water	3010A	
720-88028-4	DUP-1	Total/NA	Water	3010A	
MB 720-249671/1-A	Method Blank	Total/NA	Water	3010A	
LCS 720-249671/2-A	Lab Control Sample	Total/NA	Water	3010A	
720-88020-A-3-B MS	Matrix Spike	Total/NA	Water	3010A	
720-88020-A-3-C MSD	Matrix Spike Duplicate	Total/NA	Water	3010A	

Prep Batch: 249773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	7470A	
720-88028-3	MK-5AR	Total/NA	Water	7470A	
720-88028-4	DUP-1	Total/NA	Water	7470A	
MB 720-249773/1-A	Method Blank	Total/NA	Water	7470A	
LCS 720-249773/2-A	Lab Control Sample	Total/NA	Water	7470A	
720-88028-1 MS	MK-2A	Total/NA	Water	7470A	
720-88028-1 MSD	MK-2A	Total/NA	Water	7470A	

Analysis Batch: 249814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	6010B	249671
720-88028-3	MK-5AR	Total/NA	Water	6010B	249671
720-88028-4	DUP-1	Total/NA	Water	6010B	249671
MB 720-249671/1-A	Method Blank	Total/NA	Water	6010B	249671
LCS 720-249671/2-A	Lab Control Sample	Total/NA	Water	6010B	249671
720-88020-A-3-B MS	Matrix Spike	Total/NA	Water	6010B	249671
720-88020-A-3-C MSD	Matrix Spike Duplicate	Total/NA	Water	6010B	249671

Analysis Batch: 249850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	7470A	249773
720-88028-3	MK-5AR	Total/NA	Water	7470A	249773
720-88028-4	DUP-1	Total/NA	Water	7470A	249773
MB 720-249773/1-A	Method Blank	Total/NA	Water	7470A	249773
LCS 720-249773/2-A	Lab Control Sample	Total/NA	Water	7470A	249773
720-88028-1 MS	MK-2A	Total/NA	Water	7470A	249773

Metals (Continued)

Analysis Batch: 249850 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1 MSD	MK-2A	Total/NA	Water	7470A	249773

General Chemistry

Analysis Batch: 249500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-1	MK-2A	Total/NA	Water	7196A	
720-88028-3	MK-5AR	Total/NA	Water	7196A	
720-88028-4	DUP-1	Total/NA	Water	7196A	
MB 720-249500/9	Method Blank	Total/NA	Water	7196A	
LCS 720-249500/10	Lab Control Sample	Total/NA	Water	7196A	
LCSD 720-249500/11	Lab Control Sample Dup	Total/NA	Water	7196A	
720-88017-A-1 MS	Matrix Spike	Total/NA	Water	7196A	
720-88017-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	7196A	

Client Sample ID: MK-2A

Lab Sample ID: 720-88028-1

Date Collected: 08/14/18 13:59

Matrix: Water

Date Received: 08/14/18 17:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249587	08/16/18 03:05	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 16:36	GK	TAL IRV
Total/NA	Analysis	8015B		1	493993	08/17/18 04:32	IM	TAL IRV
Total/NA	Prep	3510C			249591	08/15/18 19:47	BRR	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/17/18 17:45	JXL	TAL PLS
Total/NA	Prep	3010A			249671	08/16/18 15:58	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249814	08/20/18 12:12	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 17:27	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249500	08/14/18 16:09	TNL	TAL PLS

Client Sample ID: FB-1

Lab Sample ID: 720-88028-2

Date Collected: 08/14/18 14:15

Matrix: Water

Date Received: 08/14/18 17:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249587	08/15/18 22:03	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	494008	08/17/18 05:05	WC	TAL IRV

Client Sample ID: MK-5AR

Lab Sample ID: 720-88028-3

Date Collected: 08/14/18 14:51

Matrix: Water

Date Received: 08/14/18 17:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249587	08/16/18 03:35	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 17:06	GK	TAL IRV
Total/NA	Analysis	8015B		1	493993	08/17/18 05:01	IM	TAL IRV
Total/NA	Prep	3510C			249591	08/15/18 19:47	BRR	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/17/18 18:10	JXL	TAL PLS
Total/NA	Prep	3010A			249671	08/16/18 15:58	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249814	08/20/18 12:17	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 17:29	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249500	08/14/18 16:09	TNL	TAL PLS

Client Sample ID: DUP-1

Lab Sample ID: 720-88028-4

Date Collected: 08/14/18 14:56

Matrix: Water

Date Received: 08/14/18 17:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249587	08/16/18 04:05	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 17:37	GK	TAL IRV

Lab Chronicle

Client: Geosyntec Consultants, Inc. TestAmerica Job ID: 720-88028-1
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8015B		1	493993	08/17/18 05:30	IM	TAL IRV
Total/NA	Prep	3510C			249591	08/15/18 19:47	BRR	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/17/18 18:34	JXL	TAL PLS
Total/NA	Prep	3010A			249671	08/16/18 15:58	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249814	08/20/18 12:21	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 17:32	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249500	08/14/18 16:09	TNL	TAL PLS

Client Sample ID: TB-1 — Lab Sample ID: 720-88028-5

Date Collected: 08/14/18 15:00 — **Matrix: Water**
Date Received: 08/14/18 17:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249587	08/15/18 22:34	A1C	TAL PLS

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc. TestAmerica Job ID: 720-88028-1
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

Laboratory: TestAmerica Pleasanton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015B		Water	GRO (C4-C12)

Method Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PLS
SRL 524M-TCP	Volatile Organic Compounds (GC/MS SIM)	CADHS	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL PLS
6010B	Metals (ICP)	SW846	TAL PLS
7470A	Mercury (CVAA)	SW846	TAL PLS
7196A	Chromium, Hexavalent	SW846	TAL PLS
3010A	Preparation, Total Metals	SW846	TAL PLS
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL PLS
5030B	Purge and Trap	SW846	TAL IRV
5030B	Purge and Trap	SW846	TAL PLS
7470A	Preparation, Mercury	SW846	TAL PLS

Protocol References:

CADHS = California Department of Health Services

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88028-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-88028-1	MK-2A	Water	08/14/18 13:59	08/14/18 17:45
720-88028-2	FB-1	Water	08/14/18 14:15	08/14/18 17:45
720-88028-3	MK-5AR	Water	08/14/18 14:51	08/14/18 17:45
720-88028-4	DUP-1	Water	08/14/18 14:56	08/14/18 17:45
720-88028-5	TB-1	Water	08/14/18 15:00	08/14/18 17:45

BLAINE
TECH SERVICES, INC

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

#184895

CHAIN OF CUSTODY BTS # 180814CR-1

CLIENT: Geosyntec Consultants

SITE: Brisbane UPC OU-SM DGA WP Implementation

Brisbane, CA

Client P.O. WG2565-03 Client Project I.D.:3Q(Aug) 2018

CONDUCT ANALYSIS TO DETECT

LAB: TA-SF DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ RWQCB REGION
☐ LIA
☐ OTHER

720-88028

SPECIAL INSTRUCTIONS

COC to Geosyntec Consultants Attn: Anthony Smith

after log in: asmith@geosyntec.com

Report to : Geosyntec Consultants
PDF, EDD & EDF Required
Report analytical results to the reporting limit (RL)

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		VOCs (8260B)	CAM-17 (6010B, 7471)	Hexavalent Chromium (7196)	TPH-G (8015)	TPH-D (8015)	1,2,3 TCP (524.2 SIM)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
MK-2A	8/14/18	1357	W	13	Various	X	X	X	X	X	X				1
FB-1		1415	W	6	3x HCL VOA 3x Amber	X					X				2
MK-SAR		1451	W	13	Various	X	X	X	X	X	X				3
DUP-1		1456	W	13	Various	X	X	X	X	X	X				4
TB-1		1500	W	2	HCL VOAs	X									5
														2.6°C	

720-88028 Chain of Custody

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY
	8/14/18		Colin Rowland

RESULTS NEEDED NO LATER THAN: Standard TAT

		DATE	TIME			DATE	TIME
RELEASED BY		8/14/18	1545	RECEIVED BY	TA720	8-14-18	15:45
RELEASED BY		8-14-18	17:45	RECEIVED BY		8/14/18	1745
RELEASED BY		DATE	TIME	RECEIVED BY		DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

11/6/2018 (Rev. 1)

TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone (925) 484-1919 Fax (925) 600-3002

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler	Lab PM: Smith, Micah	Carrier Tracking No(s):	COC No: 720-39314.1
Client Contact: Shipping/Receiving	Phone	E-Mail: micah.smith@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 720-88028-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 8/24/2018			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #:			
Email:	WO #:			
Project Name: Schlage OU, SF/Brisbane	Project #: 72012372			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/5030B C4-C12	524.2_SIM	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
MK-2A (720-88028-1)	8/14/18	13:59 Pacific		Water			X	X	6	
FB-1 (720-88028-2)	8/14/18	14:15 Pacific		Water				X	3	
MK-5AR (720-88028-3)	8/14/18	14:51 Pacific		Water			X	X	6	
DUP-1 (720-88028-4)	8/14/18	14:56 Pacific		Water			X	X	6	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by	Date:	Time:	Method of Shipment

Relinquished by:	Date/Time: 8-15-18 1600	Company: Fed Ex	Received by:	Date/Time	Company
Relinquished by:	Date/Time	Company	Received by	Date/Time.	Company
Relinquished by:	Date/Time:	Company	Received by: Tyrus Cruz	Date/Time: 8/16/18 0945	Company TA/PU

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.9/3.2 IR-66 4471 9852 4723

Ver 09/20/2016

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88028-1

Login Number: 88028
List Number: 1
Creator: Bullock, Tracy

List Source: TestAmerica Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88028-1

Login Number: 88028
List Number: 2
Creator: Ornelas, Olga

List Source: TestAmerica Irvine
List Creation: 08/16/18 01:30 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
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?	N/A	Received project as a subcontract.
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88028-1

Login Number: 88028
List Number: 3
Creator: Ornelas, Olga

List Source: TestAmerica Irvine
List Creation: 08/16/18 01:33 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
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?	N/A	Received project as a subcontract.
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-88059-1
Client Project/Site: Brisbane UPC OU-SM DGA WP Implementation
Revision: 1

For:
Geosyntec Consultants, Inc.
1111 Broadway
6th Floor
Oakland, California 94607

Attn: Mr. Tony Smith

Authorized for release by:
11/6/2018 4:17:38 PM

Micah Smith, Project Manager II
(916)374-4302
micah.smith@testamericainc.com

LINKS

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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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Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
*	LCS or LCSD is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 720-88059-1

Laboratory: TestAmerica Pleasanton

Narrative

Job Narrative
720-88059-1

Comments
This report was revised on 11/6/18 to correct the method reference for the Volatile Organic Compounds by (GC/MS SIM) to reference method SRL 524M-TCP.

Receipt
The samples were received on 8/15/2018 6:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 0.7º C, 1.2º C, 1.3º C and 3.6º C.

GC/MS VOA
Method(s) 8260B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 720-249684 recovered outside control limits for the following analytes: 2-Chlorotoluene, sec-Butylbenzene, 1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene, N-Propylbenzene, 4-Isopropyltoluene, n-Butylbenzene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 4-Chlorotoluene, tert-Butylbenzene, 1,4-Dichlorobenzene and Vinyl acetate. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method(s) 8260B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 720-249684 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8260B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 720-249691 recovered outside control limits for the following analytes: Carbon disulfide, sec-Butylbenzene, n-Butylbenzene, cis-1,2-Dichloroethene, Methylene Chloride, 1,1-Dichloroethene, 1,1,2-Trichloro-1,2,2-trifluoroethane, trans-1,2-Dichloroethene and 1,1-Dichloroethane, and vinyl acetate. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method(s) 8260B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for analytical batch 720-249691 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected.

Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 720-249695 recovered above the upper control limit for Hexachlorobutadiene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: GWE-3 (720-88059-1), GWE-4 (720-88059-2), MW-7A (720-88059-7), DUP-2 (720-88059-9) and (720-88082-A-2).

Method(s) 8260B: The following sample was collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: MW-7A (720-88059-7). The sample was analyzed within 7 days per EPA recommendation.

Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 720-249682 recovered above the upper control limit for Hexachlorobutadiene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: MK-6A (720-88059-4).

Method(s) 8260B: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 720-250217 recovered outside control limits for the following analytes: Carbon disulfide. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

Method(s) 8260B: The matrix spike duplicate (720-88121-D-3 MS) (MSD) associated with analytical batch 720-249863 was not analyzed; therefore, there are no MSD results available to report. The batch laboratory control sample/laboratory control sample duplicate (LCS/LCSD) met acceptance criteria and has been reported.

Method(s) 8260B: MS/MSD did not have reportable results, therefore MS/MSD are not reported. The following sample is affected: MW-4A (720-88059-5).

Job ID: 720-88059-1 (Continued)

Laboratory: TestAmerica Pleasanton (Continued)

Method(s) 524.2: The following volatile sample was analyzed with significant headspace in the sample container(s): GWE-3 (720-88059-1). Significant headspace is defined as a bubble greater than 6 mm in diameter. All VOAs vials were received with headspace or used for multiple method analysis.

Method(s) 524.2: The following samples were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, when verified by the laboratory, the pH was greater than 2 and the samples were analyzed after 24 hours from sampling: MW-6AR (720-88059-6) and MW-7A (720-88059-7). Sample pH 5. Results cannot be used for SDWA compliance purposes.

Method(s) 524.2: The laboratory control sample (LCS) for analytical batch 440-496218 recovered outside control limits for the following analytes: 1,2,3-Trichloropropane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
Method(s) 7470A: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of >2: MW-6AR (720-88059-6). The sample(s) was preserved to the appropriate pH in the laboratory. Added 1 mL of HNO3 @ 1329 8/15/18.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: GWE-3 — Lab Sample ID: 720-88059-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.018		0.010		mg/L	1		6010B	Total/NA
Barium	0.29		0.010		mg/L	1		6010B	Total/NA

Client Sample ID: GWE-4 — Lab Sample ID: 720-88059-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	120		55		ug/L	1		8015B	Total/NA
Barium	0.97		0.010		mg/L	1		6010B	Total/NA
Lead	0.014		0.0050		mg/L	1		6010B	Total/NA

Client Sample ID: MK-4A — Lab Sample ID: 720-88059-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	55		51		ug/L	1		8015B	Total/NA
Arsenic	0.041		0.010		mg/L	1		6010B	Total/NA
Barium	0.069		0.010		mg/L	1		6010B	Total/NA

Client Sample ID: MK-6A — Lab Sample ID: 720-88059-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	200		51		ug/L	1		8015B	Total/NA
Barium	0.081		0.010		mg/L	1		6010B	Total/NA
Cobalt	0.0052		0.0020		mg/L	1		6010B	Total/NA
Lead	0.0062		0.0050		mg/L	1		6010B	Total/NA

Client Sample ID: MW-4A — Lab Sample ID: 720-88059-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	1100		51		ug/L	1		8015B	Total/NA
Arsenic	0.12		0.010		mg/L	1		6010B	Total/NA
Barium	0.21		0.010		mg/L	1		6010B	Total/NA
Cobalt	0.013		0.0020		mg/L	1		6010B	Total/NA
Lead	0.012		0.0050		mg/L	1		6010B	Total/NA
Molybdenum	0.014		0.010		mg/L	1		6010B	Total/NA
Nickel	0.024		0.010		mg/L	1		6010B	Total/NA
Zinc	0.022		0.020		mg/L	1		6010B	Total/NA

Client Sample ID: MW-6AR — Lab Sample ID: 720-88059-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	58		51		ug/L	1		8015B	Total/NA
Arsenic	0.012		0.010		mg/L	1		6010B	Total/NA
Barium	0.20		0.010		mg/L	1		6010B	Total/NA
Lead	0.0053		0.0050		mg/L	1		6010B	Total/NA

Client Sample ID: MW-7A — Lab Sample ID: 720-88059-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	97		55		ug/L	1		8015B	Total/NA
Barium	0.56		0.010		mg/L	1		6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MW-7A (Continued) — Lab Sample ID: 720-88059-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.016		0.0050		mg/L	1		6010B	Total/NA

Client Sample ID: MW-8A — Lab Sample ID: 720-88059-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	120		55		ug/L	1		8015B	Total/NA
Barium	0.28		0.010		mg/L	1		6010B	Total/NA
Lead	0.0078		0.0050		mg/L	1		6010B	Total/NA

Client Sample ID: DUP-2 — Lab Sample ID: 720-88059-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Diesel Range Organics [C10-C28]	120		53		ug/L	1		8015B	Total/NA
Barium	0.94		0.010		mg/L	1		6010B	Total/NA
Lead	0.013		0.0050		mg/L	1		6010B	Total/NA

Client Sample ID: FB-2 — Lab Sample ID: 720-88059-10

No Detections.

Client Sample ID: TB-2 — Lab Sample ID: 720-88059-11

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: GWE-3
Date Collected: 08/15/18 10:29
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 10:27	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 10:27	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 10:27	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 10:27	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 10:27	1
1,1-Dichloroethane	ND		0.50		ug/L			08/17/18 10:27	1
1,1-Dichloroethene	ND		0.50		ug/L			08/17/18 10:27	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 10:27	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 10:27	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 10:27	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 10:27	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 10:27	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 10:27	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 10:27	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 10:27	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 10:27	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 10:27	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 10:27	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 10:27	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 10:27	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 10:27	1
2-Hexanone	ND		50		ug/L			08/17/18 10:27	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 10:27	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 10:27	1
Acetone	ND		50		ug/L			08/17/18 10:27	1
Benzene	ND		0.50		ug/L			08/17/18 10:27	1
Bromobenzene	ND		1.0		ug/L			08/17/18 10:27	1
Bromoform	ND		1.0		ug/L			08/17/18 10:27	1
Bromomethane	ND		1.0		ug/L			08/17/18 10:27	1
Carbon disulfide	ND		5.0		ug/L			08/17/18 10:27	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 10:27	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 10:27	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 10:27	1
Chloroethane	ND		1.0		ug/L			08/17/18 10:27	1
Chloroform	ND		1.0		ug/L			08/17/18 10:27	1
Chloromethane	ND		1.0		ug/L			08/17/18 10:27	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 10:27	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 10:27	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 10:27	1
Dibromomethane	ND		0.50		ug/L			08/17/18 10:27	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 10:27	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 10:27	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 10:27	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 10:27	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 10:27	1
Methylene Chloride	ND		5.0		ug/L			08/17/18 10:27	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 10:27	1
Naphthalene	ND		1.0		ug/L			08/17/18 10:27	1
n-Butylbenzene	ND		1.0		ug/L			08/17/18 10:27	1

Client Sample ID: GWE-3
Date Collected: 08/15/18 10:29
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/17/18 10:27	1
sec-Butylbenzene	ND		1.0		ug/L			08/17/18 10:27	1
Styrene	ND		0.50		ug/L			08/17/18 10:27	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 10:27	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 10:27	1
Toluene	ND		0.50		ug/L			08/17/18 10:27	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 10:27	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 10:27	1
Trichloroethene	ND		0.50		ug/L			08/17/18 10:27	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 10:27	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/17/18 10:27	1
Vinyl acetate	ND		10		ug/L			08/17/18 10:27	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 10:27	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 10:27	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 10:27	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 10:27	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 10:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*95*		*67 - 130*		*08/17/18 10:27*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*		*08/17/18 10:27*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*08/17/18 10:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*72 - 130*		*08/17/18 10:27*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 15:04	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/24/18 14:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*65 - 140*		*08/24/18 14:31*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		54		ug/L		08/17/18 15:43	08/18/18 01:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*96*		*23 - 156*	*08/17/18 15:43*	*08/18/18 01:05*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Arsenic	**0.018**		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Barium	**0.29**		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:28	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 11:28	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:28	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: GWE-3
Date Collected: 08/15/18 10:29
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-1
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:28	1
Lead	ND		0.0050		mg/L		08/18/18 10:05	08/22/18 10:12	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:28	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 11:28	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:28	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:28	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: GWE-4
Date Collected: 08/15/18 13:50
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 11:50	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 11:50	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 11:50	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 11:50	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 11:50	1
1,1-Dichloroethane	ND		0.50		ug/L			08/17/18 11:50	1
1,1-Dichloroethene	ND		0.50		ug/L			08/17/18 11:50	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 11:50	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 11:50	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 11:50	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 11:50	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 11:50	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 11:50	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 11:50	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 11:50	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 11:50	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 11:50	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 11:50	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 11:50	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 11:50	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 11:50	1
2-Hexanone	ND		50		ug/L			08/17/18 11:50	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 11:50	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 11:50	1
Acetone	ND		50		ug/L			08/17/18 11:50	1
Benzene	ND		0.50		ug/L			08/17/18 11:50	1
Bromobenzene	ND		1.0		ug/L			08/17/18 11:50	1
Bromoform	ND		1.0		ug/L			08/17/18 11:50	1
Bromomethane	ND		1.0		ug/L			08/17/18 11:50	1
Carbon disulfide	ND		5.0		ug/L			08/17/18 11:50	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 11:50	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 11:50	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 11:50	1
Chloroethane	ND		1.0		ug/L			08/17/18 11:50	1
Chloroform	ND		1.0		ug/L			08/17/18 11:50	1
Chloromethane	ND		1.0		ug/L			08/17/18 11:50	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 11:50	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 11:50	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 11:50	1
Dibromomethane	ND		0.50		ug/L			08/17/18 11:50	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 11:50	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 11:50	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 11:50	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 11:50	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 11:50	1
Methylene Chloride	ND		5.0		ug/L			08/17/18 11:50	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 11:50	1
Naphthalene	ND		1.0		ug/L			08/17/18 11:50	1
n-Butylbenzene	ND		1.0		ug/L			08/17/18 11:50	1

Client Sample ID: GWE-4 **Lab Sample ID: 720-88059-2**
Date Collected: 08/15/18 13:50 **Matrix: Water**
Date Received: 08/15/18 18:50

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/17/18 11:50	1
sec-Butylbenzene	ND		1.0		ug/L			08/17/18 11:50	1
Styrene	ND		0.50		ug/L			08/17/18 11:50	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 11:50	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 11:50	1
Toluene	ND		0.50		ug/L			08/17/18 11:50	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 11:50	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 11:50	1
Trichloroethene	ND		0.50		ug/L			08/17/18 11:50	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 11:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/17/18 11:50	1
Vinyl acetate	ND		10		ug/L			08/17/18 11:50	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 11:50	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 11:50	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 11:50	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 11:50	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 11:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*94*		*67 - 130*		*08/17/18 11:50*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*		*08/17/18 11:50*	*1*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*08/17/18 11:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*72 - 130*		*08/17/18 11:50*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 15:34	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/21/18 23:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*65 - 140*		*08/21/18 23:44*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**120**		55		ug/L		08/17/18 15:43	08/18/18 01:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*92*		*23 - 156*	*08/17/18 15:43*	*08/18/18 01:29*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Arsenic	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Barium	**0.97**		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:33	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 11:33	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:33	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: GWE-4
Date Collected: 08/15/18 13:50
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-2
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:33	1
Lead	**0.014**		0.0050		mg/L		08/18/18 10:05	08/21/18 11:33	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:33	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 11:33	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:33	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:33	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MK-4A
Date Collected: 08/15/18 12:07
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/21/18 11:55	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/21/18 11:55	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/21/18 11:55	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/21/18 11:55	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/21/18 11:55	1
1,1-Dichloroethane	ND		0.50		ug/L			08/21/18 11:55	1
1,1-Dichloroethene	ND		0.50		ug/L			08/21/18 11:55	1
1,1-Dichloropropene	ND		0.50		ug/L			08/21/18 11:55	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/21/18 11:55	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/21/18 11:55	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/21/18 11:55	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/21/18 11:55	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/21/18 11:55	1
1,2-Dichloroethane	ND		0.50		ug/L			08/21/18 11:55	1
1,2-Dichloropropane	ND		0.50		ug/L			08/21/18 11:55	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/21/18 11:55	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/21/18 11:55	1
1,3-Dichloropropane	ND		1.0		ug/L			08/21/18 11:55	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/21/18 11:55	1
2,2-Dichloropropane	ND		0.50		ug/L			08/21/18 11:55	1
2-Chlorotoluene	ND		0.50		ug/L			08/21/18 11:55	1
2-Hexanone	ND		50		ug/L			08/21/18 11:55	1
4-Chlorotoluene	ND		0.50		ug/L			08/21/18 11:55	1
4-Isopropyltoluene	ND		1.0		ug/L			08/21/18 11:55	1
Acetone	ND		50		ug/L			08/21/18 11:55	1
Benzene	ND		0.50		ug/L			08/21/18 11:55	1
Bromobenzene	ND		1.0		ug/L			08/21/18 11:55	1
Bromoform	ND		1.0		ug/L			08/21/18 11:55	1
Bromomethane	ND		1.0		ug/L			08/21/18 11:55	1
Carbon disulfide	ND		5.0		ug/L			08/21/18 11:55	1
Carbon tetrachloride	ND		0.50		ug/L			08/21/18 11:55	1
Chlorobenzene	ND		0.50		ug/L			08/21/18 11:55	1
Chlorobromomethane	ND		1.0		ug/L			08/21/18 11:55	1
Chloroethane	ND		1.0		ug/L			08/21/18 11:55	1
Chloroform	ND		1.0		ug/L			08/21/18 11:55	1
Chloromethane	ND		1.0		ug/L			08/21/18 11:55	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/21/18 11:55	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/21/18 11:55	1
Chlorodibromomethane	ND		0.50		ug/L			08/21/18 11:55	1
Dibromomethane	ND		0.50		ug/L			08/21/18 11:55	1
Dichlorobromomethane	ND		0.50		ug/L			08/21/18 11:55	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/21/18 11:55	1
Ethylbenzene	ND		0.50		ug/L			08/21/18 11:55	1
Hexachlorobutadiene	ND		1.0		ug/L			08/21/18 11:55	1
Isopropylbenzene	ND		0.50		ug/L			08/21/18 11:55	1
Methylene Chloride	ND		5.0		ug/L			08/21/18 11:55	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/21/18 11:55	1
Naphthalene	ND		1.0		ug/L			08/21/18 11:55	1
n-Butylbenzene	ND		1.0		ug/L			08/21/18 11:55	1

Client Sample ID: MK-4A
Date Collected: 08/15/18 12:07
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/21/18 11:55	1
sec-Butylbenzene	ND		1.0		ug/L			08/21/18 11:55	1
Styrene	ND		0.50		ug/L			08/21/18 11:55	1
tert-Butylbenzene	ND		1.0		ug/L			08/21/18 11:55	1
Tetrachloroethene	ND		0.50		ug/L			08/21/18 11:55	1
Toluene	ND		0.50		ug/L			08/21/18 11:55	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/21/18 11:55	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/21/18 11:55	1
Trichloroethene	ND		0.50		ug/L			08/21/18 11:55	1
Trichlorofluoromethane	ND		1.0		ug/L			08/21/18 11:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/21/18 11:55	1
Vinyl acetate	ND		10		ug/L			08/21/18 11:55	1
Vinyl chloride	ND		0.50		ug/L			08/21/18 11:55	1
Xylenes, Total	ND		0.50		ug/L			08/21/18 11:55	1
Ethylene Dibromide	ND		0.50		ug/L			08/21/18 11:55	1
2-Butanone (MEK)	ND		50		ug/L			08/21/18 11:55	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/21/18 11:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*95*		*67 - 130*		*08/21/18 11:55*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*		*08/21/18 11:55*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*08/21/18 11:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*72 - 130*		*08/21/18 11:55*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 14:33	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/22/18 00:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*65 - 140*		*08/22/18 00:12*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**55**		51		ug/L		08/17/18 15:43	08/18/18 01:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*91*		*23 - 156*	*08/17/18 15:43*	*08/18/18 01:54*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Arsenic	**0.041**		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Barium	**0.069**		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:38	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 11:38	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:38	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MK-4A
Date Collected: 08/15/18 12:07
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-3
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:38	1
Lead	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 11:38	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:38	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 11:38	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:38	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:38	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:57	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client Sample ID: MK-6A
Date Collected: 08/15/18 10:24
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 03:22	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 03:22	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 03:22	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 03:22	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 03:22	1
1,1-Dichloroethane	ND		0.50		ug/L			08/17/18 03:22	1
1,1-Dichloroethene	ND		0.50		ug/L			08/17/18 03:22	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 03:22	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 03:22	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 03:22	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 03:22	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 03:22	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 03:22	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 03:22	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 03:22	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 03:22	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 03:22	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 03:22	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 03:22	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 03:22	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 03:22	1
2-Hexanone	ND		50		ug/L			08/17/18 03:22	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 03:22	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 03:22	1
Acetone	ND		50		ug/L			08/17/18 03:22	1
Benzene	ND		0.50		ug/L			08/17/18 03:22	1
Bromobenzene	ND		1.0		ug/L			08/17/18 03:22	1
Bromoform	ND		1.0		ug/L			08/17/18 03:22	1
Bromomethane	ND		1.0		ug/L			08/17/18 03:22	1
Carbon disulfide	ND		5.0		ug/L			08/17/18 03:22	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 03:22	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 03:22	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 03:22	1
Chloroethane	ND		1.0		ug/L			08/17/18 03:22	1
Chloroform	ND		1.0		ug/L			08/17/18 03:22	1
Chloromethane	ND		1.0		ug/L			08/17/18 03:22	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 03:22	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 03:22	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 03:22	1
Dibromomethane	ND		0.50		ug/L			08/17/18 03:22	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 03:22	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 03:22	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 03:22	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 03:22	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 03:22	1
Methylene Chloride	ND		5.0		ug/L			08/17/18 03:22	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 03:22	1
Naphthalene	ND		1.0		ug/L			08/17/18 03:22	1
n-Butylbenzene	ND		1.0		ug/L			08/17/18 03:22	1

Client Sample ID: MK-6A
Date Collected: 08/15/18 10:24
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/17/18 03:22	1
sec-Butylbenzene	ND		1.0		ug/L			08/17/18 03:22	1
Styrene	ND		0.50		ug/L			08/17/18 03:22	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 03:22	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 03:22	1
Toluene	ND		0.50		ug/L			08/17/18 03:22	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 03:22	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 03:22	1
Trichloroethene	ND		0.50		ug/L			08/17/18 03:22	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 03:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/17/18 03:22	1
Vinyl acetate	ND		10		ug/L			08/17/18 03:22	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 03:22	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 03:22	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 03:22	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 03:22	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 03:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*96*		*67 - 130*		*08/17/18 03:22*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/17/18 03:22*	*1*
Dibromofluoromethane (Surr)	*109*		*70 - 130*		*08/17/18 03:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*129*		*72 - 130*		*08/17/18 03:22*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 18:07	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/22/18 00:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*65 - 140*		*08/22/18 00:41*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**200**		51		ug/L		08/17/18 15:43	08/18/18 02:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*92*		*23 - 156*	*08/17/18 15:43*	*08/18/18 02:18*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Arsenic	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Barium	**0.081**		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:43	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 11:43	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Cobalt	**0.0052**		0.0020		mg/L		08/18/18 10:05	08/21/18 11:43	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MK-6A
Date Collected: 08/15/18 10:24
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-4
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:43	1
Lead	**0.0062**		0.0050		mg/L		08/18/18 10:05	08/21/18 11:43	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:43	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 11:43	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:43	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client Sample ID: MW-4A
Date Collected: 08/15/18 14:03
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 11:49	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 11:49	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 11:49	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 11:49	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 11:49	1
1,1-Dichloroethane	ND	*	0.50		ug/L			08/17/18 11:49	1
1,1-Dichloroethene	ND	*	0.50		ug/L			08/17/18 11:49	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 11:49	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/25/18 11:57	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 11:49	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 11:49	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 11:49	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 11:49	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 11:49	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 11:49	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 11:49	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 11:49	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 11:49	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 11:49	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 11:49	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 11:49	1
2-Hexanone	ND		50		ug/L			08/17/18 11:49	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 11:49	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 11:49	1
Acetone	ND		50		ug/L			08/17/18 11:49	1
Benzene	ND		0.50		ug/L			08/17/18 11:49	1
Bromobenzene	ND		1.0		ug/L			08/17/18 11:49	1
Bromoform	ND		1.0		ug/L			08/17/18 11:49	1
Bromomethane	ND		1.0		ug/L			08/17/18 11:49	1
Carbon disulfide	ND	*	5.0		ug/L			08/17/18 11:49	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 11:49	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 11:49	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 11:49	1
Chloroethane	ND		1.0		ug/L			08/17/18 11:49	1
Chloroform	ND		1.0		ug/L			08/17/18 11:49	1
Chloromethane	ND		1.0		ug/L			08/17/18 11:49	1
cis-1,2-Dichloroethene	ND	*	0.50		ug/L			08/17/18 11:49	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 11:49	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 11:49	1
Dibromomethane	ND		0.50		ug/L			08/17/18 11:49	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 11:49	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 11:49	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 11:49	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 11:49	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 11:49	1
Methylene Chloride	ND	*	5.0		ug/L			08/17/18 11:49	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 11:49	1
Naphthalene	ND		1.0		ug/L			08/25/18 11:57	1
n-Butylbenzene	ND	*	1.0		ug/L			08/17/18 11:49	1

Client Sample ID: MW-4A
Date Collected: 08/15/18 14:03
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-5
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/17/18 11:49	1
sec-Butylbenzene	ND	*	1.0		ug/L			08/17/18 11:49	1
Styrene	ND		0.50		ug/L			08/17/18 11:49	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 11:49	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 11:49	1
Toluene	ND		0.50		ug/L			08/17/18 11:49	1
trans-1,2-Dichloroethene	ND	*	0.50		ug/L			08/17/18 11:49	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 11:49	1
Trichloroethene	ND		0.50		ug/L			08/17/18 11:49	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 11:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	*	0.50		ug/L			08/17/18 11:49	1
Vinyl acetate	ND	*	10		ug/L			08/17/18 11:49	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 11:49	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 11:49	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 11:49	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 11:49	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 11:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*81*		*67 - 130*		*08/17/18 11:49*	*1*
4-Bromofluorobenzene	*101*		*67 - 130*		*08/25/18 11:57*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*		*08/17/18 11:49*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/25/18 11:57*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*08/17/18 11:49*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*08/25/18 11:57*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*72 - 130*		*08/17/18 11:49*	*1*
1,2-Dichloroethane-d4 (Surr)	*87*		*72 - 130*		*08/25/18 11:57*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 18:38	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/22/18 02:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*65 - 140*		*08/22/18 02:34*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**1100**		51		ug/L		08/17/18 15:43	08/20/18 18:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*54*		*23 - 156*	*08/17/18 15:43*	*08/20/18 18:14*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1
Arsenic	**0.12**		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1
Barium	**0.21**		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MW-4A
Date Collected: 08/15/18 14:03
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-5
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 11:57	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 11:57	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1
Cobalt	**0.013**		0.0020		mg/L		08/18/18 10:05	08/21/18 11:57	1
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:57	1
Lead	**0.012**		0.0050		mg/L		08/18/18 10:05	08/21/18 11:57	1
Molybdenum	**0.014**		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1
Nickel	**0.024**		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 11:57	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 11:57	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 11:57	1
Zinc	**0.022**		0.020		mg/L		08/18/18 10:05	08/21/18 11:57	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 18:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client Sample ID: MW-6AR
Date Collected: 08/15/18 11:12
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/28/18 14:50	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/28/18 14:50	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/28/18 14:50	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/28/18 14:50	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/28/18 14:50	1
1,1-Dichloroethane	ND		0.50		ug/L			08/28/18 14:50	1
1,1-Dichloroethene	ND		0.50		ug/L			08/28/18 14:50	1
1,1-Dichloropropene	ND		0.50		ug/L			08/28/18 14:50	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/28/18 14:50	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/28/18 14:50	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/28/18 14:50	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/28/18 14:50	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/28/18 14:50	1
1,2-Dichloroethane	ND		0.50		ug/L			08/28/18 14:50	1
1,2-Dichloropropane	ND		0.50		ug/L			08/28/18 14:50	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/28/18 14:50	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/28/18 14:50	1
1,3-Dichloropropane	ND		1.0		ug/L			08/28/18 14:50	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/28/18 14:50	1
2,2-Dichloropropane	ND		0.50		ug/L			08/28/18 14:50	1
2-Chlorotoluene	ND		0.50		ug/L			08/28/18 14:50	1
2-Hexanone	ND		50		ug/L			08/28/18 14:50	1
4-Chlorotoluene	ND		0.50		ug/L			08/28/18 14:50	1
4-Isopropyltoluene	ND		1.0		ug/L			08/28/18 14:50	1
Acetone	ND		50		ug/L			08/28/18 14:50	1
Benzene	ND		0.50		ug/L			08/28/18 14:50	1
Bromobenzene	ND		1.0		ug/L			08/28/18 14:50	1
Bromoform	ND		1.0		ug/L			08/28/18 14:50	1
Bromomethane	ND		1.0		ug/L			08/28/18 14:50	1
Carbon disulfide	ND		5.0		ug/L			08/28/18 14:50	1
Carbon tetrachloride	ND		0.50		ug/L			08/28/18 14:50	1
Chlorobenzene	ND		0.50		ug/L			08/28/18 14:50	1
Chlorobromomethane	ND		1.0		ug/L			08/28/18 14:50	1
Chloroethane	ND		1.0		ug/L			08/28/18 14:50	1
Chloroform	ND		1.0		ug/L			08/28/18 14:50	1
Chloromethane	ND		1.0		ug/L			08/28/18 14:50	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/28/18 14:50	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/28/18 14:50	1
Chlorodibromomethane	ND		0.50		ug/L			08/28/18 14:50	1
Dibromomethane	ND		0.50		ug/L			08/28/18 14:50	1
Dichlorobromomethane	ND		0.50		ug/L			08/28/18 14:50	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/28/18 14:50	1
Ethylbenzene	ND		0.50		ug/L			08/28/18 14:50	1
Hexachlorobutadiene	ND		1.0		ug/L			08/28/18 14:50	1
Isopropylbenzene	ND		0.50		ug/L			08/28/18 14:50	1
Methylene Chloride	ND		5.0		ug/L			08/28/18 14:50	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/28/18 14:50	1
Naphthalene	ND		1.0		ug/L			08/28/18 14:50	1
n-Butylbenzene	ND		1.0		ug/L			08/28/18 14:50	1

Client Sample ID: MW-6AR
Date Collected: 08/15/18 11:12
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-6
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/28/18 14:50	1
sec-Butylbenzene	ND		1.0		ug/L			08/28/18 14:50	1
Styrene	ND		0.50		ug/L			08/28/18 14:50	1
tert-Butylbenzene	ND		1.0		ug/L			08/28/18 14:50	1
Tetrachloroethene	ND		0.50		ug/L			08/28/18 14:50	1
Toluene	ND		0.50		ug/L			08/28/18 14:50	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/28/18 14:50	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/28/18 14:50	1
Trichloroethene	ND		0.50		ug/L			08/28/18 14:50	1
Trichlorofluoromethane	ND		1.0		ug/L			08/28/18 14:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/28/18 14:50	1
Vinyl acetate	ND		10		ug/L			08/28/18 14:50	1
Vinyl chloride	ND		0.50		ug/L			08/28/18 14:50	1
Xylenes, Total	ND		0.50		ug/L			08/28/18 14:50	1
Ethylene Dibromide	ND		0.50		ug/L			08/28/18 14:50	1
2-Butanone (MEK)	ND		50		ug/L			08/28/18 14:50	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/28/18 14:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*96*		*67 - 130*		*08/28/18 14:50*	*1*
Toluene-d8 (Surr)	*100*		*70 - 130*		*08/28/18 14:50*	*1*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*08/28/18 14:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*86*		*72 - 130*		*08/28/18 14:50*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND	*	0.0050		ug/L			08/28/18 23:09	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/22/18 03:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*65 - 140*		*08/22/18 03:03*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**58**		51		ug/L		08/17/18 15:43	08/18/18 03:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*96*		*23 - 156*	*08/17/18 15:43*	*08/18/18 03:07*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Arsenic	**0.012**		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Barium	**0.20**		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:02	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 12:02	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:02	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MW-6AR
Date Collected: 08/15/18 11:12
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-6
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:02	1
Lead	**0.0053**		0.0050		mg/L		08/18/18 10:05	08/21/18 12:02	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:02	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 12:02	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:02	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:02	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 18:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client Sample ID: MW-7A
Date Collected: 08/15/18 12:40
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-7
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 17:06	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 17:06	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 17:06	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 17:06	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 17:06	1
1,1-Dichloroethane	ND		0.50		ug/L			08/17/18 17:06	1
1,1-Dichloroethene	ND		0.50		ug/L			08/17/18 17:06	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 17:06	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 17:06	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 17:06	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 17:06	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 17:06	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 17:06	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 17:06	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 17:06	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 17:06	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 17:06	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 17:06	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 17:06	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 17:06	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 17:06	1
2-Hexanone	ND		50		ug/L			08/17/18 17:06	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 17:06	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 17:06	1
Acetone	ND		50		ug/L			08/17/18 17:06	1
Benzene	ND		0.50		ug/L			08/17/18 17:06	1
Bromobenzene	ND		1.0		ug/L			08/17/18 17:06	1
Bromoform	ND		1.0		ug/L			08/17/18 17:06	1
Bromomethane	ND		1.0		ug/L			08/17/18 17:06	1
Carbon disulfide	ND		5.0		ug/L			08/17/18 17:06	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 17:06	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 17:06	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 17:06	1
Chloroethane	ND		1.0		ug/L			08/17/18 17:06	1
Chloroform	ND		1.0		ug/L			08/17/18 17:06	1
Chloromethane	ND		1.0		ug/L			08/17/18 17:06	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 17:06	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 17:06	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 17:06	1
Dibromomethane	ND		0.50		ug/L			08/17/18 17:06	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 17:06	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 17:06	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 17:06	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 17:06	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 17:06	1
Methylene Chloride	ND		5.0		ug/L			08/17/18 17:06	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 17:06	1
Naphthalene	ND		1.0		ug/L			08/28/18 15:19	1
n-Butylbenzene	ND		1.0		ug/L			08/17/18 17:06	1

Client Sample ID: MW-7A **Lab Sample ID: 720-88059-7**
Date Collected: 08/15/18 12:40 **Matrix: Water**
Date Received: 08/15/18 18:50

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/17/18 17:06	1
sec-Butylbenzene	ND		1.0		ug/L			08/17/18 17:06	1
Styrene	ND		0.50		ug/L			08/17/18 17:06	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 17:06	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 17:06	1
Toluene	ND		0.50		ug/L			08/17/18 17:06	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 17:06	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 17:06	1
Trichloroethene	ND		0.50		ug/L			08/17/18 17:06	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 17:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/17/18 17:06	1
Vinyl acetate	ND		10		ug/L			08/17/18 17:06	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 17:06	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 17:06	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 17:06	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 17:06	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 17:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*95*		*67 - 130*		*08/17/18 17:06*	*1*
4-Bromofluorobenzene	*101*		*67 - 130*		*08/28/18 15:19*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*		*08/17/18 17:06*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/28/18 15:19*	*1*
Dibromofluoromethane (Surr)	*97*		*70 - 130*		*08/17/18 17:06*	*1*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*08/28/18 15:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*72 - 130*		*08/17/18 17:06*	*1*
1,2-Dichloroethane-d4 (Surr)	*84*		*72 - 130*		*08/28/18 15:19*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND	*	0.0050		ug/L			08/28/18 23:39	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/22/18 03:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*65 - 140*		*08/22/18 03:31*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**97**		55		ug/L		08/17/18 15:43	08/18/18 03:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*98*		*23 - 156*	*08/17/18 15:43*	*08/18/18 03:31*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1
Arsenic	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1
Barium	**0.56**		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MW-7A
Date Collected: 08/15/18 12:40
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-7
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:16	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 12:16	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:16	1
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:16	1
Lead	**0.016**		0.0050		mg/L		08/18/18 10:05	08/21/18 12:16	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:16	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 12:16	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:16	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:16	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 18:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client Sample ID: MW-8A
Date Collected: 08/15/18 11:18
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 13:16	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 13:16	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 13:16	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 13:16	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 13:16	1
1,1-Dichloroethane	ND	*	0.50		ug/L			08/17/18 13:16	1
1,1-Dichloroethene	ND	*	0.50		ug/L			08/17/18 13:16	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 13:16	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 13:16	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 13:16	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 13:16	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 13:16	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 13:16	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 13:16	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 13:16	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 13:16	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 13:16	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 13:16	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 13:16	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 13:16	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 13:16	1
2-Hexanone	ND		50		ug/L			08/17/18 13:16	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 13:16	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 13:16	1
Acetone	ND		50		ug/L			08/17/18 13:16	1
Benzene	ND		0.50		ug/L			08/17/18 13:16	1
Bromobenzene	ND		1.0		ug/L			08/17/18 13:16	1
Bromoform	ND		1.0		ug/L			08/17/18 13:16	1
Bromomethane	ND		1.0		ug/L			08/17/18 13:16	1
Carbon disulfide	ND	*	5.0		ug/L			08/17/18 13:16	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 13:16	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 13:16	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 13:16	1
Chloroethane	ND		1.0		ug/L			08/17/18 13:16	1
Chloroform	ND		1.0		ug/L			08/17/18 13:16	1
Chloromethane	ND		1.0		ug/L			08/17/18 13:16	1
cis-1,2-Dichloroethene	ND	*	0.50		ug/L			08/17/18 13:16	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 13:16	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 13:16	1
Dibromomethane	ND		0.50		ug/L			08/17/18 13:16	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 13:16	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 13:16	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 13:16	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 13:16	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 13:16	1
Methylene Chloride	ND	*	5.0		ug/L			08/17/18 13:16	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 13:16	1
Naphthalene	ND		1.0		ug/L			08/17/18 13:16	1
n-Butylbenzene	ND	*	1.0		ug/L			08/17/18 13:16	1

Client Sample ID: MW-8A
Date Collected: 08/15/18 11:18
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-8
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/17/18 13:16	1
sec-Butylbenzene	ND	*	1.0		ug/L			08/17/18 13:16	1
Styrene	ND		0.50		ug/L			08/17/18 13:16	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 13:16	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 13:16	1
Toluene	ND		0.50		ug/L			08/17/18 13:16	1
trans-1,2-Dichloroethene	ND	*	0.50		ug/L			08/17/18 13:16	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 13:16	1
Trichloroethene	ND		0.50		ug/L			08/17/18 13:16	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 13:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	*	0.50		ug/L			08/17/18 13:16	1
Vinyl acetate	ND	*	10		ug/L			08/17/18 13:16	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 13:16	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 13:16	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 13:16	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 13:16	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 13:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*79*		*67 - 130*		*08/17/18 13:16*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*		*08/17/18 13:16*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*08/17/18 13:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*72 - 130*		*08/17/18 13:16*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND	*	0.0050		ug/L			08/29/18 00:10	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/22/18 01:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*65 - 140*		*08/22/18 01:09*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**120**		55		ug/L		08/17/18 15:43	08/18/18 03:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*98*		*23 - 156*	*08/17/18 15:43*	*08/18/18 03:55*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Arsenic	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Barium	**0.28**		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:06	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 12:06	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:06	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MW-8A
Date Collected: 08/15/18 11:18
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-8
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:06	1
Lead	**0.0078**		0.0050		mg/L		08/18/18 10:05	08/21/18 12:06	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:06	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 12:06	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:06	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:06	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 18:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: DUP-2
Date Collected: 08/15/18 13:55
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-9
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 19:19	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 19:19	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 19:19	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 19:19	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 19:19	1
1,1-Dichloroethane	ND		0.50		ug/L			08/17/18 19:19	1
1,1-Dichloroethene	ND		0.50		ug/L			08/17/18 19:19	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 19:19	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 19:19	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 19:19	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 19:19	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 19:19	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 19:19	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 19:19	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 19:19	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 19:19	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 19:19	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 19:19	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 19:19	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 19:19	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 19:19	1
2-Hexanone	ND		50		ug/L			08/17/18 19:19	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 19:19	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 19:19	1
Acetone	ND		50		ug/L			08/17/18 19:19	1
Benzene	ND		0.50		ug/L			08/17/18 19:19	1
Bromobenzene	ND		1.0		ug/L			08/17/18 19:19	1
Bromoform	ND		1.0		ug/L			08/17/18 19:19	1
Bromomethane	ND		1.0		ug/L			08/17/18 19:19	1
Carbon disulfide	ND		5.0		ug/L			08/17/18 19:19	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 19:19	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 19:19	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 19:19	1
Chloroethane	ND		1.0		ug/L			08/17/18 19:19	1
Chloroform	ND		1.0		ug/L			08/17/18 19:19	1
Chloromethane	ND		1.0		ug/L			08/17/18 19:19	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 19:19	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 19:19	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 19:19	1
Dibromomethane	ND		0.50		ug/L			08/17/18 19:19	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 19:19	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 19:19	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 19:19	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 19:19	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 19:19	1
Methylene Chloride	ND		5.0		ug/L			08/17/18 19:19	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 19:19	1
Naphthalene	ND		1.0		ug/L			08/17/18 19:19	1
n-Butylbenzene	ND		1.0		ug/L			08/17/18 19:19	1

Client Sample ID: DUP-2
Date Collected: 08/15/18 13:55
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-9
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND		1.0		ug/L			08/17/18 19:19	1
sec-Butylbenzene	ND		1.0		ug/L			08/17/18 19:19	1
Styrene	ND		0.50		ug/L			08/17/18 19:19	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 19:19	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 19:19	1
Toluene	ND		0.50		ug/L			08/17/18 19:19	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 19:19	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 19:19	1
Trichloroethene	ND		0.50		ug/L			08/17/18 19:19	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 19:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/17/18 19:19	1
Vinyl acetate	ND		10		ug/L			08/17/18 19:19	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 19:19	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 19:19	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 19:19	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 19:19	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 19:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*94*		*67 - 130*		*08/17/18 19:19*	*1*
Toluene-d8 (Surr)	*93*		*70 - 130*		*08/17/18 19:19*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*08/17/18 19:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*72 - 130*		*08/17/18 19:19*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 19:08	1

Method: 8015B - Gasoline Range Organics - (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/22/18 01:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*65 - 140*		*08/22/18 01:37*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**120**		53		ug/L		08/17/18 15:43	08/18/18 04:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*94*		*23 - 156*	*08/17/18 15:43*	*08/18/18 04:20*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Arsenic	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Barium	**0.94**		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:11	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 12:11	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 12:11	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: DUP-2
Date Collected: 08/15/18 13:55
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-9
Matrix: Water

Method: 6010B - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:11	1
Lead	**0.013**		0.0050		mg/L		08/18/18 10:05	08/21/18 12:11	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:11	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 12:11	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 12:11	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 12:11	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 18:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Client Sample ID: FB-2
Date Collected: 08/15/18 14:30
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-10
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/16/18 21:38	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 21:38	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/16/18 21:38	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 21:38	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/16/18 21:38	1
1,1-Dichloroethane	ND		0.50		ug/L			08/16/18 21:38	1
1,1-Dichloroethene	ND		0.50		ug/L			08/16/18 21:38	1
1,1-Dichloropropene	ND		0.50		ug/L			08/16/18 21:38	1
1,2,3-Trichlorobenzene	ND	*	1.0		ug/L			08/16/18 21:38	1
1,2,4-Trichlorobenzene	ND	*	1.0		ug/L			08/16/18 21:38	1
1,2,4-Trimethylbenzene	ND	*	0.50		ug/L			08/16/18 21:38	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/16/18 21:38	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/16/18 21:38	1
1,2-Dichloroethane	ND		0.50		ug/L			08/16/18 21:38	1
1,2-Dichloropropane	ND		0.50		ug/L			08/16/18 21:38	1
1,3,5-Trimethylbenzene	ND	*	0.50		ug/L			08/16/18 21:38	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/16/18 21:38	1
1,3-Dichloropropane	ND		1.0		ug/L			08/16/18 21:38	1
1,4-Dichlorobenzene	ND	*	0.50		ug/L			08/16/18 21:38	1
2,2-Dichloropropane	ND		0.50		ug/L			08/16/18 21:38	1
2-Chlorotoluene	ND	*	0.50		ug/L			08/16/18 21:38	1
2-Hexanone	ND		50		ug/L			08/16/18 21:38	1
4-Chlorotoluene	ND	*	0.50		ug/L			08/16/18 21:38	1
4-Isopropyltoluene	ND	*	1.0		ug/L			08/16/18 21:38	1
Acetone	ND		50		ug/L			08/16/18 21:38	1
Benzene	ND		0.50		ug/L			08/16/18 21:38	1
Bromobenzene	ND		1.0		ug/L			08/16/18 21:38	1
Bromoform	ND		1.0		ug/L			08/16/18 21:38	1
Bromomethane	ND		1.0		ug/L			08/16/18 21:38	1
Carbon disulfide	ND		5.0		ug/L			08/16/18 21:38	1
Carbon tetrachloride	ND		0.50		ug/L			08/16/18 21:38	1
Chlorobenzene	ND		0.50		ug/L			08/16/18 21:38	1
Chlorobromomethane	ND		1.0		ug/L			08/16/18 21:38	1
Chloroethane	ND		1.0		ug/L			08/16/18 21:38	1
Chloroform	ND		1.0		ug/L			08/16/18 21:38	1
Chloromethane	ND		1.0		ug/L			08/16/18 21:38	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 21:38	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 21:38	1
Chlorodibromomethane	ND		0.50		ug/L			08/16/18 21:38	1
Dibromomethane	ND		0.50		ug/L			08/16/18 21:38	1
Dichlorobromomethane	ND		0.50		ug/L			08/16/18 21:38	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/16/18 21:38	1
Ethylbenzene	ND		0.50		ug/L			08/16/18 21:38	1
Hexachlorobutadiene	ND		1.0		ug/L			08/16/18 21:38	1
Isopropylbenzene	ND		0.50		ug/L			08/16/18 21:38	1
Methylene Chloride	ND		5.0		ug/L			08/16/18 21:38	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/16/18 21:38	1
Naphthalene	ND		1.0		ug/L			08/16/18 21:38	1
n-Butylbenzene	ND	*	1.0		ug/L			08/16/18 21:38	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: FB-2
Date Collected: 08/15/18 14:30
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-10
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND	*	1.0		ug/L			08/16/18 21:38	1
sec-Butylbenzene	ND	*	1.0		ug/L			08/16/18 21:38	1
Styrene	ND		0.50		ug/L			08/16/18 21:38	1
tert-Butylbenzene	ND	*	1.0		ug/L			08/16/18 21:38	1
Tetrachloroethene	ND		0.50		ug/L			08/16/18 21:38	1
Toluene	ND		0.50		ug/L			08/16/18 21:38	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 21:38	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 21:38	1
Trichloroethene	ND		0.50		ug/L			08/16/18 21:38	1
Trichlorofluoromethane	ND		1.0		ug/L			08/16/18 21:38	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/16/18 21:38	1
Vinyl acetate	ND	*	10		ug/L			08/16/18 21:38	1
Vinyl chloride	ND		0.50		ug/L			08/16/18 21:38	1
Xylenes, Total	ND		0.50		ug/L			08/16/18 21:38	1
Ethylene Dibromide	ND		0.50		ug/L			08/16/18 21:38	1
2-Butanone (MEK)	ND		50		ug/L			08/16/18 21:38	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/16/18 21:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*83*		*67 - 130*		*08/16/18 21:38*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/16/18 21:38*	*1*
Dibromofluoromethane (Surr)	*96*		*70 - 130*		*08/16/18 21:38*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*72 - 130*		*08/16/18 21:38*	*1*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/29/18 14:09	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: TB-2
Date Collected: 08/15/18 15:00
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-11
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/16/18 22:07	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 22:07	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/16/18 22:07	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 22:07	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/16/18 22:07	1
1,1-Dichloroethane	ND		0.50		ug/L			08/16/18 22:07	1
1,1-Dichloroethene	ND		0.50		ug/L			08/16/18 22:07	1
1,1-Dichloropropene	ND		0.50		ug/L			08/16/18 22:07	1
1,2,3-Trichlorobenzene	ND	*	1.0		ug/L			08/16/18 22:07	1
1,2,4-Trichlorobenzene	ND	*	1.0		ug/L			08/16/18 22:07	1
1,2,4-Trimethylbenzene	ND	*	0.50		ug/L			08/16/18 22:07	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/16/18 22:07	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/16/18 22:07	1
1,2-Dichloroethane	ND		0.50		ug/L			08/16/18 22:07	1
1,2-Dichloropropane	ND		0.50		ug/L			08/16/18 22:07	1
1,3,5-Trimethylbenzene	ND	*	0.50		ug/L			08/16/18 22:07	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/16/18 22:07	1
1,3-Dichloropropane	ND		1.0		ug/L			08/16/18 22:07	1
1,4-Dichlorobenzene	ND	*	0.50		ug/L			08/16/18 22:07	1
2,2-Dichloropropane	ND		0.50		ug/L			08/16/18 22:07	1
2-Chlorotoluene	ND	*	0.50		ug/L			08/16/18 22:07	1
2-Hexanone	ND		50		ug/L			08/16/18 22:07	1
4-Chlorotoluene	ND	*	0.50		ug/L			08/16/18 22:07	1
4-Isopropyltoluene	ND	*	1.0		ug/L			08/16/18 22:07	1
Acetone	ND		50		ug/L			08/16/18 22:07	1
Benzene	ND		0.50		ug/L			08/16/18 22:07	1
Bromobenzene	ND		1.0		ug/L			08/16/18 22:07	1
Bromoform	ND		1.0		ug/L			08/16/18 22:07	1
Bromomethane	ND		1.0		ug/L			08/16/18 22:07	1
Carbon disulfide	ND		5.0		ug/L			08/16/18 22:07	1
Carbon tetrachloride	ND		0.50		ug/L			08/16/18 22:07	1
Chlorobenzene	ND		0.50		ug/L			08/16/18 22:07	1
Chlorobromomethane	ND		1.0		ug/L			08/16/18 22:07	1
Chloroethane	ND		1.0		ug/L			08/16/18 22:07	1
Chloroform	ND		1.0		ug/L			08/16/18 22:07	1
Chloromethane	ND		1.0		ug/L			08/16/18 22:07	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 22:07	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 22:07	1
Chlorodibromomethane	ND		0.50		ug/L			08/16/18 22:07	1
Dibromomethane	ND		0.50		ug/L			08/16/18 22:07	1
Dichlorobromomethane	ND		0.50		ug/L			08/16/18 22:07	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/16/18 22:07	1
Ethylbenzene	ND		0.50		ug/L			08/16/18 22:07	1
Hexachlorobutadiene	ND		1.0		ug/L			08/16/18 22:07	1
Isopropylbenzene	ND		0.50		ug/L			08/16/18 22:07	1
Methylene Chloride	ND		5.0		ug/L			08/16/18 22:07	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/16/18 22:07	1
Naphthalene	ND		1.0		ug/L			08/16/18 22:07	1
n-Butylbenzene	ND	*	1.0		ug/L			08/16/18 22:07	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: TB-2
Date Collected: 08/15/18 15:00
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-11
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Propylbenzene	ND	*	1.0		ug/L			08/16/18 22:07	1
sec-Butylbenzene	ND	*	1.0		ug/L			08/16/18 22:07	1
Styrene	ND		0.50		ug/L			08/16/18 22:07	1
tert-Butylbenzene	ND	*	1.0		ug/L			08/16/18 22:07	1
Tetrachloroethene	ND		0.50		ug/L			08/16/18 22:07	1
Toluene	ND		0.50		ug/L			08/16/18 22:07	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 22:07	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 22:07	1
Trichloroethene	ND		0.50		ug/L			08/16/18 22:07	1
Trichlorofluoromethane	ND		1.0		ug/L			08/16/18 22:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/16/18 22:07	1
Vinyl acetate	ND	*	10		ug/L			08/16/18 22:07	1
Vinyl chloride	ND		0.50		ug/L			08/16/18 22:07	1
Xylenes, Total	ND		0.50		ug/L			08/16/18 22:07	1
Ethylene Dibromide	ND		0.50		ug/L			08/16/18 22:07	1
2-Butanone (MEK)	ND		50		ug/L			08/16/18 22:07	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/16/18 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*81*		*67 - 130*		*08/16/18 22:07*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*08/16/18 22:07*	*1*
Dibromofluoromethane (Surr)	*92*		*70 - 130*		*08/16/18 22:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*72 - 130*		*08/16/18 22:07*	*1*

Surrogate Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	TOL	DBFM	DCA
Lab Sample ID	Client Sample ID	(67-130)	(70-130)	(70-130)	(72-130)
720-88056-A-8 MS	Matrix Spike	92	89	97	91
720-88056-A-8 MSD	Matrix Spike Duplicate	88	88	91	87
720-88059-1	GWE-3	95	92	96	108
720-88059-2	GWE-4	94	92	94	106
720-88059-3	MK-4A	95	92	96	108
720-88059-4	MK-6A	96	99	109	129
720-88059-5	MW-4A	81	97	99	98
720-88059-5	MW-4A	101	99	96	87
720-88059-6	MW-6AR	96	100	94	86
720-88059-7	MW-7A	95	92	97	109
720-88059-7	MW-7A	101	99	94	84
720-88059-8	MW-8A	79	92	96	96
720-88059-9	DUP-2	94	93	96	111
720-88059-10	FB-2	83	99	96	95
720-88059-11	TB-2	81	98	92	88
720-88062-A-5 MS	Matrix Spike	97	99	111	123
720-88062-A-5 MSD	Matrix Spike Duplicate	97	99	107	116
720-88066-A-5 MS	Matrix Spike	89	92	95	89
720-88066-A-5 MSD	Matrix Spike Duplicate	92	96	100	85
720-88082-A-2 MS	Matrix Spike	96	94	95	110
720-88082-A-2 MSD	Matrix Spike Duplicate	95	94	96	107
720-88121-D-3 MS	Matrix Spike	97	94	99	117
720-88177-A-15 MS	Matrix Spike	99	93	96	90
720-88177-A-15 MSD	Matrix Spike Duplicate	101	98	97	91
LCS 720-249682/5	Lab Control Sample	97	98	102	98
LCS 720-249684/5	Lab Control Sample	90	95	93	86
LCS 720-249691/17	Lab Control Sample	90	96	98	90
LCS 720-249695/5	Lab Control Sample	95	93	98	108
LCS 720-249863/5	Lab Control Sample	96	92	92	102
LCS 720-250217/5	Lab Control Sample	98	103	90	88
LCS 720-250344/5	Lab Control Sample	98	98	90	82
LCSD 720-249682/6	Lab Control Sample Dup	98	98	100	99
LCSD 720-249684/6	Lab Control Sample Dup	92	96	93	88
LCSD 720-249691/18	Lab Control Sample Dup	90	97	96	88
LCSD 720-249695/6	Lab Control Sample Dup	94	93	94	106
LCSD 720-249863/6	Lab Control Sample Dup	94	94	95	104
LCSD 720-250217/6	Lab Control Sample Dup	100	99	91	89
LCSD 720-250344/6	Lab Control Sample Dup	101	96	94	90
MB 720-249682/4	Method Blank	101	98	99	107
MB 720-249684/4	Method Blank	82	95	98	94
MB 720-249691/11	Method Blank	74	93	99	100
MB 720-249695/4	Method Blank	93	90	93	106
MB 720-249863/4	Method Blank	96	92	92	106
MB 720-250217/4	Method Blank	103	99	93	87
MB 720-250344/4	Method Blank	100	99	94	90

Surrogate Legend

BFB = 4-Bromofluorobenzene

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8015B - Gasoline Range Organics - (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	BFB1 (65-140)
440-218182-B-3 MS	Matrix Spike	111
440-218182-C-3 MSD	Matrix Spike Duplicate	109
440-218762-C-1 MS	Matrix Spike	116
440-218762-C-1 MSD	Matrix Spike Duplicate	113
720-88059-1	GWE-3	86
720-88059-2	GWE-4	92
720-88059-3	MK-4A	88
720-88059-4	MK-6A	85
720-88059-5	MW-4A	81
720-88059-6	MW-6AR	91
720-88059-7	MW-7A	89
720-88059-8	MW-8A	89
720-88059-9	DUP-2	90
LCS 440-494773/13	Lab Control Sample	106
LCS 440-495513/4	Lab Control Sample	110
MB 440-494773/14	Method Blank	93
MB 440-495513/5	Method Blank	99

Surrogate Legend
BFB = 4-Bromofluorobenzene (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	TPH1 (23-156)
720-88059-1	GWE-3	96
720-88059-2	GWE-4	92
720-88059-3	MK-4A	91
720-88059-4	MK-6A	92
720-88059-5	MW-4A	54
720-88059-6	MW-6AR	96
720-88059-7	MW-7A	98
720-88059-8	MW-8A	98
720-88059-9	DUP-2	94
LCS 720-249750/2-A	Lab Control Sample	100
LCSD 720-249750/3-A	Lab Control Sample Dup	101
MB 720-249750/1-A	Method Blank	95

Surrogate Legend
TPH = p-Terphenyl

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 720-249682/4
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/16/18 19:19	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 19:19	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/16/18 19:19	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 19:19	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/16/18 19:19	1
1,1-Dichloroethane	ND		0.50		ug/L			08/16/18 19:19	1
1,1-Dichloroethene	ND		0.50		ug/L			08/16/18 19:19	1
1,1-Dichloropropene	ND		0.50		ug/L			08/16/18 19:19	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/16/18 19:19	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/16/18 19:19	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/16/18 19:19	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/16/18 19:19	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/16/18 19:19	1
1,2-Dichloroethane	ND		0.50		ug/L			08/16/18 19:19	1
1,2-Dichloropropane	ND		0.50		ug/L			08/16/18 19:19	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/16/18 19:19	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/16/18 19:19	1
1,3-Dichloropropane	ND		1.0		ug/L			08/16/18 19:19	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/16/18 19:19	1
2,2-Dichloropropane	ND		0.50		ug/L			08/16/18 19:19	1
2-Chlorotoluene	ND		0.50		ug/L			08/16/18 19:19	1
2-Hexanone	ND		50		ug/L			08/16/18 19:19	1
4-Chlorotoluene	ND		0.50		ug/L			08/16/18 19:19	1
4-Isopropyltoluene	ND		1.0		ug/L			08/16/18 19:19	1
Acetone	ND		50		ug/L			08/16/18 19:19	1
Benzene	ND		0.50		ug/L			08/16/18 19:19	1
Bromobenzene	ND		1.0		ug/L			08/16/18 19:19	1
Bromoform	ND		1.0		ug/L			08/16/18 19:19	1
Bromomethane	ND		1.0		ug/L			08/16/18 19:19	1
Carbon disulfide	ND		5.0		ug/L			08/16/18 19:19	1
Carbon tetrachloride	ND		0.50		ug/L			08/16/18 19:19	1
Chlorobenzene	ND		0.50		ug/L			08/16/18 19:19	1
Chlorobromomethane	ND		1.0		ug/L			08/16/18 19:19	1
Chloroethane	ND		1.0		ug/L			08/16/18 19:19	1
Chloroform	ND		1.0		ug/L			08/16/18 19:19	1
Chloromethane	ND		1.0		ug/L			08/16/18 19:19	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 19:19	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 19:19	1
Chlorodibromomethane	ND		0.50		ug/L			08/16/18 19:19	1
Dibromomethane	ND		0.50		ug/L			08/16/18 19:19	1
Dichlorobromomethane	ND		0.50		ug/L			08/16/18 19:19	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/16/18 19:19	1
Ethylbenzene	ND		0.50		ug/L			08/16/18 19:19	1
Hexachlorobutadiene	ND		1.0		ug/L			08/16/18 19:19	1
Isopropylbenzene	ND		0.50		ug/L			08/16/18 19:19	1
Methylene Chloride	ND		5.0		ug/L			08/16/18 19:19	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/16/18 19:19	1
Naphthalene	ND		1.0		ug/L			08/16/18 19:19	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249682/4
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
n-Butylbenzene	ND		1.0		ug/L			08/16/18 19:19	1
N-Propylbenzene	ND		1.0		ug/L			08/16/18 19:19	1
sec-Butylbenzene	ND		1.0		ug/L			08/16/18 19:19	1
Styrene	ND		0.50		ug/L			08/16/18 19:19	1
tert-Butylbenzene	ND		1.0		ug/L			08/16/18 19:19	1
Tetrachloroethene	ND		0.50		ug/L			08/16/18 19:19	1
Toluene	ND		0.50		ug/L			08/16/18 19:19	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 19:19	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 19:19	1
Trichloroethene	ND		0.50		ug/L			08/16/18 19:19	1
Trichlorofluoromethane	ND		1.0		ug/L			08/16/18 19:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/16/18 19:19	1
Vinyl acetate	ND		10		ug/L			08/16/18 19:19	1
Vinyl chloride	ND		0.50		ug/L			08/16/18 19:19	1
Xylenes, Total	ND		0.50		ug/L			08/16/18 19:19	1
Ethylene Dibromide	ND		0.50		ug/L			08/16/18 19:19	1
2-Butanone (MEK)	ND		50		ug/L			08/16/18 19:19	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/16/18 19:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*101*		*67 - 130*		*08/16/18 19:19*	*1*
Toluene-d8 (Surr)	*98*		*70 - 130*		*08/16/18 19:19*	*1*
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*08/16/18 19:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*72 - 130*		*08/16/18 19:19*	*1*

Lab Sample ID: LCS 720-249682/5
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	23.7		ug/L		95	77 - 120
1,1,1,2-Tetrachloroethane	25.0	25.4		ug/L		102	81 - 121
1,1,1-Trichloroethane	25.0	26.4		ug/L		106	74 - 130
1,1,2,2-Tetrachloroethane	25.0	21.5		ug/L		86	70 - 115
1,1,2-Trichloroethane	25.0	22.3		ug/L		89	80 - 117
1,1-Dichloroethane	25.0	22.8		ug/L		91	77 - 119
1,1-Dichloroethene	25.0	22.1		ug/L		88	69 - 119
1,1-Dichloropropene	25.0	24.3		ug/L		97	83 - 130
1,2,3-Trichlorobenzene	25.0	23.3		ug/L		93	87 - 123
1,2,4-Trichlorobenzene	25.0	24.3		ug/L		97	78 - 120
1,2,4-Trimethylbenzene	25.0	24.7		ug/L		99	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	22.2		ug/L		89	74 - 126
1,2-Dichlorobenzene	25.0	23.5		ug/L		94	77 - 117
1,2-Dichloroethane	25.0	23.6		ug/L		94	73 - 122
1,2-Dichloropropane	25.0	21.9		ug/L		88	79 - 119
1,3,5-Trimethylbenzene	25.0	24.9		ug/L		100	77 - 117
1,3-Dichlorobenzene	25.0	24.2		ug/L		97	76 - 116
1,3-Dichloropropane	25.0	23.1		ug/L		93	77 - 117

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249682/5
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	25.0	24.4		ug/L		98	76 - 116
2,2-Dichloropropane	25.0	31.0		ug/L		124	74 - 156
2-Chlorotoluene	25.0	24.0		ug/L		96	75 - 115
2-Hexanone	125	92.3		ug/L		74	63 - 140
4-Chlorotoluene	25.0	24.0		ug/L		96	73 - 119
4-Isopropyltoluene	25.0	25.0		ug/L		100	80 - 120
Acetone	125	101		ug/L		81	61 - 147
Benzene	25.0	23.4		ug/L		93	79 - 119
Bromobenzene	25.0	23.5		ug/L		94	77 - 117
Bromoform	25.0	25.4		ug/L		102	75 - 127
Bromomethane	25.0	25.8		ug/L		103	70 - 132
Carbon disulfide	25.0	22.1		ug/L		88	64 - 127
Carbon tetrachloride	25.0	26.8		ug/L		107	72 - 142
Chlorobenzene	25.0	24.0		ug/L		96	76 - 116
Chlorobromomethane	25.0	24.4		ug/L		97	81 - 122
Chloroethane	25.0	23.7		ug/L		95	70 - 131
Chloroform	25.0	24.9		ug/L		100	82 - 119
Chloromethane	25.0	22.2		ug/L		89	49 - 134
cis-1,2-Dichloroethene	25.0	22.5		ug/L		90	77 - 117
cis-1,3-Dichloropropene	25.0	23.4		ug/L		93	82 - 119
Chlorodibromomethane	25.0	25.1		ug/L		100	77 - 133
Dibromomethane	25.0	23.6		ug/L		94	79 - 117
Dichlorobromomethane	25.0	25.3		ug/L		101	81 - 130
Dichlorodifluoromethane	25.0	32.4		ug/L		129	21 - 150
Ethylbenzene	25.0	24.8		ug/L		99	77 - 117
Hexachlorobutadiene	25.0	26.1		ug/L		104	78 - 140
Isopropylbenzene	25.0	25.4		ug/L		102	77 - 130
m-Xylene & p-Xylene	25.0	24.9		ug/L		100	74 - 119
Methylene Chloride	25.0	24.8		ug/L		99	75 - 117
Methyl tert-butyl ether	25.0	22.8		ug/L		91	70 - 130
Naphthalene	25.0	22.5		ug/L		90	81 - 121
n-Butylbenzene	25.0	24.6		ug/L		98	78 - 119
N-Propylbenzene	25.0	24.4		ug/L		97	77 - 117
o-Xylene	25.0	24.8		ug/L		99	77 - 118
sec-Butylbenzene	25.0	24.5		ug/L		98	78 - 118
Styrene	25.0	24.1		ug/L		96	76 - 116
tert-Butylbenzene	25.0	24.7		ug/L		99	78 - 118
Tetrachloroethene	25.0	25.0		ug/L		100	81 - 130
Toluene	25.0	20.5		ug/L		82	75 - 120
trans-1,2-Dichloroethene	25.0	23.7		ug/L		95	79 - 117
trans-1,3-Dichloropropene	25.0	24.4		ug/L		98	76 - 122
Trichloroethene	25.0	24.7		ug/L		99	80 - 123
Trichlorofluoromethane	25.0	26.5		ug/L		106	75 - 141
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	25.2		ug/L		101	70 - 133
Vinyl acetate	25.0	26.2		ug/L		105	50 - 126
Vinyl chloride	25.0	25.5		ug/L		102	58 - 138
Ethylene Dibromide	25.0	23.9		ug/L		96	80 - 121

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249682/5
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2-Butanone (MEK)			125	106		ug/L		85	66 - 133		
4-Methyl-2-pentanone (MIBK)			125	93.2		ug/L		75	66 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*97*		*67 - 130*
Toluene-d8 (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*102*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*98*		*72 - 130*

Lab Sample ID: LCSD 720-249682/6
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane			25.0	22.7		ug/L		91	77 - 120	4	20
1,1,1,2-Tetrachloroethane			25.0	25.0		ug/L		100	81 - 121	2	20
1,1,1-Trichloroethane			25.0	26.8		ug/L		107	74 - 130	1	20
1,1,2,2-Tetrachloroethane			25.0	20.7		ug/L		83	70 - 115	4	20
1,1,2-Trichloroethane			25.0	22.4		ug/L		90	80 - 117	1	20
1,1-Dichloroethane			25.0	23.1		ug/L		93	77 - 119	1	20
1,1-Dichloroethene			25.0	22.2		ug/L		89	69 - 119	1	20
1,1-Dichloropropene			25.0	24.6		ug/L		98	83 - 130	1	20
1,2,3-Trichlorobenzene			25.0	23.9		ug/L		95	87 - 123	2	20
1,2,4-Trichlorobenzene			25.0	24.8		ug/L		99	78 - 120	2	20
1,2,4-Trimethylbenzene			25.0	24.9		ug/L		100	75 - 115	1	20
1,2-Dibromo-3-Chloropropane			25.0	22.3		ug/L		89	74 - 126	0	20
1,2-Dichlorobenzene			25.0	23.5		ug/L		94	77 - 117	0	20
1,2-Dichloroethane			25.0	23.9		ug/L		96	73 - 122	1	20
1,2-Dichloropropane			25.0	22.0		ug/L		88	79 - 119	0	20
1,3,5-Trimethylbenzene			25.0	24.8		ug/L		99	77 - 117	0	20
1,3-Dichlorobenzene			25.0	24.2		ug/L		97	76 - 116	0	20
1,3-Dichloropropane			25.0	22.9		ug/L		92	77 - 117	1	20
1,4-Dichlorobenzene			25.0	24.5		ug/L		98	76 - 116	0	20
2,2-Dichloropropane			25.0	31.0		ug/L		124	74 - 156	0	20
2-Chlorotoluene			25.0	23.9		ug/L		96	75 - 115	0	20
2-Hexanone			125	90.7		ug/L		73	63 - 140	2	24
4-Chlorotoluene			25.0	23.8		ug/L		95	73 - 119	1	20
4-Isopropyltoluene			25.0	25.3		ug/L		101	80 - 120	1	20
Acetone			125	103		ug/L		82	61 - 147	2	30
Benzene			25.0	23.8		ug/L		95	79 - 119	2	20
Bromobenzene			25.0	23.4		ug/L		93	77 - 117	1	20
Bromoform			25.0	25.3		ug/L		101	75 - 127	0	20
Bromomethane			25.0	25.5		ug/L		102	70 - 132	1	20
Carbon disulfide			25.0	22.1		ug/L		88	64 - 127	0	20
Carbon tetrachloride			25.0	27.1		ug/L		109	72 - 142	1	20
Chlorobenzene			25.0	24.0		ug/L		96	76 - 116	0	20
Chlorobromomethane			25.0	24.6		ug/L		98	81 - 122	1	20
Chloroethane			25.0	23.9		ug/L		96	70 - 131	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249682/6
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	25.0	25.3		ug/L		101	82 - 119	2	20
Chloromethane	25.0	22.0		ug/L		88	49 - 134	1	20
cis-1,2-Dichloroethene	25.0	23.1		ug/L		92	77 - 117	3	20
cis-1,3-Dichloropropene	25.0	23.8		ug/L		95	82 - 119	2	20
Chlorodibromomethane	25.0	25.1		ug/L		101	77 - 133	0	20
Dibromomethane	25.0	23.9		ug/L		96	79 - 117	1	20
Dichlorobromomethane	25.0	25.5		ug/L		102	81 - 130	1	20
Dichlorodifluoromethane	25.0	33.6		ug/L		134	21 - 150	4	20
Ethylbenzene	25.0	24.9		ug/L		100	77 - 117	0	20
Hexachlorobutadiene	25.0	27.2		ug/L		109	78 - 140	4	20
Isopropylbenzene	25.0	25.3		ug/L		101	77 - 130	1	20
m-Xylene & p-Xylene	25.0	25.1		ug/L		100	74 - 119	1	20
Methylene Chloride	25.0	23.8		ug/L		95	75 - 117	4	20
Methyl tert-butyl ether	25.0	23.1		ug/L		92	70 - 130	1	20
Naphthalene	25.0	22.3		ug/L		89	81 - 121	1	20
n-Butylbenzene	25.0	25.0		ug/L		100	78 - 119	2	20
N-Propylbenzene	25.0	24.4		ug/L		98	77 - 117	0	20
o-Xylene	25.0	24.6		ug/L		98	77 - 118	1	20
sec-Butylbenzene	25.0	24.7		ug/L		99	78 - 118	0	20
Styrene	25.0	23.9		ug/L		96	76 - 116	1	20
tert-Butylbenzene	25.0	24.6		ug/L		98	78 - 118	0	20
Tetrachloroethene	25.0	26.3		ug/L		105	81 - 130	5	20
Toluene	25.0	20.5		ug/L		82	75 - 120	0	20
trans-1,2-Dichloroethene	25.0	23.8		ug/L		95	79 - 117	1	20
trans-1,3-Dichloropropene	25.0	25.0		ug/L		100	76 - 122	2	20
Trichloroethene	25.0	25.0		ug/L		100	80 - 123	1	20
Trichlorofluoromethane	25.0	27.0		ug/L		108	75 - 141	2	20
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	25.7		ug/L		103	70 - 133	2	20
Vinyl acetate	25.0	26.4		ug/L		106	50 - 126	1	20
Vinyl chloride	25.0	25.6		ug/L		103	58 - 138	0	20
Ethylene Dibromide	25.0	24.2		ug/L		97	80 - 121	1	20
2-Butanone (MEK)	125	108		ug/L		87	66 - 133	2	22
4-Methyl-2-pentanone (MIBK)	125	92.4		ug/L		74	66 - 140	1	21

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*67 - 130*
Toluene-d8 (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*99*		*72 - 130*

Lab Sample ID: 720-88062-A-5 MS
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		25.0	25.9		ug/L		104	60 - 140
1,1,1,2-Tetrachloroethane	ND		25.0	26.3		ug/L		105	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88062-A-5 MS
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	29.5		ug/L		118	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	21.1		ug/L		84	60 - 140
1,1,2-Trichloroethane	ND		25.0	23.3		ug/L		93	60 - 140
1,1-Dichloroethane	ND		25.0	24.0		ug/L		96	60 - 140
1,1-Dichloroethene	ND		25.0	20.4		ug/L		82	60 - 140
1,1-Dichloropropene	ND		25.0	23.8		ug/L		95	60 - 140
1,2,3-Trichlorobenzene	ND		25.0	24.3		ug/L		97	60 - 140
1,2,4-Trichlorobenzene	ND		25.0	23.8		ug/L		95	60 - 140
1,2,4-Trimethylbenzene	ND		25.0	24.1		ug/L		96	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	24.3		ug/L		97	60 - 140
1,2-Dichlorobenzene	ND		25.0	24.1		ug/L		96	60 - 140
1,2-Dichloroethane	ND		25.0	29.6		ug/L		118	60 - 140
1,2-Dichloropropane	ND		25.0	22.3		ug/L		89	60 - 140
1,3,5-Trimethylbenzene	ND		25.0	24.1		ug/L		96	60 - 140
1,3-Dichlorobenzene	ND		25.0	23.7		ug/L		95	60 - 140
1,3-Dichloropropane	ND		25.0	24.7		ug/L		99	60 - 140
1,4-Dichlorobenzene	ND		25.0	24.1		ug/L		96	60 - 140
2,2-Dichloropropane	ND		25.0	32.1		ug/L		128	60 - 140
2-Chlorotoluene	ND		25.0	23.5		ug/L		94	60 - 140
2-Hexanone	ND		125	112		ug/L		89	60 - 140
4-Chlorotoluene	ND		25.0	23.3		ug/L		93	60 - 140
4-Isopropyltoluene	ND		25.0	24.0		ug/L		96	60 - 140
Acetone	ND		125	102		ug/L		82	60 - 140
Benzene	ND		25.0	23.3		ug/L		93	60 - 140
Bromobenzene	ND		25.0	24.5		ug/L		98	60 - 140
Bromoform	ND		25.0	27.5		ug/L		110	56 - 140
Bromomethane	ND		25.0	23.2		ug/L		93	23 - 140
Carbon disulfide	ND		25.0	20.4		ug/L		81	38 - 140
Carbon tetrachloride	ND		25.0	29.9		ug/L		120	60 - 140
Chlorobenzene	ND		25.0	23.8		ug/L		95	60 - 140
Chlorobromomethane	ND		25.0	26.0		ug/L		104	60 - 140
Chloroethane	ND		25.0	21.0		ug/L		84	51 - 140
Chloroform	ND		25.0	27.1		ug/L		109	60 - 140
Chloromethane	ND		25.0	21.5		ug/L		86	52 - 140
cis-1,2-Dichloroethene	ND		25.0	24.3		ug/L		97	60 - 140
cis-1,3-Dichloropropene	ND		25.0	24.1		ug/L		96	60 - 140
Chlorodibromomethane	ND		25.0	28.4		ug/L		114	60 - 140
Dibromomethane	ND		25.0	25.9		ug/L		104	60 - 140
Dichlorobromomethane	ND		25.0	28.7		ug/L		115	60 - 140
Dichlorodifluoromethane	ND		25.0	32.5		ug/L		130	38 - 140
Ethylbenzene	ND		25.0	23.9		ug/L		96	60 - 140
Hexachlorobutadiene	ND		25.0	26.8		ug/L		107	60 - 140
Isopropylbenzene	ND		25.0	24.5		ug/L		98	60 - 140
m-Xylene & p-Xylene	ND		25.0	24.1		ug/L		96	60 - 140
Methylene Chloride	ND		25.0	22.9		ug/L		92	40 - 140
Methyl tert-butyl ether	ND		25.0	25.5		ug/L		102	60 - 138
Naphthalene	ND		25.0	23.6		ug/L		95	56 - 140
n-Butylbenzene	ND		25.0	22.6		ug/L		90	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88062-A-5 MS
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
N-Propylbenzene	ND		25.0	23.3		ug/L		93	60 - 140
o-Xylene	ND		25.0	24.3		ug/L		97	60 - 140
sec-Butylbenzene	ND		25.0	23.4		ug/L		93	60 - 140
Styrene	ND		25.0	23.0		ug/L		92	60 - 140
tert-Butylbenzene	ND		25.0	24.1		ug/L		97	60 - 140
Tetrachloroethene	ND		25.0	25.7		ug/L		103	60 - 140
Toluene	ND		25.0	19.6		ug/L		79	60 - 140
trans-1,2-Dichloroethene	ND		25.0	22.9		ug/L		91	60 - 140
trans-1,3-Dichloropropene	ND		25.0	26.9		ug/L		107	60 - 140
Trichloroethene	ND		25.0	25.4		ug/L		102	60 - 140
Trichlorofluoromethane	ND		25.0	28.0		ug/L		112	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	24.8		ug/L		99	60 - 140
Vinyl acetate	ND		25.0	29.5		ug/L		118	40 - 140
Vinyl chloride	ND		25.0	22.8		ug/L		91	58 - 140
Ethylene Dibromide	ND		25.0	25.6		ug/L		103	60 - 140
2-Butanone (MEK)	ND		125	112		ug/L		90	60 - 140
4-Methyl-2-pentanone (MIBK)	ND		125	115		ug/L		92	58 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*97*		*67 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*111*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*123*		*72 - 130*

Lab Sample ID: 720-88062-A-5 MSD
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	ND		25.0	22.9		ug/L		92	60 - 140	12	20
1,1,1,2-Tetrachloroethane	ND		25.0	26.0		ug/L		104	60 - 140	1	20
1,1,1-Trichloroethane	ND		25.0	29.6		ug/L		118	60 - 140	0	20
1,1,2,2-Tetrachloroethane	ND		25.0	19.6		ug/L		79	60 - 140	7	20
1,1,2-Trichloroethane	ND		25.0	21.9		ug/L		88	60 - 140	6	20
1,1-Dichloroethane	ND		25.0	23.6		ug/L		94	60 - 140	2	20
1,1-Dichloroethene	ND		25.0	20.9		ug/L		84	60 - 140	2	20
1,1-Dichloropropene	ND		25.0	24.3		ug/L		97	60 - 140	2	20
1,2,3-Trichlorobenzene	ND		25.0	23.8		ug/L		95	60 - 140	2	20
1,2,4-Trichlorobenzene	ND		25.0	24.2		ug/L		97	60 - 140	2	20
1,2,4-Trimethylbenzene	ND		25.0	24.2		ug/L		97	60 - 140	0	20
1,2-Dibromo-3-Chloropropane	ND		25.0	21.4		ug/L		86	60 - 140	13	20
1,2-Dichlorobenzene	ND		25.0	23.8		ug/L		95	60 - 140	1	20
1,2-Dichloroethane	ND		25.0	28.2		ug/L		113	60 - 140	5	20
1,2-Dichloropropane	ND		25.0	21.7		ug/L		87	60 - 140	3	20
1,3,5-Trimethylbenzene	ND		25.0	24.2		ug/L		97	60 - 140	0	20
1,3-Dichlorobenzene	ND		25.0	23.7		ug/L		95	60 - 140	0	20
1,3-Dichloropropane	ND		25.0	23.1		ug/L		93	60 - 140	6	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88062-A-5 MSD
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene	ND		25.0	24.1		ug/L		96	60 - 140	0	20
2,2-Dichloropropane	ND		25.0	31.6		ug/L		127	60 - 140	1	20
2-Chlorotoluene	ND		25.0	23.3		ug/L		93	60 - 140	1	20
2-Hexanone	ND		125	99.2		ug/L		79	60 - 140	12	20
4-Chlorotoluene	ND		25.0	23.3		ug/L		93	60 - 140	0	20
4-Isopropyltoluene	ND		25.0	24.3		ug/L		97	60 - 140	2	20
Acetone	ND		125	87.4		ug/L		70	60 - 140	15	20
Benzene	ND		25.0	23.0		ug/L		92	60 - 140	1	20
Bromobenzene	ND		25.0	23.6		ug/L		94	60 - 140	4	20
Bromoform	ND		25.0	25.7		ug/L		103	56 - 140	7	20
Bromomethane	ND		25.0	23.1		ug/L		92	23 - 140	0	20
Carbon disulfide	ND		25.0	20.6		ug/L		82	38 - 140	1	20
Carbon tetrachloride	ND		25.0	30.3		ug/L		121	60 - 140	1	20
Chlorobenzene	ND		25.0	23.4		ug/L		94	60 - 140	1	20
Chlorobromomethane	ND		25.0	25.4		ug/L		102	60 - 140	2	20
Chloroethane	ND		25.0	21.0		ug/L		84	51 - 140	0	20
Chloroform	ND		25.0	26.9		ug/L		107	60 - 140	1	20
Chloromethane	ND		25.0	22.1		ug/L		88	52 - 140	3	20
cis-1,2-Dichloroethene	ND		25.0	23.7		ug/L		95	60 - 140	2	20
cis-1,3-Dichloropropene	ND		25.0	23.7		ug/L		95	60 - 140	2	20
Chlorodibromomethane	ND		25.0	27.5		ug/L		110	60 - 140	3	20
Dibromomethane	ND		25.0	24.6		ug/L		98	60 - 140	5	20
Dichlorobromomethane	ND		25.0	27.7		ug/L		111	60 - 140	3	20
Dichlorodifluoromethane	ND		25.0	33.4		ug/L		134	38 - 140	3	20
Ethylbenzene	ND		25.0	24.0		ug/L		96	60 - 140	0	20
Hexachlorobutadiene	ND		25.0	26.5		ug/L		106	60 - 140	1	20
Isopropylbenzene	ND		25.0	24.7		ug/L		99	60 - 140	1	20
m-Xylene & p-Xylene	ND		25.0	24.3		ug/L		97	60 - 140	1	20
Methylene Chloride	ND		25.0	22.4		ug/L		90	40 - 140	2	20
Methyl tert-butyl ether	ND		25.0	23.9		ug/L		96	60 - 138	6	20
Naphthalene	ND		25.0	22.3		ug/L		89	56 - 140	6	20
n-Butylbenzene	ND		25.0	23.0		ug/L		92	60 - 140	2	20
N-Propylbenzene	ND		25.0	23.2		ug/L		93	60 - 140	0	20
o-Xylene	ND		25.0	24.1		ug/L		97	60 - 140	1	20
sec-Butylbenzene	ND		25.0	23.5		ug/L		94	60 - 140	0	20
Styrene	ND		25.0	22.6		ug/L		90	60 - 140	2	20
tert-Butylbenzene	ND		25.0	24.1		ug/L		96	60 - 140	0	20
Tetrachloroethene	ND		25.0	25.9		ug/L		104	60 - 140	1	20
Toluene	ND		25.0	19.6		ug/L		79	60 - 140	0	20
trans-1,2-Dichloroethene	ND		25.0	23.2		ug/L		93	60 - 140	2	20
trans-1,3-Dichloropropene	ND		25.0	25.8		ug/L		103	60 - 140	4	20
Trichloroethene	ND		25.0	25.3		ug/L		101	60 - 140	0	20
Trichlorofluoromethane	ND		25.0	28.5		ug/L		114	60 - 140	2	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	24.7		ug/L		99	60 - 140	1	20
Vinyl acetate	ND		25.0	27.5		ug/L		110	40 - 140	7	20
Vinyl chloride	ND		25.0	23.5		ug/L		94	58 - 140	3	20
Ethylene Dibromide	ND		25.0	24.3		ug/L		97	60 - 140	6	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88062-A-5 MSD
Matrix: Water
Analysis Batch: 249682

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Butanone (MEK)	ND		125	99.9		ug/L		80	60 - 140	12	20
4-Methyl-2-pentanone (MIBK)	ND		125	101		ug/L		81	58 - 130	13	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene	*97*		*67 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*107*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*116*		*72 - 130*

Lab Sample ID: MB 720-249684/4
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/16/18 19:15	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 19:15	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/16/18 19:15	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/16/18 19:15	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/16/18 19:15	1
1,1-Dichloroethane	ND		0.50		ug/L			08/16/18 19:15	1
1,1-Dichloroethene	ND		0.50		ug/L			08/16/18 19:15	1
1,1-Dichloropropene	ND		0.50		ug/L			08/16/18 19:15	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/16/18 19:15	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/16/18 19:15	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/16/18 19:15	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/16/18 19:15	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/16/18 19:15	1
1,2-Dichloroethane	ND		0.50		ug/L			08/16/18 19:15	1
1,2-Dichloropropane	ND		0.50		ug/L			08/16/18 19:15	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/16/18 19:15	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/16/18 19:15	1
1,3-Dichloropropane	ND		1.0		ug/L			08/16/18 19:15	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/16/18 19:15	1
2,2-Dichloropropane	ND		0.50		ug/L			08/16/18 19:15	1
2-Chlorotoluene	ND		0.50		ug/L			08/16/18 19:15	1
2-Hexanone	ND		50		ug/L			08/16/18 19:15	1
4-Chlorotoluene	ND		0.50		ug/L			08/16/18 19:15	1
4-Isopropyltoluene	ND		1.0		ug/L			08/16/18 19:15	1
Acetone	ND		50		ug/L			08/16/18 19:15	1
Benzene	ND		0.50		ug/L			08/16/18 19:15	1
Bromobenzene	ND		1.0		ug/L			08/16/18 19:15	1
Bromoform	ND		1.0		ug/L			08/16/18 19:15	1
Bromomethane	ND		1.0		ug/L			08/16/18 19:15	1
Carbon disulfide	ND		5.0		ug/L			08/16/18 19:15	1
Carbon tetrachloride	ND		0.50		ug/L			08/16/18 19:15	1
Chlorobenzene	ND		0.50		ug/L			08/16/18 19:15	1
Chlorobromomethane	ND		1.0		ug/L			08/16/18 19:15	1
Chloroethane	ND		1.0		ug/L			08/16/18 19:15	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249684/4
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroform	ND		1.0		ug/L			08/16/18 19:15	1
Chloromethane	ND		1.0		ug/L			08/16/18 19:15	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 19:15	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 19:15	1
Chlorodibromomethane	ND		0.50		ug/L			08/16/18 19:15	1
Dibromomethane	ND		0.50		ug/L			08/16/18 19:15	1
Dichlorobromomethane	ND		0.50		ug/L			08/16/18 19:15	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/16/18 19:15	1
Ethylbenzene	ND		0.50		ug/L			08/16/18 19:15	1
Hexachlorobutadiene	ND		1.0		ug/L			08/16/18 19:15	1
Isopropylbenzene	ND		0.50		ug/L			08/16/18 19:15	1
Methylene Chloride	ND		5.0		ug/L			08/16/18 19:15	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/16/18 19:15	1
Naphthalene	ND		1.0		ug/L			08/16/18 19:15	1
n-Butylbenzene	ND		1.0		ug/L			08/16/18 19:15	1
N-Propylbenzene	ND		1.0		ug/L			08/16/18 19:15	1
sec-Butylbenzene	ND		1.0		ug/L			08/16/18 19:15	1
Styrene	ND		0.50		ug/L			08/16/18 19:15	1
tert-Butylbenzene	ND		1.0		ug/L			08/16/18 19:15	1
Tetrachloroethene	ND		0.50		ug/L			08/16/18 19:15	1
Toluene	ND		0.50		ug/L			08/16/18 19:15	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/16/18 19:15	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/16/18 19:15	1
Trichloroethene	ND		0.50		ug/L			08/16/18 19:15	1
Trichlorofluoromethane	ND		1.0		ug/L			08/16/18 19:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/16/18 19:15	1
Vinyl acetate	ND		10		ug/L			08/16/18 19:15	1
Vinyl chloride	ND		0.50		ug/L			08/16/18 19:15	1
Xylenes, Total	ND		0.50		ug/L			08/16/18 19:15	1
Ethylene Dibromide	ND		0.50		ug/L			08/16/18 19:15	1
2-Butanone (MEK)	ND		50		ug/L			08/16/18 19:15	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/16/18 19:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*82*		*67 - 130*		*08/16/18 19:15*	*1*
Toluene-d8 (Surr)	*95*		*70 - 130*		*08/16/18 19:15*	*1*
Dibromofluoromethane (Surr)	*98*		*70 - 130*		*08/16/18 19:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*72 - 130*		*08/16/18 19:15*	*1*

Lab Sample ID: LCS 720-249684/5
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	26.2		ug/L		105	77 - 120
1,1,1,2-Tetrachloroethane	25.0	27.1		ug/L		108	81 - 121
1,1,1-Trichloroethane	25.0	24.3		ug/L		97	74 - 130
1,1,2,2-Tetrachloroethane	25.0	27.5		ug/L		110	70 - 115

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249684/5
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,2-Trichloroethane	25.0	26.2		ug/L		105	80 - 117
1,1-Dichloroethane	25.0	23.0		ug/L		92	77 - 119
1,1-Dichloroethene	25.0	26.3		ug/L		105	69 - 119
1,1-Dichloropropene	25.0	22.2		ug/L		89	83 - 130
1,2,3-Trichlorobenzene	25.0	29.1		ug/L		116	87 - 123
1,2,4-Trichlorobenzene	25.0	29.0		ug/L		116	78 - 120
1,2,4-Trimethylbenzene	25.0	31.0	*	ug/L		124	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	26.1		ug/L		105	74 - 126
1,2-Dichlorobenzene	25.0	28.2		ug/L		113	77 - 117
1,2-Dichloroethane	25.0	20.5		ug/L		82	73 - 122
1,2-Dichloropropane	25.0	25.0		ug/L		100	79 - 119
1,3,5-Trimethylbenzene	25.0	31.1	*	ug/L		124	77 - 117
1,3-Dichlorobenzene	25.0	28.8		ug/L		115	76 - 116
1,3-Dichloropropane	25.0	24.8		ug/L		99	77 - 117
1,4-Dichlorobenzene	25.0	28.6		ug/L		114	76 - 116
2,2-Dichloropropane	25.0	24.8		ug/L		99	74 - 156
2-Chlorotoluene	25.0	30.1	*	ug/L		120	75 - 115
2-Hexanone	125	101		ug/L		81	63 - 140
4-Chlorotoluene	25.0	29.6		ug/L		118	73 - 119
4-Isopropyltoluene	25.0	32.8	*	ug/L		131	80 - 120
Acetone	125	109		ug/L		87	61 - 147
Benzene	25.0	21.8		ug/L		87	79 - 119
Bromobenzene	25.0	25.6		ug/L		102	77 - 117
Bromoform	25.0	24.8		ug/L		99	75 - 127
Bromomethane	25.0	25.0		ug/L		100	70 - 132
Carbon disulfide	25.0	29.1		ug/L		116	64 - 127
Carbon tetrachloride	25.0	23.6		ug/L		94	72 - 142
Chlorobenzene	25.0	25.8		ug/L		103	76 - 116
Chlorobromomethane	25.0	20.8		ug/L		83	81 - 122
Chloroethane	25.0	24.7		ug/L		99	70 - 131
Chloroform	25.0	23.3		ug/L		93	82 - 119
Chloromethane	25.0	27.2		ug/L		109	49 - 134
cis-1,2-Dichloroethene	25.0	23.1		ug/L		92	77 - 117
cis-1,3-Dichloropropene	25.0	25.8		ug/L		103	82 - 119
Chlorodibromomethane	25.0	26.9		ug/L		108	77 - 133
Dibromomethane	25.0	21.3		ug/L		85	79 - 117
Dichlorobromomethane	25.0	24.7		ug/L		99	81 - 130
Dichlorodifluoromethane	25.0	23.1		ug/L		92	21 - 150
Ethylbenzene	25.0	27.8		ug/L		111	77 - 117
Hexachlorobutadiene	25.0	32.3		ug/L		129	78 - 140
Isopropylbenzene	25.0	31.1		ug/L		125	77 - 130
m-Xylene & p-Xylene	25.0	27.2		ug/L		109	74 - 119
Methylene Chloride	25.0	24.2		ug/L		97	75 - 117
Methyl tert-butyl ether	25.0	19.6		ug/L		78	70 - 130
Naphthalene	25.0	27.2		ug/L		109	81 - 121
n-Butylbenzene	25.0	34.0	*	ug/L		136	78 - 119
N-Propylbenzene	25.0	31.8	*	ug/L		127	77 - 117
o-Xylene	25.0	28.0		ug/L		112	77 - 118

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249684/5
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
sec-Butylbenzene	25.0	33.9	*	ug/L		136	78 - 118
Styrene	25.0	27.1		ug/L		109	76 - 116
tert-Butylbenzene	25.0	31.4	*	ug/L		126	78 - 118
Tetrachloroethene	25.0	23.6		ug/L		95	81 - 130
Toluene	25.0	23.2		ug/L		93	75 - 120
trans-1,2-Dichloroethene	25.0	24.5		ug/L		98	79 - 117
trans-1,3-Dichloropropene	25.0	24.9		ug/L		100	76 - 122
Trichloroethene	25.0	21.5		ug/L		86	80 - 123
Trichlorofluoromethane	25.0	25.6		ug/L		103	75 - 141
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	24.4		ug/L		98	70 - 133
Vinyl acetate	25.0	31.3		ug/L		125	50 - 126
Vinyl chloride	25.0	25.3		ug/L		101	58 - 138
Ethylene Dibromide	25.0	24.5		ug/L		98	80 - 121
2-Butanone (MEK)	125	99.0		ug/L		79	66 - 133
4-Methyl-2-pentanone (MIBK)	125	117		ug/L		93	66 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*90*		*67 - 130*
Toluene-d8 (Surr)	*95*		*70 - 130*
Dibromofluoromethane (Surr)	*93*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*86*		*72 - 130*

Lab Sample ID: LCSD 720-249684/6
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	25.0	26.5		ug/L		106	77 - 120	1	20
1,1,1,2-Tetrachloroethane	25.0	27.4		ug/L		110	81 - 121	1	20
1,1,1-Trichloroethane	25.0	25.5		ug/L		102	74 - 130	5	20
1,1,2,2-Tetrachloroethane	25.0	28.6		ug/L		114	70 - 115	4	20
1,1,2-Trichloroethane	25.0	26.3		ug/L		105	80 - 117	0	20
1,1-Dichloroethane	25.0	23.7		ug/L		95	77 - 119	3	20
1,1-Dichloroethene	25.0	26.9		ug/L		107	69 - 119	2	20
1,1-Dichloropropene	25.0	22.4		ug/L		90	83 - 130	1	20
1,2,3-Trichlorobenzene	25.0	31.1	*	ug/L		124	87 - 123	7	20
1,2,4-Trichlorobenzene	25.0	30.9	*	ug/L		124	78 - 120	6	20
1,2,4-Trimethylbenzene	25.0	31.6	*	ug/L		126	75 - 115	2	20
1,2-Dibromo-3-Chloropropane	25.0	25.1		ug/L		100	74 - 126	4	20
1,2-Dichlorobenzene	25.0	28.8		ug/L		115	77 - 117	2	20
1,2-Dichloroethane	25.0	21.0		ug/L		84	73 - 122	3	20
1,2-Dichloropropane	25.0	24.3		ug/L		97	79 - 119	3	20
1,3,5-Trimethylbenzene	25.0	32.0	*	ug/L		128	77 - 117	3	20
1,3-Dichlorobenzene	25.0	29.0		ug/L		116	76 - 116	1	20
1,3-Dichloropropane	25.0	25.4		ug/L		102	77 - 117	2	20
1,4-Dichlorobenzene	25.0	29.1	*	ug/L		117	76 - 116	2	20
2,2-Dichloropropane	25.0	26.1		ug/L		104	74 - 156	5	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249684/6
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chlorotoluene	25.0	30.4	*	ug/L		121	75 - 115	1	20
2-Hexanone	125	102		ug/L		82	63 - 140	1	24
4-Chlorotoluene	25.0	30.0	*	ug/L		120	73 - 119	1	20
4-Isopropyltoluene	25.0	33.3	*	ug/L		133	80 - 120	1	20
Acetone	125	107		ug/L		86	61 - 147	2	30
Benzene	25.0	22.2		ug/L		89	79 - 119	2	20
Bromobenzene	25.0	25.4		ug/L		102	77 - 117	1	20
Bromoform	25.0	25.3		ug/L		101	75 - 127	2	20
Bromomethane	25.0	27.0		ug/L		108	70 - 132	8	20
Carbon disulfide	25.0	30.4		ug/L		121	64 - 127	4	20
Carbon tetrachloride	25.0	25.0		ug/L		100	72 - 142	6	20
Chlorobenzene	25.0	25.9		ug/L		103	76 - 116	0	20
Chlorobromomethane	25.0	22.0		ug/L		88	81 - 122	5	20
Chloroethane	25.0	26.4		ug/L		106	70 - 131	7	20
Chloroform	25.0	23.9		ug/L		95	82 - 119	2	20
Chloromethane	25.0	30.1		ug/L		121	49 - 134	10	20
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 117	2	20
cis-1,3-Dichloropropene	25.0	26.1		ug/L		104	82 - 119	1	20
Chlorodibromomethane	25.0	26.5		ug/L		106	77 - 133	2	20
Dibromomethane	25.0	22.1		ug/L		88	79 - 117	4	20
Dichlorobromomethane	25.0	24.8		ug/L		99	81 - 130	0	20
Dichlorodifluoromethane	25.0	27.3		ug/L		109	21 - 150	17	20
Ethylbenzene	25.0	28.2		ug/L		113	77 - 117	1	20
Hexachlorobutadiene	25.0	32.5		ug/L		130	78 - 140	1	20
Isopropylbenzene	25.0	32.0		ug/L		128	77 - 130	3	20
m-Xylene & p-Xylene	25.0	27.9		ug/L		112	74 - 119	3	20
Methylene Chloride	25.0	24.4		ug/L		98	75 - 117	1	20
Methyl tert-butyl ether	25.0	20.7		ug/L		83	70 - 130	6	20
Naphthalene	25.0	29.2		ug/L		117	81 - 121	7	20
n-Butylbenzene	25.0	35.0	*	ug/L		140	78 - 119	3	20
N-Propylbenzene	25.0	32.0	*	ug/L		128	77 - 117	1	20
o-Xylene	25.0	29.0		ug/L		116	77 - 118	3	20
sec-Butylbenzene	25.0	34.2	*	ug/L		137	78 - 118	1	20
Styrene	25.0	27.2		ug/L		109	76 - 116	0	20
tert-Butylbenzene	25.0	31.3	*	ug/L		125	78 - 118	0	20
Tetrachloroethene	25.0	24.4		ug/L		98	81 - 130	3	20
Toluene	25.0	23.7		ug/L		95	75 - 120	2	20
trans-1,2-Dichloroethene	25.0	25.7		ug/L		103	79 - 117	5	20
trans-1,3-Dichloropropene	25.0	25.3		ug/L		101	76 - 122	1	20
Trichloroethene	25.0	22.5		ug/L		90	80 - 123	4	20
Trichlorofluoromethane	25.0	27.4		ug/L		110	75 - 141	7	20
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	26.2		ug/L		105	70 - 133	7	20
Vinyl acetate	25.0	32.7	*	ug/L		131	50 - 126	4	20
Vinyl chloride	25.0	28.0		ug/L		112	58 - 138	10	20
Ethylene Dibromide	25.0	24.3		ug/L		97	80 - 121	1	20
2-Butanone (MEK)	125	102		ug/L		82	66 - 133	3	22
4-Methyl-2-pentanone (MIBK)	125	118		ug/L		94	66 - 140	1	21

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249684/6
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*92*		*67 - 130*
Toluene-d8 (Surr)	*96*		*70 - 130*
Dibromofluoromethane (Surr)	*93*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*88*		*72 - 130*

Lab Sample ID: 720-88056-A-8 MS
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		25.0	22.3		ug/L		89	60 - 140
1,1,1,2-Tetrachloroethane	ND		25.0	25.3		ug/L		101	60 - 140
1,1,1-Trichloroethane	ND		25.0	28.8		ug/L		115	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	23.8		ug/L		95	60 - 140
1,1,2-Trichloroethane	ND		25.0	22.2		ug/L		89	60 - 140
1,1-Dichloroethane	ND		25.0	28.4		ug/L		114	60 - 140
1,1-Dichloroethene	ND		25.0	33.4		ug/L		134	60 - 140
1,1-Dichloropropene	ND		25.0	24.7		ug/L		99	60 - 140
1,2,3-Trichlorobenzene	ND	*	25.0	23.4		ug/L		94	60 - 140
1,2,4-Trichlorobenzene	ND	*	25.0	22.4		ug/L		90	60 - 140
1,2,4-Trimethylbenzene	ND	*	25.0	26.8		ug/L		107	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	19.3		ug/L		77	60 - 140
1,2-Dichlorobenzene	ND		25.0	24.3		ug/L		97	60 - 140
1,2-Dichloroethane	ND		25.0	22.9		ug/L		92	60 - 140
1,2-Dichloropropane	ND		25.0	25.8		ug/L		103	60 - 140
1,3,5-Trimethylbenzene	ND	*	25.0	27.2		ug/L		109	60 - 140
1,3-Dichlorobenzene	ND		25.0	24.4		ug/L		98	60 - 140
1,3-Dichloropropane	ND		25.0	22.2		ug/L		89	60 - 140
1,4-Dichlorobenzene	ND	*	25.0	24.6		ug/L		98	60 - 140
2,2-Dichloropropane	ND		25.0	28.7		ug/L		115	60 - 140
2-Chlorotoluene	ND	*	25.0	26.2		ug/L		105	60 - 140
2-Hexanone	ND		125	90.8		ug/L		73	60 - 140
4-Chlorotoluene	ND	*	25.0	25.3		ug/L		101	60 - 140
4-Isopropyltoluene	ND	*	25.0	27.8		ug/L		111	60 - 140
Acetone	ND		125	97.1		ug/L		78	60 - 140
Benzene	ND		25.0	26.0		ug/L		104	60 - 140
Bromobenzene	ND		25.0	22.5		ug/L		90	60 - 140
Bromoform	ND		25.0	21.4		ug/L		86	56 - 140
Bromomethane	ND		25.0	25.8		ug/L		103	23 - 140
Carbon disulfide	ND	F1	25.0	38.6	F1	ug/L		155	38 - 140
Carbon tetrachloride	ND		25.0	28.1		ug/L		112	60 - 140
Chlorobenzene	ND		25.0	23.7		ug/L		95	60 - 140
Chlorobromomethane	ND		25.0	24.9		ug/L		99	60 - 140
Chloroethane	ND		25.0	25.9		ug/L		104	51 - 140
Chloroform	ND		25.0	25.7		ug/L		103	60 - 140
Chloromethane	ND		25.0	27.7		ug/L		111	52 - 140
cis-1,2-Dichloroethene	0.88		25.0	28.3		ug/L		110	60 - 140
cis-1,3-Dichloropropene	ND		25.0	23.5		ug/L		94	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88056-A-8 MS
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chlorodibromomethane	ND		25.0	22.4		ug/L		89	60 - 140
Dibromomethane	ND		25.0	22.3		ug/L		89	60 - 140
Dichlorobromomethane	ND		25.0	23.6		ug/L		94	60 - 140
Dichlorodifluoromethane	ND		25.0	24.1		ug/L		96	38 - 140
Ethylbenzene	ND		25.0	26.0		ug/L		104	60 - 140
Hexachlorobutadiene	ND		25.0	25.1		ug/L		100	60 - 140
Isopropylbenzene	ND		25.0	27.6		ug/L		111	60 - 140
m-Xylene & p-Xylene	ND		25.0	24.7		ug/L		99	60 - 140
Methylene Chloride	ND		25.0	29.2		ug/L		117	40 - 140
Methyl tert-butyl ether	ND		25.0	22.5		ug/L		90	60 - 138
Naphthalene	ND		25.0	21.5		ug/L		86	56 - 140
n-Butylbenzene	ND	*	25.0	28.3		ug/L		113	60 - 140
N-Propylbenzene	ND	*	25.0	27.4		ug/L		110	60 - 140
o-Xylene	ND		25.0	26.4		ug/L		105	60 - 140
sec-Butylbenzene	ND	*	25.0	29.2		ug/L		117	60 - 140
Styrene	ND		25.0	19.8		ug/L		79	60 - 140
tert-Butylbenzene	ND	*	25.0	27.2		ug/L		109	60 - 140
Tetrachloroethene	9.3		25.0	31.4		ug/L		88	60 - 140
Toluene	ND		25.0	24.5		ug/L		98	60 - 140
trans-1,2-Dichloroethene	ND		25.0	30.8		ug/L		123	60 - 140
trans-1,3-Dichloropropene	ND		25.0	20.8		ug/L		83	60 - 140
Trichloroethene	ND		25.0	23.7		ug/L		95	60 - 140
Trichlorofluoromethane	ND		25.0	26.4		ug/L		106	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	30.0		ug/L		120	60 - 140
Vinyl acetate	ND	*	25.0	26.7		ug/L		107	40 - 140
Vinyl chloride	ND		25.0	26.4		ug/L		106	58 - 140
Ethylene Dibromide	ND		25.0	21.7		ug/L		87	60 - 140
2-Butanone (MEK)	ND		125	97.6		ug/L		78	60 - 140
4-Methyl-2-pentanone (MIBK)	ND		125	108		ug/L		86	58 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*92*		*67 - 130*
Toluene-d8 (Surr)	*89*		*70 - 130*
Dibromofluoromethane (Surr)	*97*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*91*		*72 - 130*

Lab Sample ID: 720-88056-A-8 MSD
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	ND		25.0	22.0		ug/L		88	60 - 140	1	20
1,1,1,2-Tetrachloroethane	ND		25.0	25.6		ug/L		102	60 - 140	1	20
1,1,1-Trichloroethane	ND		25.0	26.4		ug/L		106	60 - 140	9	20
1,1,2,2-Tetrachloroethane	ND		25.0	23.9		ug/L		96	60 - 140	1	20
1,1,2-Trichloroethane	ND		25.0	21.4		ug/L		86	60 - 140	3	20
1,1-Dichloroethane	ND		25.0	26.8		ug/L		107	60 - 140	6	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88056-A-8 MSD
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	ND		25.0	30.7		ug/L		123	60 - 140	8	20
1,1-Dichloropropene	ND		25.0	25.3		ug/L		101	60 - 140	2	20
1,2,3-Trichlorobenzene	ND	*	25.0	24.5		ug/L		98	60 - 140	4	20
1,2,4-Trichlorobenzene	ND	*	25.0	23.3		ug/L		93	60 - 140	4	20
1,2,4-Trimethylbenzene	ND	*	25.0	27.2		ug/L		109	60 - 140	2	20
1,2-Dibromo-3-Chloropropane	ND		25.0	20.9		ug/L		84	60 - 140	8	20
1,2-Dichlorobenzene	ND		25.0	24.5		ug/L		98	60 - 140	1	20
1,2-Dichloroethane	ND		25.0	21.9		ug/L		88	60 - 140	4	20
1,2-Dichloropropane	ND		25.0	25.4		ug/L		102	60 - 140	1	20
1,3,5-Trimethylbenzene	ND	*	25.0	28.2		ug/L		113	60 - 140	4	20
1,3-Dichlorobenzene	ND		25.0	24.9		ug/L		100	60 - 140	2	20
1,3-Dichloropropane	ND		25.0	20.8		ug/L		83	60 - 140	7	20
1,4-Dichlorobenzene	ND	*	25.0	24.9		ug/L		100	60 - 140	1	20
2,2-Dichloropropane	ND		25.0	26.5		ug/L		106	60 - 140	8	20
2-Chlorotoluene	ND	*	25.0	26.9		ug/L		108	60 - 140	3	20
2-Hexanone	ND		125	85.8		ug/L		69	60 - 140	6	20
4-Chlorotoluene	ND	*	25.0	25.4		ug/L		102	60 - 140	0	20
4-Isopropyltoluene	ND	*	25.0	28.6		ug/L		115	60 - 140	3	20
Acetone	ND		125	88.8		ug/L		71	60 - 140	9	20
Benzene	ND		25.0	25.5		ug/L		102	60 - 140	2	20
Bromobenzene	ND		25.0	22.7		ug/L		91	60 - 140	1	20
Bromoform	ND		25.0	20.7		ug/L		83	56 - 140	3	20
Bromomethane	ND		25.0	23.4		ug/L		94	23 - 140	10	20
Carbon disulfide	ND	F1	25.0	35.2	F1	ug/L		141	38 - 140	9	20
Carbon tetrachloride	ND		25.0	26.5		ug/L		106	60 - 140	6	20
Chlorobenzene	ND		25.0	23.2		ug/L		93	60 - 140	2	20
Chlorobromomethane	ND		25.0	22.8		ug/L		91	60 - 140	9	20
Chloroethane	ND		25.0	24.3		ug/L		97	51 - 140	7	20
Chloroform	ND		25.0	25.0		ug/L		100	60 - 140	3	20
Chloromethane	ND		25.0	27.1		ug/L		108	52 - 140	2	20
cis-1,2-Dichloroethene	0.88		25.0	27.1		ug/L		105	60 - 140	4	20
cis-1,3-Dichloropropene	ND		25.0	23.2		ug/L		93	60 - 140	1	20
Chlorodibromomethane	ND		25.0	20.8		ug/L		83	60 - 140	7	20
Dibromomethane	ND		25.0	20.6		ug/L		83	60 - 140	8	20
Dichlorobromomethane	ND		25.0	23.1		ug/L		93	60 - 140	2	20
Dichlorodifluoromethane	ND		25.0	22.4		ug/L		90	38 - 140	7	20
Ethylbenzene	ND		25.0	25.6		ug/L		103	60 - 140	1	20
Hexachlorobutadiene	ND		25.0	26.6		ug/L		107	60 - 140	6	20
Isopropylbenzene	ND		25.0	27.7		ug/L		111	60 - 140	0	20
m-Xylene & p-Xylene	ND		25.0	24.8		ug/L		99	60 - 140	0	20
Methylene Chloride	ND		25.0	26.5		ug/L		106	40 - 140	10	20
Methyl tert-butyl ether	ND		25.0	21.0		ug/L		84	60 - 138	7	20
Naphthalene	ND		25.0	22.7		ug/L		91	56 - 140	6	20
n-Butylbenzene	ND	*	25.0	28.5		ug/L		114	60 - 140	1	20
N-Propylbenzene	ND	*	25.0	27.7		ug/L		111	60 - 140	1	20
o-Xylene	ND		25.0	26.0		ug/L		104	60 - 140	1	20
sec-Butylbenzene	ND	*	25.0	30.3		ug/L		121	60 - 140	4	20
Styrene	ND		25.0	19.5		ug/L		78	60 - 140	2	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88056-A-8 MSD
Matrix: Water
Analysis Batch: 249684

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
tert-Butylbenzene	ND	*	25.0	29.2		ug/L		117	60 - 140	7	20
Tetrachloroethene	9.3		25.0	30.0		ug/L		83	60 - 140	4	20
Toluene	ND		25.0	24.8		ug/L		99	60 - 140	1	20
trans-1,2-Dichloroethene	ND		25.0	28.8		ug/L		115	60 - 140	7	20
trans-1,3-Dichloropropene	ND		25.0	20.2		ug/L		81	60 - 140	3	20
Trichloroethene	ND		25.0	23.4		ug/L		94	60 - 140	1	20
Trichlorofluoromethane	ND		25.0	24.4		ug/L		98	60 - 140	8	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	28.1		ug/L		113	60 - 140	6	20
Vinyl acetate	ND	*	25.0	26.8		ug/L		107	40 - 140	0	20
Vinyl chloride	ND		25.0	24.6		ug/L		98	58 - 140	7	20
Ethylene Dibromide	ND		25.0	20.4		ug/L		82	60 - 140	6	20
2-Butanone (MEK)	ND		125	99.6		ug/L		80	60 - 140	2	20
4-Methyl-2-pentanone (MIBK)	ND		125	104		ug/L		83	58 - 130	4	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene	*88*		*67 - 130*
Toluene-d8 (Surr)	*88*		*70 - 130*
Dibromofluoromethane (Surr)	*91*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*87*		*72 - 130*

Lab Sample ID: MB 720-249691/11
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 10:23	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 10:23	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 10:23	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 10:23	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 10:23	1
1,1-Dichloroethane	ND		0.50		ug/L			08/17/18 10:23	1
1,1-Dichloroethene	ND		0.50		ug/L			08/17/18 10:23	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 10:23	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 10:23	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 10:23	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 10:23	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 10:23	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 10:23	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 10:23	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 10:23	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 10:23	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 10:23	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 10:23	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 10:23	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 10:23	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 10:23	1
2-Hexanone	ND		50		ug/L			08/17/18 10:23	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249691/11
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 10:23	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 10:23	1
Acetone	ND		50		ug/L			08/17/18 10:23	1
Benzene	ND		0.50		ug/L			08/17/18 10:23	1
Bromobenzene	ND		1.0		ug/L			08/17/18 10:23	1
Bromoform	ND		1.0		ug/L			08/17/18 10:23	1
Bromomethane	ND		1.0		ug/L			08/17/18 10:23	1
Carbon disulfide	ND		5.0		ug/L			08/17/18 10:23	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 10:23	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 10:23	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 10:23	1
Chloroethane	ND		1.0		ug/L			08/17/18 10:23	1
Chloroform	ND		1.0		ug/L			08/17/18 10:23	1
Chloromethane	ND		1.0		ug/L			08/17/18 10:23	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 10:23	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 10:23	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 10:23	1
Dibromomethane	ND		0.50		ug/L			08/17/18 10:23	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 10:23	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 10:23	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 10:23	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 10:23	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 10:23	1
Methylene Chloride	ND		5.0		ug/L			08/17/18 10:23	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 10:23	1
Naphthalene	ND		1.0		ug/L			08/17/18 10:23	1
n-Butylbenzene	ND		1.0		ug/L			08/17/18 10:23	1
N-Propylbenzene	ND		1.0		ug/L			08/17/18 10:23	1
sec-Butylbenzene	ND		1.0		ug/L			08/17/18 10:23	1
Styrene	ND		0.50		ug/L			08/17/18 10:23	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 10:23	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 10:23	1
Toluene	ND		0.50		ug/L			08/17/18 10:23	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 10:23	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 10:23	1
Trichloroethene	ND		0.50		ug/L			08/17/18 10:23	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 10:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/17/18 10:23	1
Vinyl acetate	ND		10		ug/L			08/17/18 10:23	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 10:23	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 10:23	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 10:23	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 10:23	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 10:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*74*		*67 - 130*		*08/17/18 10:23*	*1*
Toluene-d8 (Surr)	*93*		*70 - 130*		*08/17/18 10:23*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249691/11
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*99*		*70 - 130*		*08/17/18 10:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*72 - 130*		*08/17/18 10:23*	*1*

Lab Sample ID: LCS 720-249691/17
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	21.5		ug/L		86	77 - 120
1,1,1,2-Tetrachloroethane	25.0	25.4		ug/L		102	81 - 121
1,1,1-Trichloroethane	25.0	32.0		ug/L		128	74 - 130
1,1,2,2-Tetrachloroethane	25.0	22.6		ug/L		90	70 - 115
1,1,2-Trichloroethane	25.0	24.7		ug/L		99	80 - 117
1,1-Dichloroethane	25.0	31.1	*	ug/L		124	77 - 119
1,1-Dichloroethene	25.0	38.0	*	ug/L		152	69 - 119
1,1-Dichloropropene	25.0	28.3		ug/L		113	83 - 130
1,2,3-Trichlorobenzene	25.0	24.5		ug/L		98	87 - 123
1,2,4-Trichlorobenzene	25.0	25.7		ug/L		103	78 - 120
1,2,4-Trimethylbenzene	25.0	28.5		ug/L		114	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	19.0		ug/L		76	74 - 126
1,2-Dichlorobenzene	25.0	25.1		ug/L		100	77 - 117
1,2-Dichloroethane	25.0	24.6		ug/L		98	73 - 122
1,2-Dichloropropane	25.0	28.2		ug/L		113	79 - 119
1,3,5-Trimethylbenzene	25.0	29.1		ug/L		116	77 - 117
1,3-Dichlorobenzene	25.0	26.0		ug/L		104	76 - 116
1,3-Dichloropropane	25.0	24.2		ug/L		97	77 - 117
1,4-Dichlorobenzene	25.0	26.0		ug/L		104	76 - 116
2,2-Dichloropropane	25.0	34.4		ug/L		138	74 - 156
2-Chlorotoluene	25.0	28.1		ug/L		112	75 - 115
2-Hexanone	125	98.1		ug/L		78	63 - 140
4-Chlorotoluene	25.0	26.8		ug/L		107	73 - 119
4-Isopropyltoluene	25.0	29.8		ug/L		119	80 - 120
Acetone	125	107		ug/L		86	61 - 147
Benzene	25.0	28.6		ug/L		114	79 - 119
Bromobenzene	25.0	23.3		ug/L		93	77 - 117
Bromoform	25.0	21.8		ug/L		87	75 - 127
Bromomethane	25.0	27.3		ug/L		109	70 - 132
Carbon disulfide	25.0	43.7	*	ug/L		175	64 - 127
Carbon tetrachloride	25.0	31.6		ug/L		126	72 - 142
Chlorobenzene	25.0	25.2		ug/L		101	76 - 116
Chlorobromomethane	25.0	26.6		ug/L		106	81 - 122
Chloroethane	25.0	27.6		ug/L		110	70 - 131
Chloroform	25.0	28.5		ug/L		114	82 - 119
Chloromethane	25.0	27.5		ug/L		110	49 - 134
cis-1,2-Dichloroethene	25.0	30.0	*	ug/L		120	77 - 117
cis-1,3-Dichloropropene	25.0	26.9		ug/L		108	82 - 119
Chlorodibromomethane	25.0	24.8		ug/L		99	77 - 133
Dibromomethane	25.0	24.5		ug/L		98	79 - 117

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249691/17
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorobromomethane	25.0	25.2		ug/L		101	81 - 130
Dichlorodifluoromethane	25.0	21.0		ug/L		84	21 - 150
Ethylbenzene	25.0	27.8		ug/L		111	77 - 117
Hexachlorobutadiene	25.0	26.3		ug/L		105	78 - 140
Isopropylbenzene	25.0	30.0		ug/L		120	77 - 130
m-Xylene & p-Xylene	25.0	27.0		ug/L		108	74 - 119
Methylene Chloride	25.0	32.0	*	ug/L		128	75 - 117
Methyl tert-butyl ether	25.0	24.9		ug/L		99	70 - 130
Naphthalene	25.0	21.9		ug/L		87	81 - 121
n-Butylbenzene	25.0	31.1	*	ug/L		124	78 - 119
N-Propylbenzene	25.0	29.4		ug/L		117	77 - 117
o-Xylene	25.0	28.0		ug/L		112	77 - 118
sec-Butylbenzene	25.0	30.6	*	ug/L		123	78 - 118
Styrene	25.0	25.1		ug/L		101	76 - 116
tert-Butylbenzene	25.0	27.4		ug/L		110	78 - 118
Tetrachloroethene	25.0	26.4		ug/L		106	81 - 130
Toluene	25.0	25.4		ug/L		102	75 - 120
trans-1,2-Dichloroethene	25.0	35.5	*	ug/L		142	79 - 117
trans-1,3-Dichloropropene	25.0	23.9		ug/L		96	76 - 122
Trichloroethene	25.0	26.2		ug/L		105	80 - 123
Trichlorofluoromethane	25.0	28.5		ug/L		114	75 - 141
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	34.4	*	ug/L		138	70 - 133
Vinyl acetate	25.0	31.2		ug/L		125	50 - 126
Vinyl chloride	25.0	27.1		ug/L		108	58 - 138
Ethylene Dibromide	25.0	23.3		ug/L		93	80 - 121
2-Butanone (MEK)	125	103		ug/L		82	66 - 133
4-Methyl-2-pentanone (MIBK)	125	114		ug/L		91	66 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*90*		*67 - 130*
Toluene-d8 (Surr)	*96*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*90*		*72 - 130*

Lab Sample ID: LCSD 720-249691/18
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	25.0	23.4		ug/L		94	77 - 120	9	20
1,1,1,2-Tetrachloroethane	25.0	24.5		ug/L		98	81 - 121	4	20
1,1,1-Trichloroethane	25.0	30.2		ug/L		121	74 - 130	6	20
1,1,2,2-Tetrachloroethane	25.0	24.0		ug/L		96	70 - 115	6	20
1,1,2-Trichloroethane	25.0	25.0		ug/L		100	80 - 117	1	20
1,1-Dichloroethane	25.0	29.7		ug/L		119	77 - 119	5	20
1,1-Dichloroethene	25.0	35.1	*	ug/L		140	69 - 119	8	20
1,1-Dichloropropene	25.0	28.2		ug/L		113	83 - 130	0	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249691/18
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene	25.0	25.2		ug/L		101	87 - 123	3	20
1,2,4-Trichlorobenzene	25.0	24.9		ug/L		100	78 - 120	3	20
1,2,4-Trimethylbenzene	25.0	28.1		ug/L		112	75 - 115	1	20
1,2-Dibromo-3-Chloropropane	25.0	21.3		ug/L		85	74 - 126	11	20
1,2-Dichlorobenzene	25.0	24.6		ug/L		98	77 - 117	2	20
1,2-Dichloroethane	25.0	24.3		ug/L		97	73 - 122	1	20
1,2-Dichloropropane	25.0	28.3		ug/L		113	79 - 119	0	20
1,3,5-Trimethylbenzene	25.0	28.5		ug/L		114	77 - 117	2	20
1,3-Dichlorobenzene	25.0	25.7		ug/L		103	76 - 116	1	20
1,3-Dichloropropane	25.0	25.8		ug/L		103	77 - 117	6	20
1,4-Dichlorobenzene	25.0	25.6		ug/L		102	76 - 116	2	20
2,2-Dichloropropane	25.0	31.2		ug/L		125	74 - 156	10	20
2-Chlorotoluene	25.0	27.6		ug/L		111	75 - 115	2	20
2-Hexanone	125	108		ug/L		87	63 - 140	10	24
4-Chlorotoluene	25.0	26.8		ug/L		107	73 - 119	0	20
4-Isopropyltoluene	25.0	29.1		ug/L		116	80 - 120	3	20
Acetone	125	104		ug/L		83	61 - 147	3	30
Benzene	25.0	27.8		ug/L		111	79 - 119	3	20
Bromobenzene	25.0	23.3		ug/L		93	77 - 117	0	20
Bromoform	25.0	22.9		ug/L		91	75 - 127	5	20
Bromomethane	25.0	24.4		ug/L		98	70 - 132	11	20
Carbon disulfide	25.0	39.6	*	ug/L		158	64 - 127	10	20
Carbon tetrachloride	25.0	29.3		ug/L		117	72 - 142	7	20
Chlorobenzene	25.0	25.3		ug/L		101	76 - 116	1	20
Chlorobromomethane	25.0	25.3		ug/L		101	81 - 122	5	20
Chloroethane	25.0	24.9		ug/L		99	70 - 131	10	20
Chloroform	25.0	27.6		ug/L		110	82 - 119	3	20
Chloromethane	25.0	24.6		ug/L		98	49 - 134	11	20
cis-1,2-Dichloroethene	25.0	28.5		ug/L		114	77 - 117	5	20
cis-1,3-Dichloropropene	25.0	27.7		ug/L		111	82 - 119	3	20
Chlorodibromomethane	25.0	24.8		ug/L		99	77 - 133	0	20
Dibromomethane	25.0	23.8		ug/L		95	79 - 117	3	20
Dichlorobromomethane	25.0	25.3		ug/L		101	81 - 130	1	20
Dichlorodifluoromethane	25.0	18.1		ug/L		72	21 - 150	15	20
Ethylbenzene	25.0	27.8		ug/L		111	77 - 117	0	20
Hexachlorobutadiene	25.0	26.3		ug/L		105	78 - 140	0	20
Isopropylbenzene	25.0	28.9		ug/L		116	77 - 130	4	20
m-Xylene & p-Xylene	25.0	27.0		ug/L		108	74 - 119	0	20
Methylene Chloride	25.0	29.3		ug/L		117	75 - 117	9	20
Methyl tert-butyl ether	25.0	24.8		ug/L		99	70 - 130	0	20
Naphthalene	25.0	23.4		ug/L		94	81 - 121	7	20
n-Butylbenzene	25.0	30.4	*	ug/L		122	78 - 119	2	20
N-Propylbenzene	25.0	29.2		ug/L		117	77 - 117	1	20
o-Xylene	25.0	27.3		ug/L		109	77 - 118	3	20
sec-Butylbenzene	25.0	29.6	*	ug/L		119	78 - 118	3	20
Styrene	25.0	25.2		ug/L		101	76 - 116	0	20
tert-Butylbenzene	25.0	27.2		ug/L		109	78 - 118	1	20
Tetrachloroethene	25.0	26.0		ug/L		104	81 - 130	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249691/18
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toluene	25.0	25.7		ug/L		103	75 - 120	1	20
trans-1,2-Dichloroethene	25.0	32.7	*	ug/L		131	79 - 117	8	20
trans-1,3-Dichloropropene	25.0	24.9		ug/L		100	76 - 122	4	20
Trichloroethene	25.0	25.5		ug/L		102	80 - 123	3	20
Trichlorofluoromethane	25.0	25.5		ug/L		102	75 - 141	11	20
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	31.6		ug/L		126	70 - 133	9	20
Vinyl acetate	25.0	33.2	*	ug/L		133	50 - 126	6	20
Vinyl chloride	25.0	24.6		ug/L		98	58 - 138	9	20
Ethylene Dibromide	25.0	24.2		ug/L		97	80 - 121	4	20
2-Butanone (MEK)	125	104		ug/L		84	66 - 133	2	22
4-Methyl-2-pentanone (MIBK)	125	123		ug/L		99	66 - 140	8	21

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*90*		*67 - 130*
Toluene-d8 (Surr)	*97*		*70 - 130*
Dibromofluoromethane (Surr)	*96*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*88*		*72 - 130*

Lab Sample ID: 720-88066-A-5 MS
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		25.0	28.5		ug/L		114	60 - 140
1,1,1,2-Tetrachloroethane	ND		25.0	28.2		ug/L		113	60 - 140
1,1,1-Trichloroethane	ND		25.0	23.1		ug/L		93	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	30.4		ug/L		122	60 - 140
1,1,2-Trichloroethane	ND		25.0	28.9		ug/L		115	60 - 140
1,1-Dichloroethane	ND	*	25.0	23.4		ug/L		94	60 - 140
1,1-Dichloroethene	ND	*	25.0	24.6		ug/L		98	60 - 140
1,1-Dichloropropene	ND		25.0	22.3		ug/L		89	60 - 140
1,2,3-Trichlorobenzene	ND		25.0	30.6		ug/L		122	60 - 140
1,2,4-Trichlorobenzene	ND		25.0	30.4		ug/L		121	60 - 140
1,2,4-Trimethylbenzene	ND		25.0	31.5		ug/L		126	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	25.5		ug/L		102	60 - 140
1,2-Dichlorobenzene	ND		25.0	30.0		ug/L		120	60 - 140
1,2-Dichloroethane	ND		25.0	22.4		ug/L		90	60 - 140
1,2-Dichloropropane	ND		25.0	26.2		ug/L		105	60 - 140
1,3,5-Trimethylbenzene	ND		25.0	32.0		ug/L		128	60 - 140
1,3-Dichlorobenzene	ND		25.0	29.7		ug/L		119	60 - 140
1,3-Dichloropropane	ND		25.0	26.7		ug/L		107	60 - 140
1,4-Dichlorobenzene	ND		25.0	30.5		ug/L		122	60 - 140
2,2-Dichloropropane	ND		25.0	23.8		ug/L		95	60 - 140
2-Chlorotoluene	ND		25.0	30.9		ug/L		124	60 - 140
2-Hexanone	ND		125	105		ug/L		84	60 - 140
4-Chlorotoluene	ND		25.0	30.2		ug/L		121	60 - 140
4-Isopropyltoluene	ND		25.0	33.4		ug/L		134	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88066-A-5 MS
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	ND		125	108		ug/L		86	60 - 140
Benzene	ND		25.0	22.7		ug/L		91	60 - 140
Bromobenzene	ND		25.0	25.6		ug/L		102	60 - 140
Bromoform	ND		25.0	25.4		ug/L		102	56 - 140
Bromomethane	ND		25.0	22.7		ug/L		91	23 - 140
Carbon disulfide	ND	*	25.0	28.0		ug/L		112	38 - 140
Carbon tetrachloride	ND		25.0	23.7		ug/L		95	60 - 140
Chlorobenzene	ND		25.0	26.5		ug/L		106	60 - 140
Chlorobromomethane	ND		25.0	21.7		ug/L		87	60 - 140
Chloroethane	ND		25.0	22.6		ug/L		90	51 - 140
Chloroform	ND		25.0	24.2		ug/L		97	60 - 140
Chloromethane	ND	F2	25.0	23.1		ug/L		92	52 - 140
cis-1,2-Dichloroethene	ND	*	25.0	23.6		ug/L		95	60 - 140
cis-1,3-Dichloropropene	ND		25.0	27.2		ug/L		109	60 - 140
Chlorodibromomethane	ND		25.0	28.0		ug/L		112	60 - 140
Dibromomethane	ND		25.0	23.7		ug/L		95	60 - 140
Dichlorobromomethane	ND		25.0	26.3		ug/L		105	60 - 140
Dichlorodifluoromethane	ND	F2	25.0	16.3		ug/L		65	38 - 140
Ethylbenzene	ND		25.0	28.6		ug/L		115	60 - 140
Hexachlorobutadiene	ND		25.0	30.8		ug/L		123	60 - 140
Isopropylbenzene	ND		25.0	31.9		ug/L		128	60 - 140
m-Xylene & p-Xylene	ND		25.0	27.7		ug/L		111	60 - 140
Methylene Chloride	ND	*	25.0	22.8		ug/L		91	40 - 140
Methyl tert-butyl ether	ND		25.0	19.1		ug/L		77	60 - 138
Naphthalene	ND		25.0	29.4		ug/L		118	56 - 140
n-Butylbenzene	ND	* F1	25.0	34.3		ug/L		137	60 - 140
N-Propylbenzene	ND		25.0	31.7		ug/L		127	60 - 140
o-Xylene	ND		25.0	29.8		ug/L		119	60 - 140
sec-Butylbenzene	ND	*	25.0	34.1		ug/L		136	60 - 140
Styrene	ND		25.0	27.9		ug/L		112	60 - 140
tert-Butylbenzene	ND		25.0	32.5		ug/L		130	60 - 140
Tetrachloroethene	ND		25.0	22.9		ug/L		92	60 - 140
Toluene	ND		25.0	24.4		ug/L		97	60 - 140
trans-1,2-Dichloroethene	ND	*	25.0	24.4		ug/L		97	60 - 140
trans-1,3-Dichloropropene	ND		25.0	25.7		ug/L		103	60 - 140
Trichloroethene	ND		25.0	22.7		ug/L		91	60 - 140
Trichlorofluoromethane	ND		25.0	23.6		ug/L		94	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	*	25.0	22.7		ug/L		91	60 - 140
Vinyl acetate	ND	*	25.0	33.1		ug/L		132	40 - 140
Vinyl chloride	ND	F2	25.0	22.4		ug/L		90	58 - 140
Ethylene Dibromide	ND		25.0	25.1		ug/L		100	60 - 140
2-Butanone (MEK)	ND		125	112		ug/L		89	60 - 140
4-Methyl-2-pentanone (MIBK)	ND		125	126		ug/L		101	58 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*89*		*67 - 130*
Toluene-d8 (Surr)	*92*		*70 - 130*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88066-A-5 MS
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Dibromofluoromethane (Surr)	*95*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*89*		*72 - 130*

Lab Sample ID: 720-88066-A-5 MSD
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	ND		25.0	26.6		ug/L		106	60 - 140	7	20
1,1,1,2-Tetrachloroethane	ND		25.0	28.9		ug/L		116	60 - 140	3	20
1,1,1-Trichloroethane	ND		25.0	26.5		ug/L		106	60 - 140	14	20
1,1,2,2-Tetrachloroethane	ND		25.0	29.4		ug/L		118	60 - 140	4	20
1,1,2-Trichloroethane	ND		25.0	27.8		ug/L		111	60 - 140	4	20
1,1-Dichloroethane	ND	*	25.0	25.3		ug/L		101	60 - 140	8	20
1,1-Dichloroethene	ND	*	25.0	27.8		ug/L		111	60 - 140	12	20
1,1-Dichloropropene	ND		25.0	22.6		ug/L		90	60 - 140	1	20
1,2,3-Trichlorobenzene	ND		25.0	31.9		ug/L		128	60 - 140	4	20
1,2,4-Trichlorobenzene	ND		25.0	31.2		ug/L		125	60 - 140	3	20
1,2,4-Trimethylbenzene	ND		25.0	31.8		ug/L		127	60 - 140	1	20
1,2-Dibromo-3-Chloropropane	ND		25.0	27.5		ug/L		110	60 - 140	7	20
1,2-Dichlorobenzene	ND		25.0	29.7		ug/L		119	60 - 140	1	20
1,2-Dichloroethane	ND		25.0	22.9		ug/L		91	60 - 140	2	20
1,2-Dichloropropane	ND		25.0	27.0		ug/L		108	60 - 140	3	20
1,3,5-Trimethylbenzene	ND		25.0	31.9		ug/L		127	60 - 140	0	20
1,3-Dichlorobenzene	ND		25.0	29.9		ug/L		120	60 - 140	1	20
1,3-Dichloropropane	ND		25.0	27.3		ug/L		109	60 - 140	2	20
1,4-Dichlorobenzene	ND		25.0	30.2		ug/L		121	60 - 140	1	20
2,2-Dichloropropane	ND		25.0	26.6		ug/L		107	60 - 140	11	20
2-Chlorotoluene	ND		25.0	30.3		ug/L		121	60 - 140	2	20
2-Hexanone	ND		125	109		ug/L		87	60 - 140	4	20
4-Chlorotoluene	ND		25.0	30.3		ug/L		121	60 - 140	0	20
4-Isopropyltoluene	ND		25.0	33.8		ug/L		135	60 - 140	1	20
Acetone	ND		125	116		ug/L		93	60 - 140	7	20
Benzene	ND		25.0	23.8		ug/L		95	60 - 140	4	20
Bromobenzene	ND		25.0	25.7		ug/L		103	60 - 140	1	20
Bromoform	ND		25.0	25.9		ug/L		103	56 - 140	2	20
Bromomethane	ND		25.0	26.3		ug/L		105	23 - 140	14	20
Carbon disulfide	ND	*	25.0	32.0		ug/L		128	38 - 140	13	20
Carbon tetrachloride	ND		25.0	26.2		ug/L		105	60 - 140	10	20
Chlorobenzene	ND		25.0	26.7		ug/L		107	60 - 140	1	20
Chlorobromomethane	ND		25.0	23.7		ug/L		95	60 - 140	9	20
Chloroethane	ND		25.0	27.2		ug/L		109	51 - 140	19	20
Chloroform	ND		25.0	25.9		ug/L		104	60 - 140	7	20
Chloromethane	ND	F2	25.0	28.6	F2	ug/L		114	52 - 140	21	20
cis-1,2-Dichloroethene	ND	*	25.0	25.4		ug/L		101	60 - 140	7	20
cis-1,3-Dichloropropene	ND		25.0	27.3		ug/L		109	60 - 140	0	20
Chlorodibromomethane	ND		25.0	29.1		ug/L		116	60 - 140	4	20
Dibromomethane	ND		25.0	23.8		ug/L		95	60 - 140	0	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88066-A-5 MSD
Matrix: Water
Analysis Batch: 249691

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dichlorobromomethane	ND		25.0	27.1		ug/L		108	60 - 140	3	20
Dichlorodifluoromethane	ND	F2	25.0	20.3	F2	ug/L		81	38 - 140	22	20
Ethylbenzene	ND		25.0	29.2		ug/L		117	60 - 140	2	20
Hexachlorobutadiene	ND		25.0	31.8		ug/L		127	60 - 140	3	20
Isopropylbenzene	ND		25.0	33.1		ug/L		132	60 - 140	4	20
m-Xylene & p-Xylene	ND		25.0	28.3		ug/L		113	60 - 140	2	20
Methylene Chloride	ND	*	25.0	25.7		ug/L		103	40 - 140	12	20
Methyl tert-butyl ether	ND		25.0	21.7		ug/L		87	60 - 138	13	20
Naphthalene	ND		25.0	30.7		ug/L		123	56 - 140	4	20
n-Butylbenzene	ND	* F1	25.0	35.3	F1	ug/L		141	60 - 140	3	20
N-Propylbenzene	ND		25.0	31.7		ug/L		127	60 - 140	0	20
o-Xylene	ND		25.0	30.3		ug/L		121	60 - 140	2	20
sec-Butylbenzene	ND	*	25.0	34.3		ug/L		137	60 - 140	1	20
Styrene	ND		25.0	28.5		ug/L		114	60 - 140	2	20
tert-Butylbenzene	ND		25.0	31.2		ug/L		125	60 - 140	4	20
Tetrachloroethene	ND		25.0	23.9		ug/L		96	60 - 140	4	20
Toluene	ND		25.0	24.1		ug/L		96	60 - 140	1	20
trans-1,2-Dichloroethene	ND	*	25.0	27.0		ug/L		108	60 - 140	10	20
trans-1,3-Dichloropropene	ND		25.0	26.4		ug/L		105	60 - 140	3	20
Trichloroethene	ND		25.0	22.9		ug/L		91	60 - 140	1	20
Trichlorofluoromethane	ND		25.0	27.7		ug/L		111	60 - 140	16	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	*	25.0	25.8		ug/L		103	60 - 140	13	20
Vinyl acetate	ND	*	25.0	32.2		ug/L		129	40 - 140	3	20
Vinyl chloride	ND	F2	25.0	27.7	F2	ug/L		111	58 - 140	21	20
Ethylene Dibromide	ND		25.0	26.3		ug/L		105	60 - 140	5	20
2-Butanone (MEK)	ND		125	109		ug/L		87	60 - 140	2	20
4-Methyl-2-pentanone (MIBK)	ND		125	125		ug/L		100	58 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene	*92*		*67 - 130*
Toluene-d8 (Surr)	*96*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*85*		*72 - 130*

Lab Sample ID: MB 720-249695/4
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/17/18 09:08	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 09:08	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/17/18 09:08	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/17/18 09:08	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/17/18 09:08	1
1,1-Dichloroethane	ND		0.50		ug/L			08/17/18 09:08	1
1,1-Dichloroethene	ND		0.50		ug/L			08/17/18 09:08	1
1,1-Dichloropropene	ND		0.50		ug/L			08/17/18 09:08	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249695/4
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/17/18 09:08	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/17/18 09:08	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/17/18 09:08	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/17/18 09:08	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/17/18 09:08	1
1,2-Dichloroethane	ND		0.50		ug/L			08/17/18 09:08	1
1,2-Dichloropropane	ND		0.50		ug/L			08/17/18 09:08	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/17/18 09:08	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/17/18 09:08	1
1,3-Dichloropropane	ND		1.0		ug/L			08/17/18 09:08	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/17/18 09:08	1
2,2-Dichloropropane	ND		0.50		ug/L			08/17/18 09:08	1
2-Chlorotoluene	ND		0.50		ug/L			08/17/18 09:08	1
2-Hexanone	ND		50		ug/L			08/17/18 09:08	1
4-Chlorotoluene	ND		0.50		ug/L			08/17/18 09:08	1
4-Isopropyltoluene	ND		1.0		ug/L			08/17/18 09:08	1
Acetone	ND		50		ug/L			08/17/18 09:08	1
Benzene	ND		0.50		ug/L			08/17/18 09:08	1
Bromobenzene	ND		1.0		ug/L			08/17/18 09:08	1
Bromoform	ND		1.0		ug/L			08/17/18 09:08	1
Bromomethane	ND		1.0		ug/L			08/17/18 09:08	1
Carbon disulfide	ND		5.0		ug/L			08/17/18 09:08	1
Carbon tetrachloride	ND		0.50		ug/L			08/17/18 09:08	1
Chlorobenzene	ND		0.50		ug/L			08/17/18 09:08	1
Chlorobromomethane	ND		1.0		ug/L			08/17/18 09:08	1
Chloroethane	ND		1.0		ug/L			08/17/18 09:08	1
Chloroform	ND		1.0		ug/L			08/17/18 09:08	1
Chloromethane	ND		1.0		ug/L			08/17/18 09:08	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 09:08	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 09:08	1
Chlorodibromomethane	ND		0.50		ug/L			08/17/18 09:08	1
Dibromomethane	ND		0.50		ug/L			08/17/18 09:08	1
Dichlorobromomethane	ND		0.50		ug/L			08/17/18 09:08	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/17/18 09:08	1
Ethylbenzene	ND		0.50		ug/L			08/17/18 09:08	1
Hexachlorobutadiene	ND		1.0		ug/L			08/17/18 09:08	1
Isopropylbenzene	ND		0.50		ug/L			08/17/18 09:08	1
Methylene Chloride	ND		5.0		ug/L			08/17/18 09:08	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/17/18 09:08	1
Naphthalene	ND		1.0		ug/L			08/17/18 09:08	1
n-Butylbenzene	ND		1.0		ug/L			08/17/18 09:08	1
N-Propylbenzene	ND		1.0		ug/L			08/17/18 09:08	1
sec-Butylbenzene	ND		1.0		ug/L			08/17/18 09:08	1
Styrene	ND		0.50		ug/L			08/17/18 09:08	1
tert-Butylbenzene	ND		1.0		ug/L			08/17/18 09:08	1
Tetrachloroethene	ND		0.50		ug/L			08/17/18 09:08	1
Toluene	ND		0.50		ug/L			08/17/18 09:08	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/17/18 09:08	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249695/4
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/17/18 09:08	1
Trichloroethene	ND		0.50		ug/L			08/17/18 09:08	1
Trichlorofluoromethane	ND		1.0		ug/L			08/17/18 09:08	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/17/18 09:08	1
Vinyl acetate	ND		10		ug/L			08/17/18 09:08	1
Vinyl chloride	ND		0.50		ug/L			08/17/18 09:08	1
Xylenes, Total	ND		0.50		ug/L			08/17/18 09:08	1
Ethylene Dibromide	ND		0.50		ug/L			08/17/18 09:08	1
2-Butanone (MEK)	ND		50		ug/L			08/17/18 09:08	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/17/18 09:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*93*		*67 - 130*		*08/17/18 09:08*	*1*
Toluene-d8 (Surr)	*90*		*70 - 130*		*08/17/18 09:08*	*1*
Dibromofluoromethane (Surr)	*93*		*70 - 130*		*08/17/18 09:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*72 - 130*		*08/17/18 09:08*	*1*

Lab Sample ID: LCS 720-249695/5
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	21.7		ug/L		87	77 - 120
1,1,1,2-Tetrachloroethane	25.0	24.8		ug/L		99	81 - 121
1,1,1-Trichloroethane	25.0	27.3		ug/L		109	74 - 130
1,1,2,2-Tetrachloroethane	25.0	20.1		ug/L		81	70 - 115
1,1,2-Trichloroethane	25.0	22.4		ug/L		89	80 - 117
1,1-Dichloroethane	25.0	22.7		ug/L		91	77 - 119
1,1-Dichloroethene	25.0	20.8		ug/L		83	69 - 119
1,1-Dichloropropene	25.0	24.5		ug/L		98	83 - 130
1,2,3-Trichlorobenzene	25.0	23.5		ug/L		94	87 - 123
1,2,4-Trichlorobenzene	25.0	24.5		ug/L		98	78 - 120
1,2,4-Trimethylbenzene	25.0	24.3		ug/L		97	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	21.0		ug/L		84	74 - 126
1,2-Dichlorobenzene	25.0	23.1		ug/L		92	77 - 117
1,2-Dichloroethane	25.0	26.8		ug/L		107	73 - 122
1,2-Dichloropropane	25.0	22.0		ug/L		88	79 - 119
1,3,5-Trimethylbenzene	25.0	24.7		ug/L		99	77 - 117
1,3-Dichlorobenzene	25.0	23.0		ug/L		92	76 - 116
1,3-Dichloropropane	25.0	23.2		ug/L		93	77 - 117
1,4-Dichlorobenzene	25.0	23.0		ug/L		92	76 - 116
2,2-Dichloropropane	25.0	27.5		ug/L		110	74 - 156
2-Chlorotoluene	25.0	23.6		ug/L		95	75 - 115
2-Hexanone	125	122		ug/L		98	63 - 140
4-Chlorotoluene	25.0	23.8		ug/L		95	73 - 119
4-Isopropyltoluene	25.0	24.8		ug/L		99	80 - 120
Acetone	125	118		ug/L		95	61 - 147
Benzene	25.0	22.2		ug/L		89	79 - 119

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249695/5
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bromobenzene	25.0	23.0		ug/L		92	77 - 117
Bromoform	25.0	24.1		ug/L		96	75 - 127
Bromomethane	25.0	23.5		ug/L		94	70 - 132
Carbon disulfide	25.0	18.7		ug/L		75	64 - 127
Carbon tetrachloride	25.0	28.5		ug/L		114	72 - 142
Chlorobenzene	25.0	23.2		ug/L		93	76 - 116
Chlorobromomethane	25.0	23.0		ug/L		92	81 - 122
Chloroethane	25.0	23.3		ug/L		93	70 - 131
Chloroform	25.0	25.5		ug/L		102	82 - 119
Chloromethane	25.0	21.4		ug/L		86	49 - 134
cis-1,2-Dichloroethene	25.0	23.6		ug/L		95	77 - 117
cis-1,3-Dichloropropene	25.0	24.5		ug/L		98	82 - 119
Chlorodibromomethane	25.0	25.2		ug/L		101	77 - 133
Dibromomethane	25.0	24.0		ug/L		96	79 - 117
Dichlorobromomethane	25.0	25.4		ug/L		102	81 - 130
Dichlorodifluoromethane	25.0	24.3		ug/L		97	21 - 150
Ethylbenzene	25.0	23.8		ug/L		95	77 - 117
Hexachlorobutadiene	25.0	25.4		ug/L		102	78 - 140
Isopropylbenzene	25.0	24.7		ug/L		99	77 - 130
m-Xylene & p-Xylene	25.0	24.4		ug/L		98	74 - 119
Methylene Chloride	25.0	21.5		ug/L		86	75 - 117
Methyl tert-butyl ether	25.0	24.8		ug/L		99	70 - 130
Naphthalene	25.0	21.7		ug/L		87	81 - 121
n-Butylbenzene	25.0	24.9		ug/L		99	78 - 119
N-Propylbenzene	25.0	23.9		ug/L		96	77 - 117
o-Xylene	25.0	24.4		ug/L		98	77 - 118
sec-Butylbenzene	25.0	24.1		ug/L		96	78 - 118
Styrene	25.0	24.6		ug/L		98	76 - 116
tert-Butylbenzene	25.0	24.2		ug/L		97	78 - 118
Tetrachloroethene	25.0	25.2		ug/L		101	81 - 130
Toluene	25.0	23.1		ug/L		92	75 - 120
trans-1,2-Dichloroethene	25.0	21.2		ug/L		85	79 - 117
trans-1,3-Dichloropropene	25.0	25.6		ug/L		102	76 - 122
Trichloroethene	25.0	23.6		ug/L		94	80 - 123
Trichlorofluoromethane	25.0	28.2		ug/L		113	75 - 141
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	23.6		ug/L		94	70 - 133
Vinyl acetate	25.0	29.8		ug/L		119	50 - 126
Vinyl chloride	25.0	23.1		ug/L		92	58 - 138
Ethylene Dibromide	25.0	23.4		ug/L		94	80 - 121
2-Butanone (MEK)	125	111		ug/L		89	66 - 133
4-Methyl-2-pentanone (MIBK)	125	122		ug/L		97	66 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*95*		*67 - 130*
Toluene-d8 (Surr)	*93*		*70 - 130*
Dibromofluoromethane (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*108*		*72 - 130*

Lab Sample ID: LCSD 720-249695/6
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	25.0	22.6		ug/L		90	77 - 120	4	20
1,1,1,2-Tetrachloroethane	25.0	24.6		ug/L		98	81 - 121	1	20
1,1,1-Trichloroethane	25.0	26.5		ug/L		106	74 - 130	3	20
1,1,2,2-Tetrachloroethane	25.0	21.2		ug/L		85	70 - 115	5	20
1,1,2-Trichloroethane	25.0	22.8		ug/L		91	80 - 117	2	20
1,1-Dichloroethane	25.0	23.0		ug/L		92	77 - 119	1	20
1,1-Dichloroethene	25.0	20.2		ug/L		81	69 - 119	3	20
1,1-Dichloropropene	25.0	24.3		ug/L		97	83 - 130	1	20
1,2,3-Trichlorobenzene	25.0	23.8		ug/L		95	87 - 123	1	20
1,2,4-Trichlorobenzene	25.0	24.6		ug/L		98	78 - 120	0	20
1,2,4-Trimethylbenzene	25.0	24.4		ug/L		98	75 - 115	0	20
1,2-Dibromo-3-Chloropropane	25.0	21.9		ug/L		88	74 - 126	4	20
1,2-Dichlorobenzene	25.0	23.1		ug/L		93	77 - 117	0	20
1,2-Dichloroethane	25.0	26.8		ug/L		107	73 - 122	0	20
1,2-Dichloropropane	25.0	21.9		ug/L		88	79 - 119	1	20
1,3,5-Trimethylbenzene	25.0	24.4		ug/L		98	77 - 117	1	20
1,3-Dichlorobenzene	25.0	23.2		ug/L		93	76 - 116	1	20
1,3-Dichloropropane	25.0	23.1		ug/L		93	77 - 117	0	20
1,4-Dichlorobenzene	25.0	23.2		ug/L		93	76 - 116	1	20
2,2-Dichloropropane	25.0	26.5		ug/L		106	74 - 156	3	20
2-Chlorotoluene	25.0	23.6		ug/L		94	75 - 115	0	20
2-Hexanone	125	126		ug/L		101	63 - 140	4	24
4-Chlorotoluene	25.0	24.0		ug/L		96	73 - 119	1	20
4-Isopropyltoluene	25.0	24.3		ug/L		97	80 - 120	2	20
Acetone	125	115		ug/L		92	61 - 147	3	30
Benzene	25.0	22.0		ug/L		88	79 - 119	1	20
Bromobenzene	25.0	23.2		ug/L		93	77 - 117	1	20
Bromoform	25.0	24.3		ug/L		97	75 - 127	1	20
Bromomethane	25.0	23.6		ug/L		94	70 - 132	0	20
Carbon disulfide	25.0	18.3		ug/L		73	64 - 127	2	20
Carbon tetrachloride	25.0	27.2		ug/L		109	72 - 142	4	20
Chlorobenzene	25.0	22.8		ug/L		91	76 - 116	2	20
Chlorobromomethane	25.0	22.9		ug/L		92	81 - 122	0	20
Chloroethane	25.0	23.6		ug/L		94	70 - 131	1	20
Chloroform	25.0	24.9		ug/L		100	82 - 119	2	20
Chloromethane	25.0	22.1		ug/L		89	49 - 134	3	20
cis-1,2-Dichloroethene	25.0	23.3		ug/L		93	77 - 117	1	20
cis-1,3-Dichloropropene	25.0	25.0		ug/L		100	82 - 119	2	20
Chlorodibromomethane	25.0	25.7		ug/L		103	77 - 133	2	20
Dibromomethane	25.0	24.4		ug/L		97	79 - 117	2	20
Dichlorobromomethane	25.0	25.4		ug/L		102	81 - 130	0	20
Dichlorodifluoromethane	25.0	23.4		ug/L		93	21 - 150	4	20
Ethylbenzene	25.0	23.5		ug/L		94	77 - 117	1	20
Hexachlorobutadiene	25.0	24.8		ug/L		99	78 - 140	2	20
Isopropylbenzene	25.0	24.0		ug/L		96	77 - 130	3	20
m-Xylene & p-Xylene	25.0	24.1		ug/L		96	74 - 119	1	20
Methylene Chloride	25.0	21.1		ug/L		84	75 - 117	2	20
Methyl tert-butyl ether	25.0	25.1		ug/L		100	70 - 130	1	20
Naphthalene	25.0	22.8		ug/L		91	81 - 121	5	20
n-Butylbenzene	25.0	24.7		ug/L		99	78 - 119	0	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249695/6
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-Propylbenzene			25.0	23.9		ug/L		95	77 - 117	0	20
o-Xylene			25.0	24.0		ug/L		96	77 - 118	2	20
sec-Butylbenzene			25.0	23.9		ug/L		96	78 - 118	1	20
Styrene			25.0	24.4		ug/L		97	76 - 116	1	20
tert-Butylbenzene			25.0	23.9		ug/L		95	78 - 118	1	20
Tetrachloroethene			25.0	24.5		ug/L		98	81 - 130	3	20
Toluene			25.0	22.9		ug/L		92	75 - 120	1	20
trans-1,2-Dichloroethene			25.0	20.7		ug/L		83	79 - 117	2	20
trans-1,3-Dichloropropene			25.0	25.8		ug/L		103	76 - 122	1	20
Trichloroethene			25.0	23.2		ug/L		93	80 - 123	2	20
Trichlorofluoromethane			25.0	27.1		ug/L		108	75 - 141	4	20
1,1,2-Trichloro-1,2,2-trifluoroethane			25.0	22.7		ug/L		91	70 - 133	4	20
Vinyl acetate			25.0	30.8		ug/L		123	50 - 126	3	20
Vinyl chloride			25.0	23.4		ug/L		94	58 - 138	2	20
Ethylene Dibromide			25.0	23.5		ug/L		94	80 - 121	0	20
2-Butanone (MEK)			125	120		ug/L		96	66 - 133	8	22
4-Methyl-2-pentanone (MIBK)			125	126		ug/L		101	66 - 140	4	21

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*94*		*67 - 130*
Toluene-d8 (Surr)	*93*		*70 - 130*
Dibromofluoromethane (Surr)	*94*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*106*		*72 - 130*

Lab Sample ID: 720-88082-A-2 MS
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		25.0	22.8		ug/L		91	60 - 140
1,1,1,2-Tetrachloroethane	ND		25.0	24.4		ug/L		98	60 - 140
1,1,1-Trichloroethane	ND		25.0	26.1		ug/L		104	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	21.1		ug/L		85	60 - 140
1,1,2-Trichloroethane	ND		25.0	23.3		ug/L		93	60 - 140
1,1-Dichloroethane	ND		25.0	23.0		ug/L		92	60 - 140
1,1-Dichloroethene	ND		25.0	21.0		ug/L		84	60 - 140
1,1-Dichloropropene	ND		25.0	23.9		ug/L		96	60 - 140
1,2,3-Trichlorobenzene	ND		25.0	22.9		ug/L		92	60 - 140
1,2,4-Trichlorobenzene	ND		25.0	23.7		ug/L		95	60 - 140
1,2,4-Trimethylbenzene	ND		25.0	23.3		ug/L		93	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	22.9		ug/L		91	60 - 140
1,2-Dichlorobenzene	ND		25.0	22.4		ug/L		90	60 - 140
1,2-Dichloroethane	ND		25.0	26.8		ug/L		107	60 - 140
1,2-Dichloropropane	ND		25.0	21.5		ug/L		86	60 - 140
1,3,5-Trimethylbenzene	ND		25.0	23.8		ug/L		95	60 - 140
1,3-Dichlorobenzene	ND		25.0	22.5		ug/L		90	60 - 140
1,3-Dichloropropane	ND		25.0	23.9		ug/L		96	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88082-A-2 MS
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	ND		25.0	22.2		ug/L		89	60 - 140
2,2-Dichloropropane	ND		25.0	25.2		ug/L		101	60 - 140
2-Chlorotoluene	ND		25.0	22.9		ug/L		92	60 - 140
2-Hexanone	ND		125	132		ug/L		106	60 - 140
4-Chlorotoluene	ND		25.0	23.1		ug/L		92	60 - 140
4-Isopropyltoluene	ND		25.0	23.7		ug/L		95	60 - 140
Acetone	ND		125	117		ug/L		94	60 - 140
Benzene	ND		25.0	21.8		ug/L		87	60 - 140
Bromobenzene	ND		25.0	22.4		ug/L		90	60 - 140
Bromoform	ND		25.0	24.9		ug/L		100	56 - 140
Bromomethane	ND		25.0	23.4		ug/L		94	23 - 140
Carbon disulfide	ND		25.0	18.4		ug/L		74	38 - 140
Carbon tetrachloride	ND		25.0	26.8		ug/L		107	60 - 140
Chlorobenzene	ND		25.0	22.6		ug/L		90	60 - 140
Chlorobromomethane	ND		25.0	23.2		ug/L		93	60 - 140
Chloroethane	ND		25.0	23.6		ug/L		94	51 - 140
Chloroform	ND		25.0	24.8		ug/L		99	60 - 140
Chloromethane	ND		25.0	21.6		ug/L		87	52 - 140
cis-1,2-Dichloroethene	ND		25.0	23.0		ug/L		92	60 - 140
cis-1,3-Dichloropropene	ND		25.0	24.5		ug/L		98	60 - 140
Chlorodibromomethane	ND		25.0	25.8		ug/L		103	60 - 140
Dibromomethane	ND		25.0	24.6		ug/L		99	60 - 140
Dichlorobromomethane	ND		25.0	25.3		ug/L		101	60 - 140
Dichlorodifluoromethane	ND		25.0	23.8		ug/L		95	38 - 140
Ethylbenzene	ND		25.0	23.2		ug/L		93	60 - 140
Hexachlorobutadiene	ND		25.0	24.4		ug/L		98	60 - 140
Isopropylbenzene	ND		25.0	23.8		ug/L		95	60 - 140
m-Xylene & p-Xylene	ND		25.0	23.7		ug/L		95	60 - 140
Methylene Chloride	ND		25.0	21.3		ug/L		85	40 - 140
Methyl tert-butyl ether	1.0		25.0	26.7		ug/L		103	60 - 138
Naphthalene	ND		25.0	22.4		ug/L		89	56 - 140
n-Butylbenzene	ND		25.0	23.9		ug/L		96	60 - 140
N-Propylbenzene	ND		25.0	23.1		ug/L		92	60 - 140
o-Xylene	ND		25.0	23.6		ug/L		94	60 - 140
sec-Butylbenzene	ND		25.0	23.3		ug/L		93	60 - 140
Styrene	ND		25.0	23.9		ug/L		96	60 - 140
tert-Butylbenzene	ND		25.0	23.3		ug/L		93	60 - 140
Tetrachloroethene	ND		25.0	24.1		ug/L		96	60 - 140
Toluene	ND		25.0	22.4		ug/L		90	60 - 140
trans-1,2-Dichloroethene	ND		25.0	20.8		ug/L		83	60 - 140
trans-1,3-Dichloropropene	ND		25.0	25.9		ug/L		104	60 - 140
Trichloroethene	ND		25.0	23.2		ug/L		93	60 - 140
Trichlorofluoromethane	ND		25.0	27.4		ug/L		110	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	20.9		ug/L		83	60 - 140
Vinyl acetate	ND		25.0	31.3		ug/L		125	40 - 140
Vinyl chloride	ND		25.0	22.8		ug/L		91	58 - 140
Ethylene Dibromide	ND		25.0	24.1		ug/L		96	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88082-A-2 MS
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Butanone (MEK)	ND		125	130		ug/L		104	60 - 140
4-Methyl-2-pentanone (MIBK)	ND		125	133		ug/L		106	58 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*96*		*67 - 130*
Toluene-d8 (Surr)	*94*		*70 - 130*
Dibromofluoromethane (Surr)	*95*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*110*		*72 - 130*

Lab Sample ID: 720-88082-A-2 MSD
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	ND		25.0	22.9		ug/L		92	60 - 140	0	20
1,1,1,2-Tetrachloroethane	ND		25.0	24.4		ug/L		98	60 - 140	0	20
1,1,1-Trichloroethane	ND		25.0	26.0		ug/L		104	60 - 140	0	20
1,1,2,2-Tetrachloroethane	ND		25.0	21.7		ug/L		87	60 - 140	3	20
1,1,2-Trichloroethane	ND		25.0	23.7		ug/L		95	60 - 140	2	20
1,1-Dichloroethane	ND		25.0	23.1		ug/L		92	60 - 140	0	20
1,1-Dichloroethene	ND		25.0	20.8		ug/L		83	60 - 140	1	20
1,1-Dichloropropene	ND		25.0	24.2		ug/L		97	60 - 140	1	20
1,2,3-Trichlorobenzene	ND		25.0	23.1		ug/L		92	60 - 140	1	20
1,2,4-Trichlorobenzene	ND		25.0	23.9		ug/L		95	60 - 140	1	20
1,2,4-Trimethylbenzene	ND		25.0	23.6		ug/L		95	60 - 140	1	20
1,2-Dibromo-3-Chloropropane	ND		25.0	22.8		ug/L		91	60 - 140	0	20
1,2-Dichlorobenzene	ND		25.0	22.6		ug/L		90	60 - 140	1	20
1,2-Dichloroethane	ND		25.0	26.7		ug/L		107	60 - 140	1	20
1,2-Dichloropropane	ND		25.0	22.0		ug/L		88	60 - 140	2	20
1,3,5-Trimethylbenzene	ND		25.0	24.0		ug/L		96	60 - 140	1	20
1,3-Dichlorobenzene	ND		25.0	22.8		ug/L		91	60 - 140	1	20
1,3-Dichloropropane	ND		25.0	24.2		ug/L		97	60 - 140	1	20
1,4-Dichlorobenzene	ND		25.0	22.7		ug/L		91	60 - 140	2	20
2,2-Dichloropropane	ND		25.0	24.9		ug/L		100	60 - 140	1	20
2-Chlorotoluene	ND		25.0	23.1		ug/L		92	60 - 140	1	20
2-Hexanone	ND		125	136		ug/L		109	60 - 140	3	20
4-Chlorotoluene	ND		25.0	23.5		ug/L		94	60 - 140	2	20
4-Isopropyltoluene	ND		25.0	24.0		ug/L		96	60 - 140	1	20
Acetone	ND		125	130		ug/L		104	60 - 140	10	20
Benzene	ND		25.0	22.1		ug/L		88	60 - 140	1	20
Bromobenzene	ND		25.0	22.7		ug/L		91	60 - 140	1	20
Bromoform	ND		25.0	25.0		ug/L		100	56 - 140	0	20
Bromomethane	ND		25.0	23.6		ug/L		94	23 - 140	1	20
Carbon disulfide	ND		25.0	18.8		ug/L		75	38 - 140	2	20
Carbon tetrachloride	ND		25.0	27.1		ug/L		109	60 - 140	1	20
Chlorobenzene	ND		25.0	22.7		ug/L		91	60 - 140	1	20
Chlorobromomethane	ND		25.0	23.1		ug/L		92	60 - 140	1	20
Chloroethane	ND		25.0	23.5		ug/L		94	51 - 140	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88082-A-2 MSD
Matrix: Water
Analysis Batch: 249695

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroform	ND		25.0	24.6		ug/L		98	60 - 140	1	20
Chloromethane	ND		25.0	22.3		ug/L		89	52 - 140	3	20
cis-1,2-Dichloroethene	ND		25.0	23.1		ug/L		92	60 - 140	1	20
cis-1,3-Dichloropropene	ND		25.0	24.9		ug/L		100	60 - 140	2	20
Chlorodibromomethane	ND		25.0	26.0		ug/L		104	60 - 140	1	20
Dibromomethane	ND		25.0	24.9		ug/L		99	60 - 140	1	20
Dichlorobromomethane	ND		25.0	25.1		ug/L		100	60 - 140	1	20
Dichlorodifluoromethane	ND		25.0	23.5		ug/L		94	38 - 140	1	20
Ethylbenzene	ND		25.0	23.3		ug/L		93	60 - 140	0	20
Hexachlorobutadiene	ND		25.0	24.6		ug/L		99	60 - 140	1	20
Isopropylbenzene	ND		25.0	23.7		ug/L		95	60 - 140	0	20
m-Xylene & p-Xylene	ND		25.0	24.0		ug/L		96	60 - 140	1	20
Methylene Chloride	ND		25.0	21.7		ug/L		87	40 - 140	2	20
Methyl tert-butyl ether	1.0		25.0	26.6		ug/L		102	60 - 138	0	20
Naphthalene	ND		25.0	22.8		ug/L		91	56 - 140	2	20
n-Butylbenzene	ND		25.0	24.2		ug/L		97	60 - 140	1	20
N-Propylbenzene	ND		25.0	23.5		ug/L		94	60 - 140	2	20
o-Xylene	ND		25.0	23.8		ug/L		95	60 - 140	1	20
sec-Butylbenzene	ND		25.0	23.4		ug/L		94	60 - 140	0	20
Styrene	ND		25.0	24.0		ug/L		96	60 - 140	0	20
tert-Butylbenzene	ND		25.0	23.2		ug/L		93	60 - 140	0	20
Tetrachloroethene	ND		25.0	24.6		ug/L		98	60 - 140	2	20
Toluene	ND		25.0	22.6		ug/L		90	60 - 140	1	20
trans-1,2-Dichloroethene	ND		25.0	20.8		ug/L		83	60 - 140	0	20
trans-1,3-Dichloropropene	ND		25.0	26.2		ug/L		105	60 - 140	1	20
Trichloroethene	ND		25.0	23.5		ug/L		94	60 - 140	1	20
Trichlorofluoromethane	ND		25.0	27.3		ug/L		109	60 - 140	1	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	21.6		ug/L		86	60 - 140	3	20
Vinyl acetate	ND		25.0	31.7		ug/L		127	40 - 140	1	20
Vinyl chloride	ND		25.0	22.9		ug/L		91	58 - 140	0	20
Ethylene Dibromide	ND		25.0	24.6		ug/L		99	60 - 140	2	20
2-Butanone (MEK)	ND		125	136		ug/L		109	60 - 140	5	20
4-Methyl-2-pentanone (MIBK)	ND		125	136		ug/L		109	58 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene	*95*		*67 - 130*
Toluene-d8 (Surr)	*94*		*70 - 130*
Dibromofluoromethane (Surr)	*96*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*107*		*72 - 130*

Lab Sample ID: MB 720-249863/4
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/21/18 09:12	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/21/18 09:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249863/4
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50		ug/L			08/21/18 09:12	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/21/18 09:12	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/21/18 09:12	1
1,1-Dichloroethane	ND		0.50		ug/L			08/21/18 09:12	1
1,1-Dichloroethene	ND		0.50		ug/L			08/21/18 09:12	1
1,1-Dichloropropene	ND		0.50		ug/L			08/21/18 09:12	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/21/18 09:12	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/21/18 09:12	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/21/18 09:12	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/21/18 09:12	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/21/18 09:12	1
1,2-Dichloroethane	ND		0.50		ug/L			08/21/18 09:12	1
1,2-Dichloropropane	ND		0.50		ug/L			08/21/18 09:12	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/21/18 09:12	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/21/18 09:12	1
1,3-Dichloropropane	ND		1.0		ug/L			08/21/18 09:12	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/21/18 09:12	1
2,2-Dichloropropane	ND		0.50		ug/L			08/21/18 09:12	1
2-Chlorotoluene	ND		0.50		ug/L			08/21/18 09:12	1
2-Hexanone	ND		50		ug/L			08/21/18 09:12	1
4-Chlorotoluene	ND		0.50		ug/L			08/21/18 09:12	1
4-Isopropyltoluene	ND		1.0		ug/L			08/21/18 09:12	1
Acetone	ND		50		ug/L			08/21/18 09:12	1
Benzene	ND		0.50		ug/L			08/21/18 09:12	1
Bromobenzene	ND		1.0		ug/L			08/21/18 09:12	1
Bromoform	ND		1.0		ug/L			08/21/18 09:12	1
Bromomethane	ND		1.0		ug/L			08/21/18 09:12	1
Carbon disulfide	ND		5.0		ug/L			08/21/18 09:12	1
Carbon tetrachloride	ND		0.50		ug/L			08/21/18 09:12	1
Chlorobenzene	ND		0.50		ug/L			08/21/18 09:12	1
Chlorobromomethane	ND		1.0		ug/L			08/21/18 09:12	1
Chloroethane	ND		1.0		ug/L			08/21/18 09:12	1
Chloroform	ND		1.0		ug/L			08/21/18 09:12	1
Chloromethane	ND		1.0		ug/L			08/21/18 09:12	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/21/18 09:12	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/21/18 09:12	1
Chlorodibromomethane	ND		0.50		ug/L			08/21/18 09:12	1
Dibromomethane	ND		0.50		ug/L			08/21/18 09:12	1
Dichlorobromomethane	ND		0.50		ug/L			08/21/18 09:12	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/21/18 09:12	1
Ethylbenzene	ND		0.50		ug/L			08/21/18 09:12	1
Hexachlorobutadiene	ND		1.0		ug/L			08/21/18 09:12	1
Isopropylbenzene	ND		0.50		ug/L			08/21/18 09:12	1
Methylene Chloride	ND		5.0		ug/L			08/21/18 09:12	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/21/18 09:12	1
Naphthalene	ND		1.0		ug/L			08/21/18 09:12	1
n-Butylbenzene	ND		1.0		ug/L			08/21/18 09:12	1
N-Propylbenzene	ND		1.0		ug/L			08/21/18 09:12	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-249863/4
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
sec-Butylbenzene	ND		1.0		ug/L			08/21/18 09:12	1
Styrene	ND		0.50		ug/L			08/21/18 09:12	1
tert-Butylbenzene	ND		1.0		ug/L			08/21/18 09:12	1
Tetrachloroethene	ND		0.50		ug/L			08/21/18 09:12	1
Toluene	ND		0.50		ug/L			08/21/18 09:12	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/21/18 09:12	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/21/18 09:12	1
Trichloroethene	ND		0.50		ug/L			08/21/18 09:12	1
Trichlorofluoromethane	ND		1.0		ug/L			08/21/18 09:12	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/21/18 09:12	1
Vinyl acetate	ND		10		ug/L			08/21/18 09:12	1
Vinyl chloride	ND		0.50		ug/L			08/21/18 09:12	1
Xylenes, Total	ND		0.50		ug/L			08/21/18 09:12	1
Ethylene Dibromide	ND		0.50		ug/L			08/21/18 09:12	1
2-Butanone (MEK)	ND		50		ug/L			08/21/18 09:12	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/21/18 09:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*96*		*67 - 130*		*08/21/18 09:12*	*1*
Toluene-d8 (Surr)	*92*		*70 - 130*		*08/21/18 09:12*	*1*
Dibromofluoromethane (Surr)	*92*		*70 - 130*		*08/21/18 09:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*72 - 130*		*08/21/18 09:12*	*1*

Lab Sample ID: LCS 720-249863/5
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	23.4		ug/L		94	77 - 120
1,1,1,2-Tetrachloroethane	25.0	25.7		ug/L		103	81 - 121
1,1,1-Trichloroethane	25.0	30.2		ug/L		121	74 - 130
1,1,2,2-Tetrachloroethane	25.0	20.5		ug/L		82	70 - 115
1,1,2-Trichloroethane	25.0	22.4		ug/L		90	80 - 117
1,1-Dichloroethane	25.0	24.5		ug/L		98	77 - 119
1,1-Dichloroethene	25.0	25.8		ug/L		103	69 - 119
1,1-Dichloropropene	25.0	26.3		ug/L		105	83 - 130
1,2,3-Trichlorobenzene	25.0	23.7		ug/L		95	87 - 123
1,2,4-Trichlorobenzene	25.0	24.7		ug/L		99	78 - 120
1,2,4-Trimethylbenzene	25.0	25.1		ug/L		100	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	23.0		ug/L		92	74 - 126
1,2-Dichlorobenzene	25.0	23.7		ug/L		95	77 - 117
1,2-Dichloroethane	25.0	26.7		ug/L		107	73 - 122
1,2-Dichloropropane	25.0	21.6		ug/L		87	79 - 119
1,3,5-Trimethylbenzene	25.0	25.6		ug/L		102	77 - 117
1,3-Dichlorobenzene	25.0	24.1		ug/L		96	76 - 116
1,3-Dichloropropane	25.0	22.5		ug/L		90	77 - 117
1,4-Dichlorobenzene	25.0	23.8		ug/L		95	76 - 116
2,2-Dichloropropane	25.0	30.6		ug/L		122	74 - 156

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249863/5
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chlorotoluene	25.0	24.5		ug/L		98	75 - 115
2-Hexanone	125	123		ug/L		98	63 - 140
4-Chlorotoluene	25.0	24.8		ug/L		99	73 - 119
4-Isopropyltoluene	25.0	26.1		ug/L		104	80 - 120
Acetone	125	102		ug/L		81	61 - 147
Benzene	25.0	22.8		ug/L		91	79 - 119
Bromobenzene	25.0	23.6		ug/L		94	77 - 117
Bromoform	25.0	24.3		ug/L		97	75 - 127
Bromomethane	25.0	25.0		ug/L		100	70 - 132
Carbon disulfide	25.0	26.2		ug/L		105	64 - 127
Carbon tetrachloride	25.0	31.2		ug/L		125	72 - 142
Chlorobenzene	25.0	23.7		ug/L		95	76 - 116
Chlorobromomethane	25.0	23.4		ug/L		94	81 - 122
Chloroethane	25.0	23.8		ug/L		95	70 - 131
Chloroform	25.0	26.0		ug/L		104	82 - 119
Chloromethane	25.0	22.2		ug/L		89	49 - 134
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	77 - 117
cis-1,3-Dichloropropene	25.0	25.4		ug/L		102	82 - 119
Chlorodibromomethane	25.0	25.9		ug/L		104	77 - 133
Dibromomethane	25.0	23.4		ug/L		94	79 - 117
Dichlorobromomethane	25.0	25.8		ug/L		103	81 - 130
Dichlorodifluoromethane	25.0	28.3		ug/L		113	21 - 150
Ethylbenzene	25.0	24.5		ug/L		98	77 - 117
Hexachlorobutadiene	25.0	27.6		ug/L		110	78 - 140
Isopropylbenzene	25.0	25.6		ug/L		102	77 - 130
m-Xylene & p-Xylene	25.0	25.3		ug/L		101	74 - 119
Methylene Chloride	25.0	22.6		ug/L		91	75 - 117
Methyl tert-butyl ether	25.0	24.2		ug/L		97	70 - 130
Naphthalene	25.0	22.1		ug/L		89	81 - 121
n-Butylbenzene	25.0	25.8		ug/L		103	78 - 119
N-Propylbenzene	25.0	25.2		ug/L		101	77 - 117
o-Xylene	25.0	25.1		ug/L		100	77 - 118
sec-Butylbenzene	25.0	25.2		ug/L		101	78 - 118
Styrene	25.0	24.2		ug/L		97	76 - 116
tert-Butylbenzene	25.0	25.4		ug/L		101	78 - 118
Tetrachloroethene	25.0	26.1		ug/L		105	81 - 130
Toluene	25.0	23.6		ug/L		95	75 - 120
trans-1,2-Dichloroethene	25.0	24.8		ug/L		99	79 - 117
trans-1,3-Dichloropropene	25.0	25.7		ug/L		103	76 - 122
Trichloroethene	25.0	25.1		ug/L		100	80 - 123
Trichlorofluoromethane	25.0	32.3		ug/L		129	75 - 141
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	30.2		ug/L		121	70 - 133
Vinyl acetate	25.0	27.9		ug/L		112	50 - 126
Vinyl chloride	25.0	24.3		ug/L		97	58 - 138
Ethylene Dibromide	25.0	22.9		ug/L		91	80 - 121
2-Butanone (MEK)	125	106		ug/L		85	66 - 133
4-Methyl-2-pentanone (MIBK)	125	123		ug/L		98	66 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-249863/5
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*96*		*67 - 130*
Toluene-d8 (Surr)	*92*		*70 - 130*
Dibromofluoromethane (Surr)	*92*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*72 - 130*

Lab Sample ID: LCSD 720-249863/6
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane			25.0	22.4		ug/L		89	77 - 120	5	20
1,1,1,2-Tetrachloroethane			25.0	25.5		ug/L		102	81 - 121	1	20
1,1,1-Trichloroethane			25.0	29.8		ug/L		119	74 - 130	1	20
1,1,2,2-Tetrachloroethane			25.0	20.1		ug/L		81	70 - 115	2	20
1,1,2-Trichloroethane			25.0	22.7		ug/L		91	80 - 117	1	20
1,1-Dichloroethane			25.0	24.5		ug/L		98	77 - 119	0	20
1,1-Dichloroethene			25.0	26.4		ug/L		106	69 - 119	2	20
1,1-Dichloropropene			25.0	25.9		ug/L		103	83 - 130	2	20
1,2,3-Trichlorobenzene			25.0	24.4		ug/L		98	87 - 123	3	20
1,2,4-Trichlorobenzene			25.0	25.3		ug/L		101	78 - 120	2	20
1,2,4-Trimethylbenzene			25.0	24.6		ug/L		99	75 - 115	2	20
1,2-Dibromo-3-Chloropropane			25.0	22.5		ug/L		90	74 - 126	2	20
1,2-Dichlorobenzene			25.0	23.6		ug/L		94	77 - 117	0	20
1,2-Dichloroethane			25.0	26.3		ug/L		105	73 - 122	2	20
1,2-Dichloropropane			25.0	22.1		ug/L		88	79 - 119	2	20
1,3,5-Trimethylbenzene			25.0	25.1		ug/L		100	77 - 117	2	20
1,3-Dichlorobenzene			25.0	23.6		ug/L		94	76 - 116	2	20
1,3-Dichloropropane			25.0	22.6		ug/L		91	77 - 117	1	20
1,4-Dichlorobenzene			25.0	23.5		ug/L		94	76 - 116	1	20
2,2-Dichloropropane			25.0	29.6		ug/L		119	74 - 156	3	20
2-Chlorotoluene			25.0	24.1		ug/L		96	75 - 115	2	20
2-Hexanone			125	120		ug/L		96	63 - 140	2	24
4-Chlorotoluene			25.0	24.5		ug/L		98	73 - 119	1	20
4-Isopropyltoluene			25.0	25.6		ug/L		102	80 - 120	2	20
Acetone			125	84.9		ug/L		68	61 - 147	18	30
Benzene			25.0	22.8		ug/L		91	79 - 119	0	20
Bromobenzene			25.0	23.4		ug/L		94	77 - 117	1	20
Bromoform			25.0	23.8		ug/L		95	75 - 127	2	20
Bromomethane			25.0	26.2		ug/L		105	70 - 132	5	20
Carbon disulfide			25.0	26.0		ug/L		104	64 - 127	1	20
Carbon tetrachloride			25.0	29.2		ug/L		117	72 - 142	7	20
Chlorobenzene			25.0	23.4		ug/L		93	76 - 116	1	20
Chlorobromomethane			25.0	23.5		ug/L		94	81 - 122	0	20
Chloroethane			25.0	24.4		ug/L		98	70 - 131	3	20
Chloroform			25.0	26.0		ug/L		104	82 - 119	0	20
Chloromethane			25.0	23.9		ug/L		96	49 - 134	8	20
cis-1,2-Dichloroethene			25.0	24.7		ug/L		99	77 - 117	0	20
cis-1,3-Dichloropropene			25.0	25.6		ug/L		103	82 - 119	1	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-249863/6
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorodibromomethane	25.0	26.0		ug/L		104	77 - 133	0	20
Dibromomethane	25.0	23.3		ug/L		93	79 - 117	1	20
Dichlorobromomethane	25.0	25.5		ug/L		102	81 - 130	1	20
Dichlorodifluoromethane	25.0	29.6		ug/L		118	21 - 150	4	20
Ethylbenzene	25.0	23.8		ug/L		95	77 - 117	3	20
Hexachlorobutadiene	25.0	27.4		ug/L		109	78 - 140	1	20
Isopropylbenzene	25.0	24.7		ug/L		99	77 - 130	3	20
m-Xylene & p-Xylene	25.0	24.4		ug/L		97	74 - 119	4	20
Methylene Chloride	25.0	22.9		ug/L		92	75 - 117	1	20
Methyl tert-butyl ether	25.0	24.4		ug/L		97	70 - 130	1	20
Naphthalene	25.0	22.7		ug/L		91	81 - 121	3	20
n-Butylbenzene	25.0	25.2		ug/L		101	78 - 119	2	20
N-Propylbenzene	25.0	24.4		ug/L		98	77 - 117	3	20
o-Xylene	25.0	24.6		ug/L		98	77 - 118	2	20
sec-Butylbenzene	25.0	24.5		ug/L		98	78 - 118	3	20
Styrene	25.0	23.8		ug/L		95	76 - 116	2	20
tert-Butylbenzene	25.0	24.5		ug/L		98	78 - 118	3	20
Tetrachloroethene	25.0	25.4		ug/L		101	81 - 130	3	20
Toluene	25.0	23.2		ug/L		93	75 - 120	2	20
trans-1,2-Dichloroethene	25.0	24.1		ug/L		96	79 - 117	3	20
trans-1,3-Dichloropropene	25.0	25.9		ug/L		104	76 - 122	1	20
Trichloroethene	25.0	24.5		ug/L		98	80 - 123	2	20
Trichlorofluoromethane	25.0	31.3		ug/L		125	75 - 141	3	20
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	28.5		ug/L		114	70 - 133	6	20
Vinyl acetate	25.0	27.5		ug/L		110	50 - 126	2	20
Vinyl chloride	25.0	25.8		ug/L		103	58 - 138	6	20
Ethylene Dibromide	25.0	23.3		ug/L		93	80 - 121	2	20
2-Butanone (MEK)	125	96.7		ug/L		77	66 - 133	9	22
4-Methyl-2-pentanone (MIBK)	125	119		ug/L		95	66 - 140	3	21

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*94*		*67 - 130*
Toluene-d8 (Surr)	*94*		*70 - 130*
Dibromofluoromethane (Surr)	*95*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*104*		*72 - 130*

Lab Sample ID: 720-88121-D-3 MS
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		25.0	23.6		ug/L		94	60 - 140
1,1,1,2-Tetrachloroethane	ND		25.0	26.6		ug/L		107	60 - 140
1,1,1-Trichloroethane	ND		25.0	30.5		ug/L		122	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	20.7		ug/L		83	60 - 140
1,1,2-Trichloroethane	ND		25.0	24.6		ug/L		98	60 - 140
1,1-Dichloroethane	ND		25.0	24.8		ug/L		99	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88121-D-3 MS
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	ND		25.0	25.6		ug/L		102	60 - 140
1,1-Dichloropropene	ND		25.0	25.4		ug/L		101	60 - 140
1,2,3-Trichlorobenzene	ND		25.0	23.9		ug/L		96	60 - 140
1,2,4-Trichlorobenzene	ND		25.0	24.5		ug/L		98	60 - 140
1,2,4-Trimethylbenzene	ND		25.0	23.9		ug/L		95	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	23.2		ug/L		93	60 - 140
1,2-Dichlorobenzene	ND		25.0	23.6		ug/L		94	60 - 140
1,2-Dichloroethane	ND		25.0	29.9		ug/L		119	60 - 140
1,2-Dichloropropane	ND		25.0	22.4		ug/L		90	60 - 140
1,3,5-Trimethylbenzene	ND		25.0	24.3		ug/L		97	60 - 140
1,3-Dichlorobenzene	ND		25.0	23.4		ug/L		94	60 - 140
1,3-Dichloropropane	ND		25.0	24.2		ug/L		97	60 - 140
1,4-Dichlorobenzene	ND		25.0	23.5		ug/L		94	60 - 140
2,2-Dichloropropane	ND		25.0	29.1		ug/L		116	60 - 140
2-Chlorotoluene	ND		25.0	23.1		ug/L		92	60 - 140
2-Hexanone	ND		125	127		ug/L		102	60 - 140
4-Chlorotoluene	ND		25.0	23.7		ug/L		95	60 - 140
4-Isopropyltoluene	ND		25.0	24.6		ug/L		99	60 - 140
Acetone	ND		125	85.0		ug/L		68	60 - 140
Benzene	ND		25.0	23.3		ug/L		93	60 - 140
Bromobenzene	ND		25.0	23.8		ug/L		95	60 - 140
Bromoform	ND		25.0	26.0		ug/L		104	56 - 140
Bromomethane	ND		25.0	23.8		ug/L		95	23 - 140
Carbon disulfide	ND		25.0	24.8		ug/L		99	38 - 140
Carbon tetrachloride	ND		25.0	31.4		ug/L		125	60 - 140
Chlorobenzene	ND		25.0	23.3		ug/L		93	60 - 140
Chlorobromomethane	ND		25.0	24.9		ug/L		100	60 - 140
Chloroethane	ND		25.0	22.1		ug/L		88	51 - 140
Chloroform	6.9		25.0	34.1		ug/L		109	60 - 140
Chloromethane	ND		25.0	20.3		ug/L		81	52 - 140
cis-1,2-Dichloroethene	ND		25.0	24.6		ug/L		98	60 - 140
cis-1,3-Dichloropropene	ND		25.0	26.7		ug/L		107	60 - 140
Chlorodibromomethane	ND		25.0	28.5		ug/L		114	60 - 140
Dibromomethane	ND		25.0	26.0		ug/L		104	60 - 140
Dichlorobromomethane	ND		25.0	27.6		ug/L		110	60 - 140
Dichlorodifluoromethane	ND		25.0	26.1		ug/L		104	38 - 140
Ethylbenzene	ND		25.0	23.7		ug/L		95	60 - 140
Hexachlorobutadiene	ND		25.0	25.6		ug/L		103	60 - 140
Isopropylbenzene	ND		25.0	24.6		ug/L		98	60 - 140
m-Xylene & p-Xylene	ND		25.0	24.4		ug/L		97	60 - 140
Methylene Chloride	ND		25.0	22.9		ug/L		91	40 - 140
Methyl tert-butyl ether	ND		25.0	26.5		ug/L		106	60 - 138
Naphthalene	ND		25.0	22.6		ug/L		90	56 - 140
n-Butylbenzene	ND		25.0	23.5		ug/L		94	60 - 140
N-Propylbenzene	ND		25.0	23.2		ug/L		93	60 - 140
o-Xylene	ND		25.0	24.8		ug/L		99	60 - 140
sec-Butylbenzene	ND		25.0	23.5		ug/L		94	60 - 140
Styrene	ND		25.0	23.9		ug/L		95	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88121-D-3 MS
Matrix: Water
Analysis Batch: 249863

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
tert-Butylbenzene	ND		25.0	24.0		ug/L		96	60 - 140
Tetrachloroethene	0.75		25.0	26.4		ug/L		103	60 - 140
Toluene	ND		25.0	23.0		ug/L		92	60 - 140
trans-1,2-Dichloroethene	ND		25.0	24.0		ug/L		96	60 - 140
trans-1,3-Dichloropropene	ND		25.0	27.3		ug/L		109	60 - 140
Trichloroethene	ND		25.0	24.9		ug/L		100	60 - 140
Trichlorofluoromethane	ND		25.0	31.5		ug/L		126	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	27.1		ug/L		108	60 - 140
Vinyl acetate	ND		25.0	29.3		ug/L		117	40 - 140
Vinyl chloride	ND		25.0	21.9		ug/L		88	58 - 140
Ethylene Dibromide	ND		25.0	24.8		ug/L		99	60 - 140
2-Butanone (MEK)	ND		125	107		ug/L		86	60 - 140
4-Methyl-2-pentanone (MIBK)	ND		125	129		ug/L		103	58 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*97*		*67 - 130*
Toluene-d8 (Surr)	*94*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*117*		*72 - 130*

Lab Sample ID: MB 720-250217/4
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/25/18 09:53	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/25/18 09:53	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/25/18 09:53	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/25/18 09:53	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/25/18 09:53	1
1,1-Dichloroethane	ND		0.50		ug/L			08/25/18 09:53	1
1,1-Dichloroethene	ND		0.50		ug/L			08/25/18 09:53	1
1,1-Dichloropropene	ND		0.50		ug/L			08/25/18 09:53	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/25/18 09:53	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/25/18 09:53	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/25/18 09:53	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/25/18 09:53	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/25/18 09:53	1
1,2-Dichloroethane	ND		0.50		ug/L			08/25/18 09:53	1
1,2-Dichloropropane	ND		0.50		ug/L			08/25/18 09:53	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/25/18 09:53	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/25/18 09:53	1
1,3-Dichloropropane	ND		1.0		ug/L			08/25/18 09:53	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/25/18 09:53	1
2,2-Dichloropropane	ND		0.50		ug/L			08/25/18 09:53	1
2-Chlorotoluene	ND		0.50		ug/L			08/25/18 09:53	1
2-Hexanone	ND		50		ug/L			08/25/18 09:53	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-250217/4
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Chlorotoluene	ND		0.50		ug/L			08/25/18 09:53	1
4-Isopropyltoluene	ND		1.0		ug/L			08/25/18 09:53	1
Acetone	ND		50		ug/L			08/25/18 09:53	1
Benzene	ND		0.50		ug/L			08/25/18 09:53	1
Bromobenzene	ND		1.0		ug/L			08/25/18 09:53	1
Bromoform	ND		1.0		ug/L			08/25/18 09:53	1
Bromomethane	ND		1.0		ug/L			08/25/18 09:53	1
Carbon disulfide	ND		5.0		ug/L			08/25/18 09:53	1
Carbon tetrachloride	ND		0.50		ug/L			08/25/18 09:53	1
Chlorobenzene	ND		0.50		ug/L			08/25/18 09:53	1
Chlorobromomethane	ND		1.0		ug/L			08/25/18 09:53	1
Chloroethane	ND		1.0		ug/L			08/25/18 09:53	1
Chloroform	ND		1.0		ug/L			08/25/18 09:53	1
Chloromethane	ND		1.0		ug/L			08/25/18 09:53	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/25/18 09:53	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/25/18 09:53	1
Chlorodibromomethane	ND		0.50		ug/L			08/25/18 09:53	1
Dibromomethane	ND		0.50		ug/L			08/25/18 09:53	1
Dichlorobromomethane	ND		0.50		ug/L			08/25/18 09:53	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/25/18 09:53	1
Ethylbenzene	ND		0.50		ug/L			08/25/18 09:53	1
Hexachlorobutadiene	ND		1.0		ug/L			08/25/18 09:53	1
Isopropylbenzene	ND		0.50		ug/L			08/25/18 09:53	1
Methylene Chloride	ND		5.0		ug/L			08/25/18 09:53	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/25/18 09:53	1
Naphthalene	ND		1.0		ug/L			08/25/18 09:53	1
n-Butylbenzene	ND		1.0		ug/L			08/25/18 09:53	1
N-Propylbenzene	ND		1.0		ug/L			08/25/18 09:53	1
sec-Butylbenzene	ND		1.0		ug/L			08/25/18 09:53	1
Styrene	ND		0.50		ug/L			08/25/18 09:53	1
tert-Butylbenzene	ND		1.0		ug/L			08/25/18 09:53	1
Tetrachloroethene	ND		0.50		ug/L			08/25/18 09:53	1
Toluene	ND		0.50		ug/L			08/25/18 09:53	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/25/18 09:53	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/25/18 09:53	1
Trichloroethene	ND		0.50		ug/L			08/25/18 09:53	1
Trichlorofluoromethane	ND		1.0		ug/L			08/25/18 09:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/25/18 09:53	1
Vinyl acetate	ND		10		ug/L			08/25/18 09:53	1
Vinyl chloride	ND		0.50		ug/L			08/25/18 09:53	1
Xylenes, Total	ND		0.50		ug/L			08/25/18 09:53	1
Ethylene Dibromide	ND		0.50		ug/L			08/25/18 09:53	1
2-Butanone (MEK)	ND		50		ug/L			08/25/18 09:53	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/25/18 09:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*103*		*67 - 130*		*08/25/18 09:53*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/25/18 09:53*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-250217/4
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*93*		*70 - 130*		*08/25/18 09:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*87*		*72 - 130*		*08/25/18 09:53*	*1*

Lab Sample ID: LCS 720-250217/5
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	23.6		ug/L		94	77 - 120
1,1,1,2-Tetrachloroethane	25.0	23.0		ug/L		92	81 - 121
1,1,1-Trichloroethane	25.0	23.2		ug/L		93	74 - 130
1,1,2,2-Tetrachloroethane	25.0	23.3		ug/L		93	70 - 115
1,1,2-Trichloroethane	25.0	26.8		ug/L		107	80 - 117
1,1-Dichloroethane	25.0	25.4		ug/L		101	77 - 119
1,1-Dichloroethene	25.0	27.9		ug/L		112	69 - 119
1,1-Dichloropropene	25.0	24.1		ug/L		96	83 - 130
1,2,3-Trichlorobenzene	25.0	25.4		ug/L		102	87 - 123
1,2,4-Trichlorobenzene	25.0	26.0		ug/L		104	78 - 120
1,2,4-Trimethylbenzene	25.0	25.8		ug/L		103	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	26.2		ug/L		105	74 - 126
1,2-Dichlorobenzene	25.0	24.3		ug/L		97	77 - 117
1,2-Dichloroethane	25.0	22.8		ug/L		91	73 - 122
1,2-Dichloropropane	25.0	25.7		ug/L		103	79 - 119
1,3,5-Trimethylbenzene	25.0	25.2		ug/L		101	77 - 117
1,3-Dichlorobenzene	25.0	23.6		ug/L		95	76 - 116
1,3-Dichloropropane	25.0	24.9		ug/L		100	77 - 117
1,4-Dichlorobenzene	25.0	23.3		ug/L		93	76 - 116
2,2-Dichloropropane	25.0	26.5		ug/L		106	74 - 156
2-Chlorotoluene	25.0	25.6		ug/L		103	75 - 115
2-Hexanone	125	131		ug/L		105	63 - 140
4-Chlorotoluene	25.0	25.8		ug/L		103	73 - 119
4-Isopropyltoluene	25.0	24.3		ug/L		97	80 - 120
Acetone	125	133		ug/L		106	61 - 147
Benzene	25.0	24.5		ug/L		98	79 - 119
Bromobenzene	25.0	25.4		ug/L		101	77 - 117
Bromoform	25.0	22.9		ug/L		91	75 - 127
Bromomethane	25.0	23.1		ug/L		92	70 - 132
Carbon disulfide	25.0	33.1	*	ug/L		132	64 - 127
Carbon tetrachloride	25.0	22.7		ug/L		91	72 - 142
Chlorobenzene	25.0	23.4		ug/L		94	76 - 116
Chlorobromomethane	25.0	24.7		ug/L		99	81 - 122
Chloroethane	25.0	22.5		ug/L		90	70 - 131
Chloroform	25.0	22.6		ug/L		90	82 - 119
Chloromethane	25.0	20.7		ug/L		83	49 - 134
cis-1,2-Dichloroethene	25.0	24.4		ug/L		98	77 - 117
cis-1,3-Dichloropropene	25.0	28.0		ug/L		112	82 - 119
Chlorodibromomethane	25.0	25.5		ug/L		102	77 - 133
Dibromomethane	25.0	23.9		ug/L		96	79 - 117

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-250217/5
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorobromomethane	25.0	23.3		ug/L		93	81 - 130
Dichlorodifluoromethane	25.0	13.7		ug/L		55	21 - 150
Ethylbenzene	25.0	23.9		ug/L		96	77 - 117
Hexachlorobutadiene	25.0	22.1		ug/L		88	78 - 140
Isopropylbenzene	25.0	24.5		ug/L		98	77 - 130
m-Xylene & p-Xylene	25.0	24.4		ug/L		98	74 - 119
Methylene Chloride	25.0	27.0		ug/L		108	75 - 117
Methyl tert-butyl ether	25.0	27.1		ug/L		108	70 - 130
Naphthalene	25.0	27.1		ug/L		108	81 - 121
n-Butylbenzene	25.0	23.9		ug/L		96	78 - 119
N-Propylbenzene	25.0	25.6		ug/L		102	77 - 117
o-Xylene	25.0	24.3		ug/L		97	77 - 118
sec-Butylbenzene	25.0	24.6		ug/L		98	78 - 118
Styrene	25.0	24.6		ug/L		98	76 - 116
tert-Butylbenzene	25.0	23.9		ug/L		95	78 - 118
Tetrachloroethene	25.0	25.1		ug/L		101	81 - 130
Toluene	25.0	23.8		ug/L		95	75 - 120
trans-1,2-Dichloroethene	25.0	29.0		ug/L		116	79 - 117
trans-1,3-Dichloropropene	25.0	26.7		ug/L		107	76 - 122
Trichloroethene	25.0	23.0		ug/L		92	80 - 123
Trichlorofluoromethane	25.0	22.0		ug/L		88	75 - 141
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	28.2		ug/L		113	70 - 133
Vinyl acetate	25.0	28.4		ug/L		113	50 - 126
Vinyl chloride	25.0	20.1		ug/L		80	58 - 138
Ethylene Dibromide	25.0	24.7		ug/L		99	80 - 121
2-Butanone (MEK)	125	115		ug/L		92	66 - 133
4-Methyl-2-pentanone (MIBK)	125	126		ug/L		101	66 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*67 - 130*
Toluene-d8 (Surr)	*103*		*70 - 130*
Dibromofluoromethane (Surr)	*90*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*88*		*72 - 130*

Lab Sample ID: LCSD 720-250217/6
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	25.0	25.6		ug/L		102	77 - 120	8	20
1,1,1,2-Tetrachloroethane	25.0	23.2		ug/L		93	81 - 121	1	20
1,1,1-Trichloroethane	25.0	23.7		ug/L		95	74 - 130	2	20
1,1,2,2-Tetrachloroethane	25.0	24.3		ug/L		97	70 - 115	4	20
1,1,2-Trichloroethane	25.0	25.6		ug/L		102	80 - 117	4	20
1,1-Dichloroethane	25.0	25.8		ug/L		103	77 - 119	2	20
1,1-Dichloroethene	25.0	28.5		ug/L		114	69 - 119	2	20
1,1-Dichloropropene	25.0	24.6		ug/L		99	83 - 130	2	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-250217/6
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichlorobenzene	25.0	27.5		ug/L		110	87 - 123	8	20
1,2,4-Trichlorobenzene	25.0	27.6		ug/L		110	78 - 120	6	20
1,2,4-Trimethylbenzene	25.0	26.4		ug/L		105	75 - 115	2	20
1,2-Dibromo-3-Chloropropane	25.0	28.3		ug/L		113	74 - 126	8	20
1,2-Dichlorobenzene	25.0	25.1		ug/L		100	77 - 117	3	20
1,2-Dichloroethane	25.0	23.0		ug/L		92	73 - 122	1	20
1,2-Dichloropropane	25.0	25.7		ug/L		103	79 - 119	0	20
1,3,5-Trimethylbenzene	25.0	26.0		ug/L		104	77 - 117	3	20
1,3-Dichlorobenzene	25.0	24.3		ug/L		97	76 - 116	3	20
1,3-Dichloropropane	25.0	25.0		ug/L		100	77 - 117	0	20
1,4-Dichlorobenzene	25.0	23.8		ug/L		95	76 - 116	2	20
2,2-Dichloropropane	25.0	26.6		ug/L		106	74 - 156	0	20
2-Chlorotoluene	25.0	25.5		ug/L		102	75 - 115	0	20
2-Hexanone	125	132		ug/L		106	63 - 140	1	24
4-Chlorotoluene	25.0	26.3		ug/L		105	73 - 119	2	20
4-Isopropyltoluene	25.0	25.3		ug/L		101	80 - 120	4	20
Acetone	125	134		ug/L		107	61 - 147	1	30
Benzene	25.0	24.2		ug/L		97	79 - 119	1	20
Bromobenzene	25.0	26.1		ug/L		104	77 - 117	3	20
Bromoform	25.0	23.9		ug/L		96	75 - 127	5	20
Bromomethane	25.0	22.0		ug/L		88	70 - 132	5	20
Carbon disulfide	25.0	32.4	*	ug/L		130	64 - 127	2	20
Carbon tetrachloride	25.0	22.8		ug/L		91	72 - 142	1	20
Chlorobenzene	25.0	23.5		ug/L		94	76 - 116	0	20
Chlorobromomethane	25.0	25.5		ug/L		102	81 - 122	3	20
Chloroethane	25.0	21.7		ug/L		87	70 - 131	4	20
Chloroform	25.0	22.7		ug/L		91	82 - 119	1	20
Chloromethane	25.0	19.1		ug/L		76	49 - 134	8	20
cis-1,2-Dichloroethene	25.0	25.2		ug/L		101	77 - 117	3	20
cis-1,3-Dichloropropene	25.0	27.2		ug/L		109	82 - 119	3	20
Chlorodibromomethane	25.0	24.6		ug/L		98	77 - 133	3	20
Dibromomethane	25.0	23.8		ug/L		95	79 - 117	1	20
Dichlorobromomethane	25.0	23.2		ug/L		93	81 - 130	0	20
Dichlorodifluoromethane	25.0	12.9		ug/L		52	21 - 150	6	20
Ethylbenzene	25.0	24.1		ug/L		96	77 - 117	1	20
Hexachlorobutadiene	25.0	23.3		ug/L		93	78 - 140	5	20
Isopropylbenzene	25.0	25.2		ug/L		101	77 - 130	3	20
m-Xylene & p-Xylene	25.0	24.5		ug/L		98	74 - 119	0	20
Methylene Chloride	25.0	26.4		ug/L		106	75 - 117	2	20
Methyl tert-butyl ether	25.0	28.1		ug/L		112	70 - 130	4	20
Naphthalene	25.0	29.8		ug/L		119	81 - 121	9	20
n-Butylbenzene	25.0	24.9		ug/L		100	78 - 119	4	20
N-Propylbenzene	25.0	26.1		ug/L		104	77 - 117	2	20
o-Xylene	25.0	24.7		ug/L		99	77 - 118	2	20
sec-Butylbenzene	25.0	25.2		ug/L		101	78 - 118	2	20
Styrene	25.0	24.9		ug/L		100	76 - 116	1	20
tert-Butylbenzene	25.0	25.2		ug/L		101	78 - 118	5	20
Tetrachloroethene	25.0	24.4		ug/L		98	81 - 130	3	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-250217/6
Matrix: Water
Analysis Batch: 250217

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Toluene			25.0	23.7		ug/L		95	75 - 120	0	20
trans-1,2-Dichloroethene			25.0	28.9		ug/L		116	79 - 117	0	20
trans-1,3-Dichloropropene			25.0	25.6		ug/L		103	76 - 122	4	20
Trichloroethene			25.0	23.4		ug/L		94	80 - 123	2	20
Trichlorofluoromethane			25.0	21.9		ug/L		88	75 - 141	0	20
1,1,2-Trichloro-1,2,2-trifluoroethane			25.0	28.7		ug/L		115	70 - 133	2	20
Vinyl acetate			25.0	28.7		ug/L		115	50 - 126	1	20
Vinyl chloride			25.0	19.3		ug/L		77	58 - 138	4	20
Ethylene Dibromide			25.0	24.6		ug/L		98	80 - 121	0	20
2-Butanone (MEK)			125	124		ug/L		99	66 - 133	8	22
4-Methyl-2-pentanone (MIBK)			125	131		ug/L		105	66 - 140	3	21

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*100*		*67 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*
Dibromofluoromethane (Surr)	*91*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*89*		*72 - 130*

Lab Sample ID: MB 720-250344/4
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.50		ug/L			08/28/18 09:35	1
1,1,1,2-Tetrachloroethane	ND		0.50		ug/L			08/28/18 09:35	1
1,1,1-Trichloroethane	ND		0.50		ug/L			08/28/18 09:35	1
1,1,2,2-Tetrachloroethane	ND		0.50		ug/L			08/28/18 09:35	1
1,1,2-Trichloroethane	ND		0.50		ug/L			08/28/18 09:35	1
1,1-Dichloroethane	ND		0.50		ug/L			08/28/18 09:35	1
1,1-Dichloroethene	ND		0.50		ug/L			08/28/18 09:35	1
1,1-Dichloropropene	ND		0.50		ug/L			08/28/18 09:35	1
1,2,3-Trichlorobenzene	ND		1.0		ug/L			08/28/18 09:35	1
1,2,4-Trichlorobenzene	ND		1.0		ug/L			08/28/18 09:35	1
1,2,4-Trimethylbenzene	ND		0.50		ug/L			08/28/18 09:35	1
1,2-Dibromo-3-Chloropropane	ND		1.0		ug/L			08/28/18 09:35	1
1,2-Dichlorobenzene	ND		0.50		ug/L			08/28/18 09:35	1
1,2-Dichloroethane	ND		0.50		ug/L			08/28/18 09:35	1
1,2-Dichloropropane	ND		0.50		ug/L			08/28/18 09:35	1
1,3,5-Trimethylbenzene	ND		0.50		ug/L			08/28/18 09:35	1
1,3-Dichlorobenzene	ND		0.50		ug/L			08/28/18 09:35	1
1,3-Dichloropropane	ND		1.0		ug/L			08/28/18 09:35	1
1,4-Dichlorobenzene	ND		0.50		ug/L			08/28/18 09:35	1
2,2-Dichloropropane	ND		0.50		ug/L			08/28/18 09:35	1
2-Chlorotoluene	ND		0.50		ug/L			08/28/18 09:35	1
2-Hexanone	ND		50		ug/L			08/28/18 09:35	1
4-Chlorotoluene	ND		0.50		ug/L			08/28/18 09:35	1
4-Isopropyltoluene	ND		1.0		ug/L			08/28/18 09:35	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-250344/4
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		50		ug/L			08/28/18 09:35	1
Benzene	ND		0.50		ug/L			08/28/18 09:35	1
Bromobenzene	ND		1.0		ug/L			08/28/18 09:35	1
Bromoform	ND		1.0		ug/L			08/28/18 09:35	1
Bromomethane	ND		1.0		ug/L			08/28/18 09:35	1
Carbon disulfide	ND		5.0		ug/L			08/28/18 09:35	1
Carbon tetrachloride	ND		0.50		ug/L			08/28/18 09:35	1
Chlorobenzene	ND		0.50		ug/L			08/28/18 09:35	1
Chlorobromomethane	ND		1.0		ug/L			08/28/18 09:35	1
Chloroethane	ND		1.0		ug/L			08/28/18 09:35	1
Chloroform	ND		1.0		ug/L			08/28/18 09:35	1
Chloromethane	ND		1.0		ug/L			08/28/18 09:35	1
cis-1,2-Dichloroethene	ND		0.50		ug/L			08/28/18 09:35	1
cis-1,3-Dichloropropene	ND		0.50		ug/L			08/28/18 09:35	1
Chlorodibromomethane	ND		0.50		ug/L			08/28/18 09:35	1
Dibromomethane	ND		0.50		ug/L			08/28/18 09:35	1
Dichlorobromomethane	ND		0.50		ug/L			08/28/18 09:35	1
Dichlorodifluoromethane	ND		0.50		ug/L			08/28/18 09:35	1
Ethylbenzene	ND		0.50		ug/L			08/28/18 09:35	1
Hexachlorobutadiene	ND		1.0		ug/L			08/28/18 09:35	1
Isopropylbenzene	ND		0.50		ug/L			08/28/18 09:35	1
Methylene Chloride	ND		5.0		ug/L			08/28/18 09:35	1
Methyl tert-butyl ether	ND		0.50		ug/L			08/28/18 09:35	1
Naphthalene	ND		1.0		ug/L			08/28/18 09:35	1
n-Butylbenzene	ND		1.0		ug/L			08/28/18 09:35	1
N-Propylbenzene	ND		1.0		ug/L			08/28/18 09:35	1
sec-Butylbenzene	ND		1.0		ug/L			08/28/18 09:35	1
Styrene	ND		0.50		ug/L			08/28/18 09:35	1
tert-Butylbenzene	ND		1.0		ug/L			08/28/18 09:35	1
Tetrachloroethene	ND		0.50		ug/L			08/28/18 09:35	1
Toluene	ND		0.50		ug/L			08/28/18 09:35	1
trans-1,2-Dichloroethene	ND		0.50		ug/L			08/28/18 09:35	1
trans-1,3-Dichloropropene	ND		0.50		ug/L			08/28/18 09:35	1
Trichloroethene	ND		0.50		ug/L			08/28/18 09:35	1
Trichlorofluoromethane	ND		1.0		ug/L			08/28/18 09:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50		ug/L			08/28/18 09:35	1
Vinyl acetate	ND		10		ug/L			08/28/18 09:35	1
Vinyl chloride	ND		0.50		ug/L			08/28/18 09:35	1
Xylenes, Total	ND		0.50		ug/L			08/28/18 09:35	1
Ethylene Dibromide	ND		0.50		ug/L			08/28/18 09:35	1
2-Butanone (MEK)	ND		50		ug/L			08/28/18 09:35	1
4-Methyl-2-pentanone (MIBK)	ND		50		ug/L			08/28/18 09:35	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene	*100*		*67 - 130*		*08/28/18 09:35*	*1*
Toluene-d8 (Surr)	*99*		*70 - 130*		*08/28/18 09:35*	*1*
Dibromofluoromethane (Surr)	*94*		*70 - 130*		*08/28/18 09:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*72 - 130*		*08/28/18 09:35*	*1*

Lab Sample ID: LCS 720-250344/5
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	25.0	21.3		ug/L		85	77 - 120
1,1,1,2-Tetrachloroethane	25.0	22.6		ug/L		90	81 - 121
1,1,1-Trichloroethane	25.0	22.8		ug/L		91	74 - 130
1,1,2,2-Tetrachloroethane	25.0	21.0		ug/L		84	70 - 115
1,1,2-Trichloroethane	25.0	22.5		ug/L		90	80 - 117
1,1-Dichloroethane	25.0	23.8		ug/L		95	77 - 119
1,1-Dichloroethene	25.0	22.6		ug/L		90	69 - 119
1,1-Dichloropropene	25.0	23.4		ug/L		93	83 - 130
1,2,3-Trichlorobenzene	25.0	24.9		ug/L		100	87 - 123
1,2,4-Trichlorobenzene	25.0	26.5		ug/L		106	78 - 120
1,2,4-Trimethylbenzene	25.0	26.6		ug/L		106	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	23.0		ug/L		92	74 - 126
1,2-Dichlorobenzene	25.0	24.1		ug/L		96	77 - 117
1,2-Dichloroethane	25.0	20.8		ug/L		83	73 - 122
1,2-Dichloropropane	25.0	23.5		ug/L		94	79 - 119
1,3,5-Trimethylbenzene	25.0	26.1		ug/L		104	77 - 117
1,3-Dichlorobenzene	25.0	24.1		ug/L		96	76 - 116
1,3-Dichloropropane	25.0	22.2		ug/L		89	77 - 117
1,4-Dichlorobenzene	25.0	23.9		ug/L		96	76 - 116
2,2-Dichloropropane	25.0	24.8		ug/L		99	74 - 156
2-Chlorotoluene	25.0	25.5		ug/L		102	75 - 115
2-Hexanone	125	107		ug/L		86	63 - 140
4-Chlorotoluene	25.0	25.3		ug/L		101	73 - 119
4-Isopropyltoluene	25.0	25.4		ug/L		102	80 - 120
Acetone	125	112		ug/L		90	61 - 147
Benzene	25.0	23.2		ug/L		93	79 - 119
Bromobenzene	25.0	24.8		ug/L		99	77 - 117
Bromoform	25.0	21.0		ug/L		84	75 - 127
Bromomethane	25.0	21.5		ug/L		86	70 - 132
Carbon disulfide	25.0	24.3		ug/L		97	64 - 127
Carbon tetrachloride	25.0	22.6		ug/L		90	72 - 142
Chlorobenzene	25.0	23.1		ug/L		93	76 - 116
Chlorobromomethane	25.0	22.4		ug/L		90	81 - 122
Chloroethane	25.0	22.3		ug/L		89	70 - 131
Chloroform	25.0	21.7		ug/L		87	82 - 119
Chloromethane	25.0	20.5		ug/L		82	49 - 134
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 117
cis-1,3-Dichloropropene	25.0	23.7		ug/L		95	82 - 119
Chlorodibromomethane	25.0	22.4		ug/L		90	77 - 133
Dibromomethane	25.0	21.8		ug/L		87	79 - 117
Dichlorobromomethane	25.0	22.1		ug/L		88	81 - 130
Dichlorodifluoromethane	25.0	15.7		ug/L		63	21 - 150
Ethylbenzene	25.0	24.3		ug/L		97	77 - 117
Hexachlorobutadiene	25.0	24.1		ug/L		96	78 - 140
Isopropylbenzene	25.0	25.5		ug/L		102	77 - 130
m-Xylene & p-Xylene	25.0	24.8		ug/L		99	74 - 119
Methylene Chloride	25.0	23.8		ug/L		95	75 - 117
Methyl tert-butyl ether	25.0	22.4		ug/L		89	70 - 130
Naphthalene	25.0	25.0		ug/L		100	81 - 121
n-Butylbenzene	25.0	26.0		ug/L		104	78 - 119

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-250344/5
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
N-Propylbenzene			25.0	26.2		ug/L		105	77 - 117		
o-Xylene			25.0	24.9		ug/L		99	77 - 118		
sec-Butylbenzene			25.0	25.8		ug/L		103	78 - 118		
Styrene			25.0	24.8		ug/L		99	76 - 116		
tert-Butylbenzene			25.0	24.8		ug/L		99	78 - 118		
Tetrachloroethene			25.0	24.9		ug/L		99	81 - 130		
Toluene			25.0	23.6		ug/L		95	75 - 120		
trans-1,2-Dichloroethene			25.0	24.6		ug/L		98	79 - 117		
trans-1,3-Dichloropropene			25.0	23.1		ug/L		92	76 - 122		
Trichloroethene			25.0	22.9		ug/L		92	80 - 123		
Trichlorofluoromethane			25.0	21.8		ug/L		87	75 - 141		
1,1,2-Trichloro-1,2,2-trifluoroethane			25.0	24.7		ug/L		99	70 - 133		
Vinyl acetate			25.0	25.7		ug/L		103	50 - 126		
Vinyl chloride			25.0	19.7		ug/L		79	58 - 138		
Ethylene Dibromide			25.0	21.0		ug/L		84	80 - 121		
2-Butanone (MEK)			125	101		ug/L		81	66 - 133		
4-Methyl-2-pentanone (MIBK)			125	108		ug/L		87	66 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene	*98*		*67 - 130*
Toluene-d8 (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*90*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*82*		*72 - 130*

Lab Sample ID: LCSD 720-250344/6
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane			25.0	22.6		ug/L		90	77 - 120	6	20
1,1,1,2-Tetrachloroethane			25.0	24.1		ug/L		97	81 - 121	7	20
1,1,1-Trichloroethane			25.0	23.1		ug/L		93	74 - 130	2	20
1,1,2,2-Tetrachloroethane			25.0	22.4		ug/L		90	70 - 115	6	20
1,1,2-Trichloroethane			25.0	23.5		ug/L		94	80 - 117	4	20
1,1-Dichloroethane			25.0	24.9		ug/L		100	77 - 119	4	20
1,1-Dichloroethene			25.0	23.7		ug/L		95	69 - 119	5	20
1,1-Dichloropropene			25.0	23.2		ug/L		93	83 - 130	1	20
1,2,3-Trichlorobenzene			25.0	27.1		ug/L		109	87 - 123	9	20
1,2,4-Trichlorobenzene			25.0	28.4		ug/L		113	78 - 120	7	20
1,2,4-Trimethylbenzene			25.0	26.7		ug/L		107	75 - 115	0	20
1,2-Dibromo-3-Chloropropane			25.0	25.2		ug/L		101	74 - 126	9	20
1,2-Dichlorobenzene			25.0	24.9		ug/L		100	77 - 117	3	20
1,2-Dichloroethane			25.0	22.0		ug/L		88	73 - 122	6	20
1,2-Dichloropropane			25.0	24.3		ug/L		97	79 - 119	3	20
1,3,5-Trimethylbenzene			25.0	25.9		ug/L		104	77 - 117	1	20
1,3-Dichlorobenzene			25.0	24.7		ug/L		99	76 - 116	2	20
1,3-Dichloropropane			25.0	22.9		ug/L		92	77 - 117	3	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-250344/6
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene			25.0	23.9		ug/L		96	76 - 116	0	20
2,2-Dichloropropane			25.0	24.4		ug/L		98	74 - 156	1	20
2-Chlorotoluene			25.0	25.6		ug/L		102	75 - 115	0	20
2-Hexanone			125	121		ug/L		96	63 - 140	11	24
4-Chlorotoluene			25.0	25.5		ug/L		102	73 - 119	1	20
4-Isopropyltoluene			25.0	25.0		ug/L		100	80 - 120	2	20
Acetone			125	128		ug/L		103	61 - 147	14	30
Benzene			25.0	23.6		ug/L		95	79 - 119	2	20
Bromobenzene			25.0	25.2		ug/L		101	77 - 117	2	20
Bromoform			25.0	23.0		ug/L		92	75 - 127	9	20
Bromomethane			25.0	22.4		ug/L		90	70 - 132	4	20
Carbon disulfide			25.0	25.3		ug/L		101	64 - 127	4	20
Carbon tetrachloride			25.0	22.8		ug/L		91	72 - 142	1	20
Chlorobenzene			25.0	23.2		ug/L		93	76 - 116	0	20
Chlorobromomethane			25.0	24.3		ug/L		97	81 - 122	8	20
Chloroethane			25.0	23.3		ug/L		93	70 - 131	4	20
Chloroform			25.0	22.9		ug/L		92	82 - 119	5	20
Chloromethane			25.0	21.5		ug/L		86	49 - 134	5	20
cis-1,2-Dichloroethene			25.0	24.7		ug/L		99	77 - 117	4	20
cis-1,3-Dichloropropene			25.0	24.4		ug/L		98	82 - 119	3	20
Chlorodibromomethane			25.0	23.3		ug/L		93	77 - 133	4	20
Dibromomethane			25.0	22.8		ug/L		91	79 - 117	4	20
Dichlorobromomethane			25.0	22.5		ug/L		90	81 - 130	2	20
Dichlorodifluoromethane			25.0	15.8		ug/L		63	21 - 150	0	20
Ethylbenzene			25.0	24.1		ug/L		96	77 - 117	1	20
Hexachlorobutadiene			25.0	24.0		ug/L		96	78 - 140	0	20
Isopropylbenzene			25.0	25.6		ug/L		102	77 - 130	0	20
m-Xylene & p-Xylene			25.0	24.5		ug/L		98	74 - 119	1	20
Methylene Chloride			25.0	25.5		ug/L		102	75 - 117	7	20
Methyl tert-butyl ether			25.0	23.9		ug/L		95	70 - 130	7	20
Naphthalene			25.0	28.1		ug/L		112	81 - 121	12	20
n-Butylbenzene			25.0	25.4		ug/L		102	78 - 119	2	20
N-Propylbenzene			25.0	25.3		ug/L		101	77 - 117	3	20
o-Xylene			25.0	25.0		ug/L		100	77 - 118	1	20
sec-Butylbenzene			25.0	25.2		ug/L		101	78 - 118	2	20
Styrene			25.0	25.1		ug/L		100	76 - 116	1	20
tert-Butylbenzene			25.0	25.1		ug/L		101	78 - 118	1	20
Tetrachloroethene			25.0	24.3		ug/L		97	81 - 130	2	20
Toluene			25.0	23.4		ug/L		93	75 - 120	1	20
trans-1,2-Dichloroethene			25.0	26.0		ug/L		104	79 - 117	6	20
trans-1,3-Dichloropropene			25.0	23.7		ug/L		95	76 - 122	3	20
Trichloroethene			25.0	22.8		ug/L		91	80 - 123	1	20
Trichlorofluoromethane			25.0	22.0		ug/L		88	75 - 141	1	20
1,1,2-Trichloro-1,2,2-trifluoroethane			25.0	24.9		ug/L		100	70 - 133	1	20
Vinyl acetate			25.0	28.2		ug/L		113	50 - 126	9	20
Vinyl chloride			25.0	20.6		ug/L		82	58 - 138	4	20
Ethylene Dibromide			25.0	22.7		ug/L		91	80 - 121	8	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-250344/6
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Butanone (MEK)			125	117		ug/L		93	66 - 133	14	22
4-Methyl-2-pentanone (MIBK)			125	121		ug/L		97	66 - 140	11	21

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*67 - 130*
Toluene-d8 (Surr)	*96*		*70 - 130*
Dibromofluoromethane (Surr)	*94*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*90*		*72 - 130*

Lab Sample ID: 720-88177-A-15 MS
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		25.0	22.4		ug/L		90	60 - 140
1,1,1,2-Tetrachloroethane	ND		25.0	24.6		ug/L		98	60 - 140
1,1,1-Trichloroethane	ND		25.0	22.2		ug/L		89	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	21.9		ug/L		88	60 - 140
1,1,2-Trichloroethane	ND		25.0	23.3		ug/L		93	60 - 140
1,1-Dichloroethane	ND		25.0	25.2		ug/L		101	60 - 140
1,1-Dichloroethene	ND		25.0	23.0		ug/L		92	60 - 140
1,1-Dichloropropene	ND		25.0	23.6		ug/L		95	60 - 140
1,2,3-Trichlorobenzene	ND		25.0	26.5		ug/L		103	60 - 140
1,2,4-Trichlorobenzene	ND		25.0	28.0		ug/L		110	60 - 140
1,2,4-Trimethylbenzene	ND		25.0	26.1		ug/L		104	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	25.5		ug/L		102	60 - 140
1,2-Dichlorobenzene	ND		25.0	24.5		ug/L		98	60 - 140
1,2-Dichloroethane	ND		25.0	23.4		ug/L		93	60 - 140
1,2-Dichloropropane	ND		25.0	24.8		ug/L		99	60 - 140
1,3,5-Trimethylbenzene	ND		25.0	25.5		ug/L		102	60 - 140
1,3-Dichlorobenzene	ND		25.0	23.9		ug/L		96	60 - 140
1,3-Dichloropropane	ND		25.0	22.6		ug/L		90	60 - 140
1,4-Dichlorobenzene	ND		25.0	24.3		ug/L		97	60 - 140
2,2-Dichloropropane	ND		25.0	23.9		ug/L		96	60 - 140
2-Chlorotoluene	ND		25.0	24.9		ug/L		100	60 - 140
2-Hexanone	ND		125	116		ug/L		93	60 - 140
4-Chlorotoluene	ND		25.0	25.0		ug/L		100	60 - 140
4-Isopropyltoluene	ND		25.0	24.7		ug/L		99	60 - 140
Acetone	ND		125	125		ug/L		100	60 - 140
Benzene	ND		25.0	24.3		ug/L		97	60 - 140
Bromobenzene	ND		25.0	24.5		ug/L		98	60 - 140
Bromoform	ND		25.0	22.9		ug/L		92	56 - 140
Bromomethane	ND		25.0	21.6		ug/L		86	23 - 140
Carbon disulfide	ND		25.0	23.8		ug/L		95	38 - 140
Carbon tetrachloride	ND		25.0	21.9		ug/L		88	60 - 140
Chlorobenzene	ND		25.0	23.6		ug/L		95	60 - 140
Chlorobromomethane	ND		25.0	25.0		ug/L		100	60 - 140
Chloroethane	ND		25.0	22.0		ug/L		88	51 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88177-A-15 MS
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroform	ND		25.0	23.5		ug/L		94	60 - 140
Chloromethane	ND		25.0	19.7		ug/L		79	52 - 140
cis-1,2-Dichloroethene	ND		25.0	25.0		ug/L		100	60 - 140
cis-1,3-Dichloropropene	ND		25.0	25.1		ug/L		101	60 - 140
Chlorodibromomethane	ND		25.0	23.3		ug/L		93	60 - 140
Dibromomethane	ND		25.0	24.1		ug/L		96	60 - 140
Dichlorobromomethane	ND		25.0	23.3		ug/L		93	60 - 140
Dichlorodifluoromethane	ND		25.0	15.1		ug/L		61	38 - 140
Ethylbenzene	ND		25.0	23.9		ug/L		95	60 - 140
Hexachlorobutadiene	ND		25.0	23.8		ug/L		94	60 - 140
Isopropylbenzene	ND		25.0	25.6		ug/L		102	60 - 140
m-Xylene & p-Xylene	ND		25.0	24.3		ug/L		97	60 - 140
Methylene Chloride	ND		25.0	24.9		ug/L		99	40 - 140
Methyl tert-butyl ether	3.6		25.0	28.2		ug/L		99	60 - 138
Naphthalene	ND		25.0	27.1		ug/L		105	56 - 140
n-Butylbenzene	ND		25.0	24.9		ug/L		99	60 - 140
N-Propylbenzene	ND		25.0	24.5		ug/L		98	60 - 140
o-Xylene	ND		25.0	25.3		ug/L		101	60 - 140
sec-Butylbenzene	ND		25.0	24.6		ug/L		99	60 - 140
Styrene	ND		25.0	25.4		ug/L		102	60 - 140
tert-Butylbenzene	ND		25.0	25.1		ug/L		100	60 - 140
Tetrachloroethene	ND		25.0	23.3		ug/L		93	60 - 140
Toluene	ND		25.0	23.9		ug/L		96	60 - 140
trans-1,2-Dichloroethene	ND		25.0	25.2		ug/L		101	60 - 140
trans-1,3-Dichloropropene	ND		25.0	24.1		ug/L		96	60 - 140
Trichloroethene	ND		25.0	23.4		ug/L		94	60 - 140
Trichlorofluoromethane	ND		25.0	21.2		ug/L		85	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	23.3		ug/L		93	60 - 140
Vinyl acetate	ND		25.0	29.1		ug/L		116	40 - 140
Vinyl chloride	ND		25.0	18.9		ug/L		76	58 - 140
Ethylene Dibromide	ND		25.0	22.9		ug/L		92	60 - 140
2-Butanone (MEK)	ND		125	125		ug/L		100	60 - 140
4-Methyl-2-pentanone (MIBK)	ND		125	119		ug/L		95	58 - 130

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene	*99*		*67 - 130*
Toluene-d8 (Surr)	*93*		*70 - 130*
Dibromofluoromethane (Surr)	*96*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*90*		*72 - 130*

Lab Sample ID: 720-88177-A-15 MSD
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	ND		25.0	22.8		ug/L		91	60 - 140	2	20
1,1,1,2-Tetrachloroethane	ND		25.0	24.2		ug/L		97	60 - 140	2	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88177-A-15 MSD
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	22.7		ug/L		91	60 - 140	3	20
1,1,2,2-Tetrachloroethane	ND		25.0	23.3		ug/L		93	60 - 140	6	20
1,1,2-Trichloroethane	ND		25.0	25.2		ug/L		101	60 - 140	8	20
1,1-Dichloroethane	ND		25.0	24.9		ug/L		100	60 - 140	1	20
1,1-Dichloroethene	ND		25.0	22.8		ug/L		91	60 - 140	1	20
1,1-Dichloropropene	ND		25.0	23.0		ug/L		92	60 - 140	3	20
1,2,3-Trichlorobenzene	ND		25.0	27.2		ug/L		105	60 - 140	2	20
1,2,4-Trichlorobenzene	ND		25.0	27.8		ug/L		109	60 - 140	1	20
1,2,4-Trimethylbenzene	ND		25.0	25.3		ug/L		101	60 - 140	3	20
1,2-Dibromo-3-Chloropropane	ND		25.0	25.9		ug/L		104	60 - 140	2	20
1,2-Dichlorobenzene	ND		25.0	24.4		ug/L		98	60 - 140	0	20
1,2-Dichloroethane	ND		25.0	23.7		ug/L		95	60 - 140	1	20
1,2-Dichloropropane	ND		25.0	25.4		ug/L		102	60 - 140	2	20
1,3,5-Trimethylbenzene	ND		25.0	24.5		ug/L		98	60 - 140	4	20
1,3-Dichlorobenzene	ND		25.0	23.6		ug/L		94	60 - 140	1	20
1,3-Dichloropropane	ND		25.0	24.3		ug/L		97	60 - 140	7	20
1,4-Dichlorobenzene	ND		25.0	23.2		ug/L		93	60 - 140	5	20
2,2-Dichloropropane	ND		25.0	25.1		ug/L		100	60 - 140	5	20
2-Chlorotoluene	ND		25.0	24.1		ug/L		96	60 - 140	3	20
2-Hexanone	ND		125	139		ug/L		111	60 - 140	18	20
4-Chlorotoluene	ND		25.0	24.5		ug/L		98	60 - 140	2	20
4-Isopropyltoluene	ND		25.0	23.5		ug/L		94	60 - 140	5	20
Acetone	ND		125	142		ug/L		114	60 - 140	13	20
Benzene	ND		25.0	24.0		ug/L		96	60 - 140	1	20
Bromobenzene	ND		25.0	24.7		ug/L		99	60 - 140	1	20
Bromoform	ND		25.0	23.9		ug/L		95	56 - 140	4	20
Bromomethane	ND		25.0	22.4		ug/L		90	23 - 140	4	20
Carbon disulfide	ND		25.0	24.0		ug/L		96	38 - 140	1	20
Carbon tetrachloride	ND		25.0	22.1		ug/L		89	60 - 140	1	20
Chlorobenzene	ND		25.0	23.3		ug/L		93	60 - 140	1	20
Chlorobromomethane	ND		25.0	25.3		ug/L		101	60 - 140	1	20
Chloroethane	ND		25.0	23.0		ug/L		92	51 - 140	5	20
Chloroform	ND		25.0	23.4		ug/L		93	60 - 140	1	20
Chloromethane	ND		25.0	20.5		ug/L		82	52 - 140	4	20
cis-1,2-Dichloroethene	ND		25.0	24.9		ug/L		100	60 - 140	0	20
cis-1,3-Dichloropropene	ND		25.0	26.1		ug/L		105	60 - 140	4	20
Chlorodibromomethane	ND		25.0	24.8		ug/L		99	60 - 140	6	20
Dibromomethane	ND		25.0	24.5		ug/L		98	60 - 140	2	20
Dichlorobromomethane	ND		25.0	24.3		ug/L		97	60 - 140	4	20
Dichlorodifluoromethane	ND		25.0	15.4		ug/L		62	38 - 140	2	20
Ethylbenzene	ND		25.0	23.1		ug/L		92	60 - 140	3	20
Hexachlorobutadiene	ND		25.0	22.3		ug/L		88	60 - 140	6	20
Isopropylbenzene	ND		25.0	24.8		ug/L		99	60 - 140	3	20
m-Xylene & p-Xylene	ND		25.0	23.9		ug/L		96	60 - 140	1	20
Methylene Chloride	ND		25.0	25.1		ug/L		101	40 - 140	1	20
Methyl tert-butyl ether	3.6		25.0	32.8		ug/L		117	60 - 138	15	20
Naphthalene	ND		25.0	29.1		ug/L		113	56 - 140	7	20
n-Butylbenzene	ND		25.0	23.6		ug/L		95	60 - 140	5	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88177-A-15 MSD
Matrix: Water
Analysis Batch: 250344

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-Propylbenzene	ND		25.0	23.5		ug/L		94	60 - 140	4	20
o-Xylene	ND		25.0	25.1		ug/L		100	60 - 140	1	20
sec-Butylbenzene	ND		25.0	23.4		ug/L		93	60 - 140	5	20
Styrene	ND		25.0	25.4		ug/L		101	60 - 140	0	20
tert-Butylbenzene	ND		25.0	23.0		ug/L		92	60 - 140	9	20
Tetrachloroethene	ND		25.0	24.1		ug/L		96	60 - 140	3	20
Toluene	ND		25.0	23.1		ug/L		92	60 - 140	3	20
trans-1,2-Dichloroethene	ND		25.0	25.2		ug/L		101	60 - 140	0	20
trans-1,3-Dichloropropene	ND		25.0	26.0		ug/L		104	60 - 140	8	20
Trichloroethene	ND		25.0	23.3		ug/L		93	60 - 140	1	20
Trichlorofluoromethane	ND		25.0	21.2		ug/L		85	60 - 140	0	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	24.0		ug/L		96	60 - 140	3	20
Vinyl acetate	ND		25.0	29.5		ug/L		118	40 - 140	2	20
Vinyl chloride	ND		25.0	19.6		ug/L		78	58 - 140	3	20
Ethylene Dibromide	ND		25.0	24.8		ug/L		99	60 - 140	8	20
2-Butanone (MEK)	ND		125	130		ug/L		104	60 - 140	4	20
4-Methyl-2-pentanone (MIBK)	ND		125	142		ug/L		113	58 - 130	17	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene	*101*		*67 - 130*
Toluene-d8 (Surr)	*98*		*70 - 130*
Dibromofluoromethane (Surr)	*97*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*91*		*72 - 130*

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 440-496081/5
Matrix: Water
Analysis Batch: 496081

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 14:03	1

Lab Sample ID: LCS 440-496081/4
Matrix: Water
Analysis Batch: 496081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2,3-Trichloropropane			0.00500	0.00433	J	ug/L		87	80 - 120		

Lab Sample ID: 720-88059-3 DU
Matrix: Water
Analysis Batch: 496081

Client Sample ID: MK-4A
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
1,2,3-Trichloropropane	ND			ND		ug/L				NC	30

Method: SRL 524M-TCP - Volatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 440-496218/5
Matrix: Water
Analysis Batch: 496218

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/28/18 22:12	1

Lab Sample ID: LCS 440-496218/4
Matrix: Water
Analysis Batch: 496218

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	0.00500	0.00606	*	ug/L		121	80 - 120

Lab Sample ID: 720-88236-I-1 DU
Matrix: Water
Analysis Batch: 496218

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
1,2,3-Trichloropropane	ND	*	ND	*	ug/L		NC	30

Lab Sample ID: MB 440-496340/5
Matrix: Water
Analysis Batch: 496340

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050		ug/L			08/29/18 12:49	1

Lab Sample ID: LCS 440-496340/4
Matrix: Water
Analysis Batch: 496340

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	0.00500	0.00498	J	ug/L		100	80 - 120

Lab Sample ID: 320-42553-E-2 DU
Matrix: Water
Analysis Batch: 496340

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
1,2,3-Trichloropropane	ND		ND		ug/L		NC	30

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 440-494773/14
Matrix: Water
Analysis Batch: 494773

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/21/18 17:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*65 - 140*		*08/21/18 17:08*	*1*

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: LCS 440-494773/13
Matrix: Water
Analysis Batch: 494773

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)			800	833		ug/L		104	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*65 - 140*

Lab Sample ID: 440-218182-B-3 MS
Matrix: Water
Analysis Batch: 494773

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)	90		800	914		ug/L		103	65 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*111*		*65 - 140*

Lab Sample ID: 440-218182-C-3 MSD
Matrix: Water
Analysis Batch: 494773

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	90		800	868		ug/L		97	65 - 140	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*109*		*65 - 140*

Lab Sample ID: MB 440-495513/5
Matrix: Water
Analysis Batch: 495513

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C4-C12)	ND		50		ug/L			08/24/18 10:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*65 - 140*		*08/24/18 10:48*	*1*

Lab Sample ID: LCS 440-495513/4
Matrix: Water
Analysis Batch: 495513

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)			800	811		ug/L		101	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*110*		*65 - 140*

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: 440-218762-C-1 MS
Matrix: Water
Analysis Batch: 495513

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C4-C12)	ND		800	758		ug/L		95	65 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*116*		*65 - 140*

Lab Sample ID: 440-218762-C-1 MSD
Matrix: Water
Analysis Batch: 495513

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	ND		800	759		ug/L		95	65 - 140	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*65 - 140*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 720-249750/1-A
Matrix: Water
Analysis Batch: 249700

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249750

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		50		ug/L		08/17/18 15:43	08/18/18 06:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*95*		*23 - 156*	*08/17/18 15:43*	*08/18/18 06:40*	*1*

Lab Sample ID: LCS 720-249750/2-A
Matrix: Water
Analysis Batch: 249700

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249750

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	2500	2070		ug/L		83	34 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
p-Terphenyl	*100*		*23 - 156*

Lab Sample ID: LCSD 720-249750/3-A
Matrix: Water
Analysis Batch: 249700

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 249750

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	2500	1990		ug/L		80	34 - 115	4	35

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 720-249750/3-A
Matrix: Water
Analysis Batch: 249700

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 249750

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
p-Terphenyl	*101*		*23 - 156*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-249769/1-A
Matrix: Water
Analysis Batch: 249891

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249769

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Arsenic	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Barium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Beryllium	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 09:54	1
Cadmium	ND		0.0025		mg/L		08/18/18 10:05	08/21/18 09:54	1
Chromium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Cobalt	ND		0.0020		mg/L		08/18/18 10:05	08/21/18 09:54	1
Copper	ND		0.020		mg/L		08/18/18 10:05	08/21/18 09:54	1
Lead	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 09:54	1
Molybdenum	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Nickel	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Selenium	ND		0.020		mg/L		08/18/18 10:05	08/21/18 09:54	1
Silver	ND		0.0050		mg/L		08/18/18 10:05	08/21/18 09:54	1
Thallium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Vanadium	ND		0.010		mg/L		08/18/18 10:05	08/21/18 09:54	1
Zinc	ND		0.020		mg/L		08/18/18 10:05	08/21/18 09:54	1

Lab Sample ID: LCS 720-249769/2-A
Matrix: Water
Analysis Batch: 249891

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249769

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	1.00	1.03		mg/L		103	80 - 120
Arsenic	1.00	0.981		mg/L		98	80 - 120
Barium	1.00	0.956		mg/L		96	80 - 120
Beryllium	1.00	0.963		mg/L		96	80 - 120
Cadmium	1.00	1.03		mg/L		103	80 - 120
Chromium	1.00	1.01		mg/L		101	80 - 120
Cobalt	1.00	1.05		mg/L		105	80 - 120
Copper	1.00	0.998		mg/L		100	80 - 120
Lead	1.00	1.05		mg/L		105	80 - 120
Molybdenum	1.00	1.01		mg/L		101	80 - 120
Nickel	1.00	1.04		mg/L		104	80 - 120
Selenium	1.00	0.963		mg/L		96	80 - 120
Silver	0.500	0.495		mg/L		99	80 - 120
Thallium	1.00	1.05		mg/L		105	80 - 120
Vanadium	1.00	1.01		mg/L		101	80 - 120
Zinc	1.00	1.03		mg/L		103	80 - 120

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 720-88089-A-1-A MS
Matrix: Water
Analysis Batch: 249891

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 249769

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		1.00	1.07		mg/L		107	75 - 125
Arsenic	ND		1.00	0.969		mg/L		97	75 - 125
Barium	0.17		1.00	1.11		mg/L		94	75 - 125
Beryllium	ND		1.00	0.952		mg/L		95	75 - 125
Cadmium	ND		1.00	1.04		mg/L		104	75 - 125
Chromium	ND		1.00	0.910		mg/L		91	75 - 125
Cobalt	ND		1.00	1.04		mg/L		104	75 - 125
Copper	ND		1.00	0.891		mg/L		89	75 - 125
Lead	ND		1.00	1.03		mg/L		103	75 - 125
Molybdenum	ND		1.00	0.965		mg/L		96	75 - 125
Nickel	ND		1.00	1.03		mg/L		103	75 - 125
Selenium	ND		1.00	0.926		mg/L		93	75 - 125
Silver	ND		0.500	0.492		mg/L		98	75 - 125
Thallium	ND		1.00	0.997		mg/L		100	75 - 125
Vanadium	ND		1.00	0.935		mg/L		93	75 - 125
Zinc	ND		1.00	1.06		mg/L		106	75 - 125

Lab Sample ID: 720-88089-A-1-B MSD
Matrix: Water
Analysis Batch: 249891

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 249769

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		1.00	0.939		mg/L		94	75 - 125	13	20
Arsenic	ND		1.00	0.951		mg/L		95	75 - 125	2	20
Barium	0.17		1.00	1.09		mg/L		92	75 - 125	2	20
Beryllium	ND		1.00	0.932		mg/L		93	75 - 125	2	20
Cadmium	ND		1.00	0.921		mg/L		92	75 - 125	12	20
Chromium	ND		1.00	0.927		mg/L		93	75 - 125	2	20
Cobalt	ND		1.00	0.915		mg/L		92	75 - 125	13	20
Copper	ND		1.00	0.914		mg/L		91	75 - 125	3	20
Lead	ND		1.00	0.908		mg/L		91	75 - 125	12	20
Molybdenum	ND		1.00	0.945		mg/L		94	75 - 125	2	20
Nickel	ND		1.00	0.914		mg/L		91	75 - 125	12	20
Selenium	ND		1.00	0.919		mg/L		92	75 - 125	1	20
Silver	ND		0.500	0.460		mg/L		92	75 - 125	7	20
Thallium	ND		1.00	0.887		mg/L		89	75 - 125	12	20
Vanadium	ND		1.00	0.945		mg/L		94	75 - 125	1	20
Zinc	ND		1.00	0.927		mg/L		93	75 - 125	13	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 720-249773/1-A
Matrix: Water
Analysis Batch: 249850

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 249773

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020		mg/L		08/18/18 14:29	08/20/18 17:18	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 720-249773/2-A
Matrix: Water
Analysis Batch: 249850

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 249773

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.0100	0.00927		mg/L		93	85 - 115

Lab Sample ID: 720-88028-G-1-E MS
Matrix: Water
Analysis Batch: 249850

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 249773

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	ND		0.0100	0.00949		mg/L		95	75 - 125

Lab Sample ID: 720-88028-G-1-F MSD
Matrix: Water
Analysis Batch: 249850

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 249773

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.0100	0.00949		mg/L		95	75 - 125	0	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 720-249590/9
Matrix: Water
Analysis Batch: 249590

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010		mg/L			08/15/18 18:31	1

Lab Sample ID: LCS 720-249590/10
Matrix: Water
Analysis Batch: 249590

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	0.250	0.260		mg/L		104	90 - 110

Lab Sample ID: LCSD 720-249590/11
Matrix: Water
Analysis Batch: 249590

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	0.250	0.261		mg/L		104	90 - 110	0	20

Lab Sample ID: 720-88059-3 MS
Matrix: Water
Analysis Batch: 249590

Client Sample ID: MK-4A
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cr (VI)	ND		0.250	0.252		mg/L		101	85 - 115

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: 720-88059-3 MSD
Matrix: Water
Analysis Batch: 249590

Client Sample ID: MK-4A
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	ND		0.250	0.252		mg/L		101	85 - 115	0	20

GC/MS VOA

Analysis Batch: 249682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-4	MK-6A	Total/NA	Water	8260B	
MB 720-249682/4	Method Blank	Total/NA	Water	8260B	
LCS 720-249682/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-249682/6	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88062-A-5 MS	Matrix Spike	Total/NA	Water	8260B	
720-88062-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 249684

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-10	FB-2	Total/NA	Water	8260B	
720-88059-11	TB-2	Total/NA	Water	8260B	
MB 720-249684/4	Method Blank	Total/NA	Water	8260B	
LCS 720-249684/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-249684/6	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88056-A-8 MS	Matrix Spike	Total/NA	Water	8260B	
720-88056-A-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 249691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-5	MW-4A	Total/NA	Water	8260B	
720-88059-8	MW-8A	Total/NA	Water	8260B	
MB 720-249691/11	Method Blank	Total/NA	Water	8260B	
LCS 720-249691/17	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-249691/18	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88066-A-5 MS	Matrix Spike	Total/NA	Water	8260B	
720-88066-A-5 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 249695

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	8260B	
720-88059-2	GWE-4	Total/NA	Water	8260B	
720-88059-7	MW-7A	Total/NA	Water	8260B	
720-88059-9	DUP-2	Total/NA	Water	8260B	
MB 720-249695/4	Method Blank	Total/NA	Water	8260B	
LCS 720-249695/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-249695/6	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88082-A-2 MS	Matrix Spike	Total/NA	Water	8260B	
720-88082-A-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 249863

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-3	MK-4A	Total/NA	Water	8260B	
MB 720-249863/4	Method Blank	Total/NA	Water	8260B	
LCS 720-249863/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-249863/6	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88121-D-3 MS	Matrix Spike	Total/NA	Water	8260B	

Analysis Batch: 250217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-5	MW-4A	Total/NA	Water	8260B	
MB 720-250217/4	Method Blank	Total/NA	Water	8260B	

GC/MS VOA (Continued)

Analysis Batch: 250217 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 720-250217/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-250217/6	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 250344

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-6	MW-6AR	Total/NA	Water	8260B	
720-88059-7	MW-7A	Total/NA	Water	8260B	
MB 720-250344/4	Method Blank	Total/NA	Water	8260B	
LCS 720-250344/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-250344/6	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88177-A-15 MS	Matrix Spike	Total/NA	Water	8260B	
720-88177-A-15 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 496081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	SRL 524M-TCP	
720-88059-2	GWE-4	Total/NA	Water	SRL 524M-TCP	
720-88059-3	MK-4A	Total/NA	Water	SRL 524M-TCP	
720-88059-4	MK-6A	Total/NA	Water	SRL 524M-TCP	
720-88059-5	MW-4A	Total/NA	Water	SRL 524M-TCP	
720-88059-9	DUP-2	Total/NA	Water	SRL 524M-TCP	
MB 440-496081/5	Method Blank	Total/NA	Water	SRL 524M-TCP	
LCS 440-496081/4	Lab Control Sample	Total/NA	Water	SRL 524M-TCP	
720-88059-3 DU	MK-4A	Total/NA	Water	SRL 524M-TCP	

Analysis Batch: 496218

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-6	MW-6AR	Total/NA	Water	SRL 524M-TCP	
720-88059-7	MW-7A	Total/NA	Water	SRL 524M-TCP	
720-88059-8	MW-8A	Total/NA	Water	SRL 524M-TCP	
MB 440-496218/5	Method Blank	Total/NA	Water	SRL 524M-TCP	
LCS 440-496218/4	Lab Control Sample	Total/NA	Water	SRL 524M-TCP	
720-88236-I-1 DU	Duplicate	Total/NA	Water	SRL 524M-TCP	

Analysis Batch: 496340

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-10	FB-2	Total/NA	Water	SRL 524M-TCP	
MB 440-496340/5	Method Blank	Total/NA	Water	SRL 524M-TCP	
LCS 440-496340/4	Lab Control Sample	Total/NA	Water	SRL 524M-TCP	
320-42553-E-2 DU	Duplicate	Total/NA	Water	SRL 524M-TCP	

GC VOA

Analysis Batch: 494773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-2	GWE-4	Total/NA	Water	8015B	
720-88059-3	MK-4A	Total/NA	Water	8015B	
720-88059-4	MK-6A	Total/NA	Water	8015B	
720-88059-5	MW-4A	Total/NA	Water	8015B	
720-88059-6	MW-6AR	Total/NA	Water	8015B	

GC VOA (Continued)

Analysis Batch: 494773 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-7	MW-7A	Total/NA	Water	8015B	
720-88059-8	MW-8A	Total/NA	Water	8015B	
720-88059-9	DUP-2	Total/NA	Water	8015B	
MB 440-494773/14	Method Blank	Total/NA	Water	8015B	
LCS 440-494773/13	Lab Control Sample	Total/NA	Water	8015B	
440-218182-B-3 MS	Matrix Spike	Total/NA	Water	8015B	
440-218182-C-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B	

Analysis Batch: 495513

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	8015B	
MB 440-495513/5	Method Blank	Total/NA	Water	8015B	
LCS 440-495513/4	Lab Control Sample	Total/NA	Water	8015B	
440-218762-C-1 MS	Matrix Spike	Total/NA	Water	8015B	
440-218762-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B	

GC Semi VOA

Analysis Batch: 249700

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 720-249750/1-A	Method Blank	Total/NA	Water	8015B	249750
LCS 720-249750/2-A	Lab Control Sample	Total/NA	Water	8015B	249750
LCSD 720-249750/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	249750

Analysis Batch: 249701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	8015B	249750
720-88059-2	GWE-4	Total/NA	Water	8015B	249750
720-88059-3	MK-4A	Total/NA	Water	8015B	249750
720-88059-4	MK-6A	Total/NA	Water	8015B	249750
720-88059-6	MW-6AR	Total/NA	Water	8015B	249750
720-88059-7	MW-7A	Total/NA	Water	8015B	249750
720-88059-8	MW-8A	Total/NA	Water	8015B	249750
720-88059-9	DUP-2	Total/NA	Water	8015B	249750

Prep Batch: 249750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	3510C	
720-88059-2	GWE-4	Total/NA	Water	3510C	
720-88059-3	MK-4A	Total/NA	Water	3510C	
720-88059-4	MK-6A	Total/NA	Water	3510C	
720-88059-5	MW-4A	Total/NA	Water	3510C	
720-88059-6	MW-6AR	Total/NA	Water	3510C	
720-88059-7	MW-7A	Total/NA	Water	3510C	
720-88059-8	MW-8A	Total/NA	Water	3510C	
720-88059-9	DUP-2	Total/NA	Water	3510C	
MB 720-249750/1-A	Method Blank	Total/NA	Water	3510C	
LCS 720-249750/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 720-249750/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

GC Semi VOA (Continued)

Analysis Batch: 249788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-5	MW-4A	Total/NA	Water	8015B	249750

Metals

Prep Batch: 249769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	3010A	
720-88059-2	GWE-4	Total/NA	Water	3010A	
720-88059-3	MK-4A	Total/NA	Water	3010A	
720-88059-4	MK-6A	Total/NA	Water	3010A	
720-88059-5	MW-4A	Total/NA	Water	3010A	
720-88059-6	MW-6AR	Total/NA	Water	3010A	
720-88059-7	MW-7A	Total/NA	Water	3010A	
720-88059-8	MW-8A	Total/NA	Water	3010A	
720-88059-9	DUP-2	Total/NA	Water	3010A	
MB 720-249769/1-A	Method Blank	Total/NA	Water	3010A	
LCS 720-249769/2-A	Lab Control Sample	Total/NA	Water	3010A	
720-88089-A-1-A MS	Matrix Spike	Total/NA	Water	3010A	
720-88089-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	3010A	

Prep Batch: 249773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	7470A	
720-88059-2	GWE-4	Total/NA	Water	7470A	
720-88059-3	MK-4A	Total/NA	Water	7470A	
720-88059-4	MK-6A	Total/NA	Water	7470A	
720-88059-5	MW-4A	Total/NA	Water	7470A	
720-88059-6	MW-6AR	Total/NA	Water	7470A	
720-88059-7	MW-7A	Total/NA	Water	7470A	
720-88059-8	MW-8A	Total/NA	Water	7470A	
720-88059-9	DUP-2	Total/NA	Water	7470A	
MB 720-249773/1-A	Method Blank	Total/NA	Water	7470A	
LCS 720-249773/2-A	Lab Control Sample	Total/NA	Water	7470A	
720-88028-G-1-E MS	Matrix Spike	Total/NA	Water	7470A	
720-88028-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	

Analysis Batch: 249850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	7470A	249773
720-88059-2	GWE-4	Total/NA	Water	7470A	249773
720-88059-3	MK-4A	Total/NA	Water	7470A	249773
720-88059-4	MK-6A	Total/NA	Water	7470A	249773
720-88059-5	MW-4A	Total/NA	Water	7470A	249773
720-88059-6	MW-6AR	Total/NA	Water	7470A	249773
720-88059-7	MW-7A	Total/NA	Water	7470A	249773
720-88059-8	MW-8A	Total/NA	Water	7470A	249773
720-88059-9	DUP-2	Total/NA	Water	7470A	249773
MB 720-249773/1-A	Method Blank	Total/NA	Water	7470A	249773
LCS 720-249773/2-A	Lab Control Sample	Total/NA	Water	7470A	249773
720-88028-G-1-E MS	Matrix Spike	Total/NA	Water	7470A	249773

Metals (Continued)

Analysis Batch: 249850 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88028-G-1-F MSD	Matrix Spike Duplicate	Total/NA	Water	7470A	249773

Analysis Batch: 249891

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 720-249769/1-A	Method Blank	Total/NA	Water	6010B	249769
LCS 720-249769/2-A	Lab Control Sample	Total/NA	Water	6010B	249769
720-88089-A-1-A MS	Matrix Spike	Total/NA	Water	6010B	249769
720-88089-A-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	6010B	249769

Analysis Batch: 249901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	6010B	249769
720-88059-2	GWE-4	Total/NA	Water	6010B	249769
720-88059-3	MK-4A	Total/NA	Water	6010B	249769
720-88059-4	MK-6A	Total/NA	Water	6010B	249769
720-88059-5	MW-4A	Total/NA	Water	6010B	249769
720-88059-6	MW-6AR	Total/NA	Water	6010B	249769
720-88059-7	MW-7A	Total/NA	Water	6010B	249769
720-88059-8	MW-8A	Total/NA	Water	6010B	249769
720-88059-9	DUP-2	Total/NA	Water	6010B	249769

Analysis Batch: 249962

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	6010B	249769

General Chemistry

Analysis Batch: 249590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88059-1	GWE-3	Total/NA	Water	7196A	
720-88059-2	GWE-4	Total/NA	Water	7196A	
720-88059-3	MK-4A	Total/NA	Water	7196A	
720-88059-4	MK-6A	Total/NA	Water	7196A	
720-88059-5	MW-4A	Total/NA	Water	7196A	
720-88059-6	MW-6AR	Total/NA	Water	7196A	
720-88059-7	MW-7A	Total/NA	Water	7196A	
720-88059-8	MW-8A	Total/NA	Water	7196A	
720-88059-9	DUP-2	Total/NA	Water	7196A	
MB 720-249590/9	Method Blank	Total/NA	Water	7196A	
LCS 720-249590/10	Lab Control Sample	Total/NA	Water	7196A	
LCSD 720-249590/11	Lab Control Sample Dup	Total/NA	Water	7196A	
720-88059-3 MS	MK-4A	Total/NA	Water	7196A	
720-88059-3 MSD	MK-4A	Total/NA	Water	7196A	

Client Sample ID: GWE-3

Lab Sample ID: 720-88059-1

Date Collected: 08/15/18 10:29

Matrix: Water

Date Received: 08/15/18 18:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249695	08/17/18 10:27	JD1	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 15:04	GK	TAL IRV
Total/NA	Analysis	8015B		1	495513	08/24/18 14:31	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 01:05	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249962	08/22/18 10:12	BKR	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 11:28	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 17:52	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: GWE-4

Lab Sample ID: 720-88059-2

Date Collected: 08/15/18 13:50

Matrix: Water

Date Received: 08/15/18 18:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249695	08/17/18 11:50	JD1	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 15:34	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/21/18 23:44	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 01:29	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 11:33	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 17:55	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: MK-4A

Lab Sample ID: 720-88059-3

Date Collected: 08/15/18 12:07

Matrix: Water

Date Received: 08/15/18 18:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249863	08/21/18 11:55	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 14:33	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/22/18 00:12	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 01:54	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 11:38	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS

Client Sample ID: MK-4A

Lab Sample ID: 720-88059-3

Date Collected: 08/15/18 12:07

Matrix: Water

Date Received: 08/15/18 18:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	7470A		1	249850	08/20/18 17:57	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: MK-6A

Lab Sample ID: 720-88059-4

Date Collected: 08/15/18 10:24

Matrix: Water

Date Received: 08/15/18 18:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249682	08/17/18 03:22	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 18:07	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/22/18 00:41	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 02:18	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 11:43	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 17:59	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: MW-4A

Lab Sample ID: 720-88059-5

Date Collected: 08/15/18 14:03

Matrix: Water

Date Received: 08/15/18 18:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249691	08/17/18 11:49	A1C	TAL PLS
Total/NA	Analysis	8260B		1	250217	08/25/18 11:57	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 18:38	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/22/18 02:34	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249788	08/20/18 18:14	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 11:57	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 18:01	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: MW-6AR

Lab Sample ID: 720-88059-6

Date Collected: 08/15/18 11:12

Matrix: Water

Date Received: 08/15/18 18:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	250344	08/28/18 14:50	A1C	TAL PLS

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: MW-6AR

Date Collected: 08/15/18 11:12
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SRL 524M-TCP		1	496218	08/28/18 23:09	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/22/18 03:03	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 03:07	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 12:02	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 18:04	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: MW-7A

Date Collected: 08/15/18 12:40
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249695	08/17/18 17:06	JD1	TAL PLS
Total/NA	Analysis	8260B		1	250344	08/28/18 15:19	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496218	08/28/18 23:39	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/22/18 03:31	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 03:31	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 12:16	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 18:06	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: MW-8A

Date Collected: 08/15/18 11:18
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249691	08/17/18 13:16	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496218	08/29/18 00:10	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/22/18 01:09	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 03:55	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 12:06	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 18:13	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Client Sample ID: DUP-2

Date Collected: 08/15/18 13:55
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-9
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249695	08/17/18 19:19	JD1	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496081	08/28/18 19:08	GK	TAL IRV
Total/NA	Analysis	8015B		1	494773	08/22/18 01:37	IM	TAL IRV
Total/NA	Prep	3510C			249750	08/17/18 15:43	NDU	TAL PLS
Total/NA	Analysis	8015B		1	249701	08/18/18 04:20	JXL	TAL PLS
Total/NA	Prep	3010A			249769	08/18/18 10:05	MAA	TAL PLS
Total/NA	Analysis	6010B		1	249901	08/21/18 12:11	BKR	TAL PLS
Total/NA	Prep	7470A			249773	08/18/18 14:29	MAG	TAL PLS
Total/NA	Analysis	7470A		1	249850	08/20/18 18:15	OBI	TAL PLS
Total/NA	Analysis	7196A		1	249590	08/15/18 18:31	TNL	TAL PLS

Client Sample ID: FB-2

Date Collected: 08/15/18 14:30
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249684	08/16/18 21:38	A1C	TAL PLS
Total/NA	Analysis	SRL 524M-TCP		1	496340	08/29/18 14:09	GK	TAL IRV

Client Sample ID: TB-2

Date Collected: 08/15/18 15:00
Date Received: 08/15/18 18:50

Lab Sample ID: 720-88059-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	249684	08/16/18 22:07	A1C	TAL PLS

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc. TestAmerica Job ID: 720-88059-1
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

Laboratory: TestAmerica Pleasanton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015B		Water	GRO (C4-C12)

Method Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PLS
SRL 524M-TCP	Volatile Organic Compounds (GC/MS SIM)	CADHS	TAL IRV
8015B	Gasoline Range Organics - (GC)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL PLS
6010B	Metals (ICP)	SW846	TAL PLS
7470A	Mercury (CVAA)	SW846	TAL PLS
7196A	Chromium, Hexavalent	SW846	TAL PLS
3010A	Preparation, Total Metals	SW846	TAL PLS
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL PLS
5030B	Purge and Trap	SW846	TAL IRV
5030B	Purge and Trap	SW846	TAL PLS
7470A	Preparation, Mercury	SW846	TAL PLS

Protocol References:

CADHS = California Department of Health Services

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP Implementation

TestAmerica Job ID: 720-88059-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-88059-1	GWE-3	Water	08/15/18 10:29	08/15/18 18:50
720-88059-2	GWE-4	Water	08/15/18 13:50	08/15/18 18:50
720-88059-3	MK-4A	Water	08/15/18 12:07	08/15/18 18:50
720-88059-4	MK-6A	Water	08/15/18 10:24	08/15/18 18:50
720-88059-5	MW-4A	Water	08/15/18 14:03	08/15/18 18:50
720-88059-6	MW-6AR	Water	08/15/18 11:12	08/15/18 18:50
720-88059-7	MW-7A	Water	08/15/18 12:40	08/15/18 18:50
720-88059-8	MW-8A	Water	08/15/18 11:18	08/15/18 18:50
720-88059-9	DUP-2	Water	08/15/18 13:55	08/15/18 18:50
720-88059-10	FB-2	Water	08/15/18 14:30	08/15/18 18:50
720-88059-11	TB-2	Water	08/15/18 15:00	08/15/18 18:50

BLAINE TECH SERVICES, INC

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

#1849261 1 of 2

CHAIN OF CUSTODY BTS # 180814GR-1

CLIENT: Geosyntec Consultants

SITE: Brisbane UPC OU-SM DGA WP Implementation

Brisbane, CA

Client P.O.: WG2565-03 Client Project I.D.: 3Q(Aug) 2018

CONDUCT ANALYSIS TO DETECT

LAB: TA-SF DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ LIA ☐ OTHER ☐ RWQCB REGION

720-88059

SPECIAL INSTRUCTIONS

COC to Geosyntec Consultants Attn: Anthony Smith

after log in: asmith@geosyntec.com

Report to : Geosyntec Consultants
PDF, EDD & EDF Required
Report analytical results to the reporting limit (RL)

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		VOCs (8260B)	CAM-17 (6010B, 7471)	Hexavalent Chromium (7196)	TPH-G (8015)	TPH-D (8015)	1,2,3 TCP (524.2 SIM)		ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
GWE-3	8/15/18	1029	W	13	various	X	X	X	X	X	X					1
GWE-4		1350	W	13	various	X	X	X	X	X	X					2
MK-4A		1207	W	13	various	X	X	X	X	X	X					3
MK-6A		1024	W	13	various	X	X	X	X	X	X					4
MW-4A		1403	W	13	various	X	X	X	X	X	X					5
MW-6AR		1112	W	13	various	X	X	X	X	X	X					6
MW-7A		1240	W	13	various	X	X	X	X	X	X					7
MW-8A		1118	W	13	various	X	X	X	X	X	X					8
DUP-2		1355	W	13	various	X	X	X	X	X	X					9
FB-2		1430	W	6	VOAs	X					X					10

SAMPLING COMPLETED: DATE 8/15/18 TIME 1500

SAMPLING PERFORMED BY: Colin Rowland, Jeff Stromberg

RESULTS NEEDED NO LATER THAN: Standard TAT

		DATE	TIME		DATE	TIME
RELEASED BY		8/15/18	1540	RECEIVED BY TA 720	8/15/18	1540
RELEASED BY TA 720		8/15/18	1850	RECEIVED BY TA-720	8/15/18	1850
RELEASED BY		DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA

DATE SENT	TIME SENT	COOLER #

720-88059 Chain of Custody

0.7/1.2/1.3/3.6 °C

11/6/2018 (Rev. 1)

1804989 2 of 2

BLAINE
TECH SERVICES, INC

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS # 180814 CR-1

CLIENT: Geosyntec Consultants

SITE: Brisbane UPC OU-SM DGA WP Implementation

Brisbane, CA

Client P.O.. WG2565-03 Client Project I.D.:3Q(Aug) 2018

CONDUCT ANALYSIS TO DETECT

LAB: TA-SF DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ RWQCB REGION ____
☐ LIA
☐ OTHER

720-88059

SPECIAL INSTRUCTIONS

COC to Geosyntec Consultants Attn: Anthony Smith

after log in: asmith@geosyntec.com

Report to : Geosyntec Consultants
PDF, EDD & EDF Required
Report analytical results to the reporting limit (RL)

SAMPLE I.D	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL		VOCs (8260B)	CAM-17 (6010B. 7471)	Hexavalent Chromium (7196)	TPH-G (8015)	TPH-D (8015)	1,2,3 TCP (524.2 SIM)			ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
TB-2	8/15/18	1500	W	2	VOAs	X											11

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY
	8/15/18	1500	Colin Rowland, Jeff Stromberg

RESULTS NEEDED NO LATER THAN: Standard TAT

RELEASED BY		DATE 8/15/18	TIME 1540	RECEIVED BY TA720	DATE 8/15/18	TIME 1540
RELEASED BY		DATE 8/15/18	TIME 1852	RECEIVED BY TA720	DATE 8/15/18	TIME 1852
RELEASED BY		DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

07/1.2/1-3/3.6 °C

11/6/2018 (Rev. 1)

TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone (925) 484-1919 Fax (925) 600-3002

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler	Lab PM: Smith, Micah	Carrier Tracking No(s): 440198521784	COC No: 720-39319.1
Client Contact: Shipping/Receiving	Phone	E-Mail: micah.smith@testamericainc.com	State of Origin: California	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 720-88059-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 8/27/2018			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #			
Email	WO #			
Project Name: Brisbane UPC OU-SM DGA WP Implementation	Project #: 72012372			
Site	SSOW#			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/5030B C4-C12	524.2_SIM	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
GWE-3 (720-88059-1)	8/15/18	10:29 Pacific		Water			X	X	6	
GWE-4 (720-88059-2)	8/15/18	13.50 Pacific		Water			X	X	6	
MK-4A (720-88059-3)	8/15/18	12.07 Pacific		Water			X	X	6	
MK-6A (720-88059-4)	8/15/18	10:24 Pacific		Water			X	X	6	
MW-4A (720-88059-5)	8/15/18	14:03 Pacific		Water			X	X	6	
MW-6AR (720-88059-6)	8/15/18	11:12 Pacific		Water			X	X	6	
MW-7A (720-88059-7)	8/15/18	12:40 Pacific		Water			X	X	6	
MW-8A (720-88059-8)	8/15/18	11:18 Pacific		Water			X	X	6	
DUP-2 (720-88059-9)	8/15/18	13 55 Pacific		Water			X	X	6	

Note Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements.

Empty Kit Relinquished by	Date:	Time:	Method of Shipment

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	8-16-18 13:16	TAP			
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Relinquished by	Date/Time	Company	Received by	Date/Time	Company
				8/17/18 1000	TA IRV

Custody Seals Intact: Δ Yes Δ No	Custody Seal No..	Cooler Temperature(s) °C and Other Remarks
		4.8/4.9 IR88

Ver 09/20/2016

TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone (925) 484-1919 Fax (925) 600-3002

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler	Lab PM: Smith, Micah	Carrier Tracking No(s)	COC No: 720-39319.2
Client Contact: Shipping/Receiving	Phone	E-Mail: micah.smith@testamericainc.com	State of Origin: California	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 720-88059-1
Address: 17461 Denan Ave, Suite 100,	Due Date Requested: 8/27/2018			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #			
Email	WO #			
Project Name: Brisbane UPC OU-SM DGA WP Implementation	Project #: 72012372			
Site	SSOW#			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other.

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8015B_GRO/5030B C4-C12	524.2_SIM	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
FB-2 (720-88059-10)	8/15/18	14:30 Pacific		Water				X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time	Method of Shipment

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	[signature]	8-16-18 13:16	TA720			
2	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
3	Relinquished by	Date/Time	Company	Received by [signature]	Date/Time 8/17/18 1000	Company TA IRV

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks

Ver: 09/20/2016

TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone (925) 484-1919 Fax (925) 600-3002

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler	Lab PM: Smith, Micah	Carrier Tracking No(s)	COC No: 720-39452.1
Client Contact: Shipping/Receiving	Phone	E-Mail: micah smith@testamericainc com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 720-88059-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 8/27/2018			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #			
Email	WO #			
Project Name: Brisbane UPC OU-SM DGA WP Implementation	Project #: 72012372			
Site	SSOW#			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	524.2_SIM	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
FB-2 (720-88059-10)	8/15/18	14:30 Pacific		Water			X	1	

GeoSyntec

1 HCl VOAs

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
		8/28/18 14:14	TAPN			
	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	Relinquished by	Date/Time	Company	Received by	Date/Time 8/29/18 708	Company TAPN

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.9 / 0.9 IR-SC6 2.4/2.7 4471 9852 5763

Ver. 09/20/2016

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88059-1

Login Number: 88059
List Number: 1
Creator: Bullock, Tracy

List Source: TestAmerica Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
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.	N/A	
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").	False	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88059-1

Login Number: 88059
List Number: 2
Creator: Ornelas, Olga

List Source: TestAmerica Irvine
List Creation: 08/17/18 02:00 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
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?	N/A	Received project as a subcontract.
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88059-1

Login Number: 88059
List Number: 3
Creator: Ornelas, Olga

List Source: TestAmerica Irvine
List Creation: 08/17/18 02:14 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
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?	N/A	Received project as a subcontract.
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING



ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-88324-1
Client Project/Site: Brisbane UPC OU-SM DGA WP

For:
Geosyntec Consultants, Inc.
201 N. Civic Drive
Suite 245
Walnut Creek, California 94596

Attn: Mr. Krys Jesionek

Authorized for release by:
9/10/2018 4:59:03 PM

Micah Smith, Project Manager II
(916)374-4302
micah.smith@testamericainc.com

LINKS
Review your project results through TotalAccess
Have a Question? Ask The Expert
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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Definitions/Glossary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 720-88324-1

Laboratory: TestAmerica Pleasanton

Narrative

Job Narrative
720-88324-1

Comments
No additional comments.

Receipt
The samples were received on 8/30/2018 2:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.0º C.

Receipt Exceptions
The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. "Field Filtered" or "Dissolved" CAM 17 Metals is not noted on the COC but "FF" is noted on the sample label. Sample TB-1 (720-88324-4) had no analyses requested on the COC.

Based on a phone conversation with the client on August 29, 2018, the 1,2,3-TCP analysis was switched to 8260BSIM.

GC/MS VOA
Method(s) 8260B: The method blank for analytical batch 720-250881 contained Naphthalene above the method detection limit (MDL). Associated samples were not re-analyzed because results were less than the reporting limit (RL).

Method(s) 8260B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 720-250881 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 8260B: The following volatile samples were analyzed with significant headspace in the sample container(s): GWE-1 (720-88324-1) and GWE-2 (720-88324-2). Significant headspace is defined as a bubble greater than 6 mm in diameter.

Method(s) 8260B: The Gasoline Range Organics (GRO) concentration reported for the following sample is due to the presence of discrete peaks: GWE-1 (720-88324-1). cis-1,2-Dichloroethene, Vinyl chloride and unknown.

Method(s) 8260B: Methylene Chloride was detected above MDL and the sample was not re-analyzed due to insufficient volume.TB-1 (720-88324-4)

Method(s) 8260B SIM: The following volatile sample was received and analyzed with significant headspace in the sample container(s): GWE-2 (720-88324-2). Significant headspace is defined as a bubble greater than 6 mm in diameter.

Method(s) 8260B SIM: The following sample were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH of 4 was outside the required criteria when verified by the laboratory, and corrective action was not possible: GWE-3 (720-88324-3).
The sample was analyzed within 7 days per EPA recommendation.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Job ID: 720-88324-1 (Continued)

Laboratory: TestAmerica Pleasanton (Continued)

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Client Sample ID: GWE-1 — Lab Sample ID: 720-88324-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	0.35	J	0.50	0.11	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	70		0.50	0.076	ug/L	1		8260B	Total/NA
Gasoline Range Organics (GRO) -C4-C12	120		50	21	ug/L	1		8260B	Total/NA
Tetrachloroethene	0.28	J	0.50	0.20	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.85		0.50	0.13	ug/L	1		8260B	Total/NA
Trichloroethene	3.0		0.50	0.20	ug/L	1		8260B	Total/NA
Vinyl chloride	210		5.0	2.0	ug/L	10		8260B	Total/NA
Diesel Range Organics [C10-C28]	64		59	35	ug/L	1		8015B	Total/NA
Arsenic	0.010		0.010	0.0026	mg/L	1		6010B	Dissolved
Barium	0.22		0.010	0.0014	mg/L	1		6010B	Dissolved
Chromium	0.0018	J	0.010	0.0015	mg/L	1		6010B	Dissolved
Copper	0.0019	J	0.020	0.0015	mg/L	1		6010B	Dissolved
Lead	0.0086		0.0050	0.0023	mg/L	1		6010B	Dissolved
Nickel	0.0059	J	0.010	0.00080	mg/L	1		6010B	Dissolved
Vanadium	0.0014	J	0.010	0.00070	mg/L	1		6010B	Dissolved

Client Sample ID: GWE-2 — Lab Sample ID: 720-88324-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.34	J	0.50	0.076	ug/L	1		8260B	Total/NA
trans-1,2-Dichloroethene	0.15	J	0.50	0.13	ug/L	1		8260B	Total/NA
Vinyl chloride	0.34	J	0.50	0.20	ug/L	1		8260B	Total/NA
Diesel Range Organics [C10-C28]	73		54	33	ug/L	1		8015B	Total/NA
Arsenic	0.021		0.010	0.0026	mg/L	1		6010B	Dissolved
Barium	0.79		0.010	0.0014	mg/L	1		6010B	Dissolved
Cobalt	0.0026		0.0020	0.0012	mg/L	1		6010B	Dissolved
Copper	0.0020	J	0.020	0.0015	mg/L	1		6010B	Dissolved
Lead	0.0096		0.0050	0.0023	mg/L	1		6010B	Dissolved
Nickel	0.0066	J	0.010	0.00080	mg/L	1		6010B	Dissolved
Zinc	0.013	J	0.020	0.0096	mg/L	1		6010B	Dissolved

Client Sample ID: GWE-3 — Lab Sample ID: 720-88324-3

No Detections.

Client Sample ID: TB-1 — Lab Sample ID: 720-88324-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Methylene Chloride	1.7	J	5.0	1.5	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: GWE-1
Date Collected: 08/30/18 11:45
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-1
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050	0.0025	ug/L			09/05/18 20:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*09/05/18 20:43*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.067	ug/L			09/05/18 12:58	1
1,1,1-Trichloroethane	ND		0.50	0.20	ug/L			09/05/18 12:58	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.074	ug/L			09/05/18 12:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.091	ug/L			09/05/18 12:58	1
1,1,2-Trichloroethane	ND		0.50	0.11	ug/L			09/05/18 12:58	1
1,1-Dichloroethane	**0.35**	**J**	0.50	0.11	ug/L			09/05/18 12:58	1
1,1-Dichloroethene	ND		0.50	0.20	ug/L			09/05/18 12:58	1
1,1-Dichloropropene	ND		0.50	0.20	ug/L			09/05/18 12:58	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			09/05/18 12:58	1
1,2,3-Trichloropropane	ND		0.50	0.087	ug/L			09/05/18 12:58	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L			09/05/18 12:58	1
1,2,4-Trimethylbenzene	ND		0.50	0.20	ug/L			09/05/18 12:58	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.30	ug/L			09/05/18 12:58	1
1,2-Dichlorobenzene	ND		0.50	0.21	ug/L			09/05/18 12:58	1
1,2-Dichloroethane	ND		0.50	0.077	ug/L			09/05/18 12:58	1
1,2-Dichloropropane	ND		0.50	0.20	ug/L			09/05/18 12:58	1
1,3,5-Trimethylbenzene	ND		0.50	0.17	ug/L			09/05/18 12:58	1
1,3-Dichlorobenzene	ND		0.50	0.20	ug/L			09/05/18 12:58	1
1,3-Dichloropropane	ND		1.0	0.17	ug/L			09/05/18 12:58	1
1,4-Dichlorobenzene	ND		0.50	0.16	ug/L			09/05/18 12:58	1
2,2-Dichloropropane	ND		0.50	0.17	ug/L			09/05/18 12:58	1
2-Butanone (MEK)	ND		50	8.4	ug/L			09/05/18 12:58	1
2-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 12:58	1
2-Hexanone	ND		50	3.0	ug/L			09/05/18 12:58	1
4-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 12:58	1
4-Isopropyltoluene	ND		1.0	0.20	ug/L			09/05/18 12:58	1
4-Methyl-2-pentanone (MIBK)	ND		50	4.5	ug/L			09/05/18 12:58	1
Acetone	ND		50	20	ug/L			09/05/18 12:58	1
Benzene	ND		0.50	0.25	ug/L			09/05/18 12:58	1
Bromobenzene	ND		1.0	0.20	ug/L			09/05/18 12:58	1
Bromoform	ND		1.0	0.50	ug/L			09/05/18 12:58	1
Bromomethane	ND		1.0	0.49	ug/L			09/05/18 12:58	1
Carbon disulfide	ND		5.0	0.78	ug/L			09/05/18 12:58	1
Carbon tetrachloride	ND		0.50	0.11	ug/L			09/05/18 12:58	1
Chlorobenzene	ND		0.50	0.13	ug/L			09/05/18 12:58	1
Chlorobromomethane	ND		1.0	0.25	ug/L			09/05/18 12:58	1
Chlorodibromomethane	ND		0.50	0.10	ug/L			09/05/18 12:58	1
Chloroethane	ND		1.0	0.17	ug/L			09/05/18 12:58	1
Chloroform	ND		1.0	0.40	ug/L			09/05/18 12:58	1
Chloromethane	ND		1.0	0.19	ug/L			09/05/18 12:58	1
cis-1,2-Dichloroethene	**70**		0.50	0.076	ug/L			09/05/18 12:58	1
cis-1,3-Dichloropropene	ND		0.50	0.10	ug/L			09/05/18 12:58	1
Dibromomethane	ND		0.50	0.30	ug/L			09/05/18 12:58	1

Client Sample ID: GWE-1
Date Collected: 08/30/18 11:45
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorobromomethane	ND		0.50	0.20	ug/L			09/05/18 12:58	1
Dichlorodifluoromethane	ND		0.50	0.25	ug/L			09/05/18 12:58	1
Ethylbenzene	ND		0.50	0.13	ug/L			09/05/18 12:58	1
Ethylene Dibromide	ND		0.50	0.075	ug/L			09/05/18 12:58	1
Gasoline Range Organics (GRO) -C4-C12	**120**		50	21	ug/L			09/05/18 12:58	1
Hexachlorobutadiene	ND		1.0	0.27	ug/L			09/05/18 12:58	1
Isopropylbenzene	ND		0.50	0.20	ug/L			09/05/18 12:58	1
Methyl tert-butyl ether	ND		0.50	0.11	ug/L			09/05/18 12:58	1
Methylene Chloride	ND		50	15	ug/L			09/08/18 03:03	10
Naphthalene	ND		1.0	0.22	ug/L			09/05/18 12:58	1
n-Butylbenzene	ND		1.0	0.30	ug/L			09/05/18 12:58	1
N-Propylbenzene	ND		1.0	0.20	ug/L			09/05/18 12:58	1
sec-Butylbenzene	ND		1.0	0.17	ug/L			09/05/18 12:58	1
Styrene	ND		0.50	0.22	ug/L			09/05/18 12:58	1
tert-Butylbenzene	ND		1.0	0.20	ug/L			09/05/18 12:58	1
Tetrachloroethene	**0.28**	**J**	0.50	0.20	ug/L			09/05/18 12:58	1
Toluene	ND		0.50	0.17	ug/L			09/05/18 12:58	1
trans-1,2-Dichloroethene	**0.85**		0.50	0.13	ug/L			09/05/18 12:58	1
trans-1,3-Dichloropropene	ND		0.50	0.17	ug/L			09/05/18 12:58	1
Trichloroethene	**3.0**		0.50	0.20	ug/L			09/05/18 12:58	1
Trichlorofluoromethane	ND		1.0	0.30	ug/L			09/05/18 12:58	1
Vinyl acetate	ND		10	0.60	ug/L			09/05/18 12:58	1
Vinyl chloride	**210**		5.0	2.0	ug/L			09/08/18 03:03	10
Xylenes, Total	ND		0.50	0.40	ug/L			09/05/18 12:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*72 - 130*		*09/05/18 12:58*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*72 - 130*		*09/08/18 03:03*	*10*
4-Bromofluorobenzene	*100*		*67 - 130*		*09/05/18 12:58*	*1*
4-Bromofluorobenzene	*87*		*67 - 130*		*09/08/18 03:03*	*10*
Toluene-d8 (Surr)	*96*		*70 - 130*		*09/05/18 12:58*	*1*
Toluene-d8 (Surr)	*96*		*70 - 130*		*09/08/18 03:03*	*10*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**64**		59	35	ug/L		09/04/18 21:23	09/06/18 04:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*80*		*23 - 156*	*09/04/18 21:23*	*09/06/18 04:03*	*1*

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010	0.0027	mg/L		09/04/18 08:51	09/05/18 10:36	1
Arsenic	**0.010**		0.010	0.0026	mg/L		09/04/18 08:51	09/05/18 10:36	1
Barium	**0.22**		0.010	0.0014	mg/L		09/04/18 08:51	09/05/18 10:36	1
Beryllium	ND		0.0020	0.00033	mg/L		09/04/18 08:51	09/05/18 10:36	1
Cadmium	ND		0.0025	0.0013	mg/L		09/04/18 08:51	09/05/18 10:36	1
Chromium	**0.0018**	**J**	0.010	0.0015	mg/L		09/04/18 08:51	09/05/18 10:36	1
Cobalt	ND		0.0020	0.0012	mg/L		09/04/18 08:51	09/05/18 10:36	1
Copper	**0.0019**	**J**	0.020	0.0015	mg/L		09/04/18 08:51	09/05/18 10:36	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Client Sample ID: GWE-1
Date Collected: 08/30/18 11:45
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-1
Matrix: Water

Method: 6010B - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**0.0086**		0.0050	0.0023	mg/L		09/04/18 08:51	09/05/18 10:36	1
Molybdenum	ND		0.010	0.0023	mg/L		09/04/18 08:51	09/05/18 10:36	1
Nickel	**0.0059**	**J**	0.010	0.00080	mg/L		09/04/18 08:51	09/05/18 10:36	1
Selenium	ND		0.020	0.0071	mg/L		09/04/18 08:51	09/05/18 10:36	1
Silver	ND		0.0050	0.0012	mg/L		09/04/18 08:51	09/05/18 10:36	1
Thallium	ND		0.010	0.0035	mg/L		09/04/18 08:51	09/05/18 10:36	1
Vanadium	**0.0014**	**J**	0.010	0.00070	mg/L		09/04/18 08:51	09/05/18 10:36	1
Zinc	ND		0.020	0.0096	mg/L		09/04/18 08:51	09/05/18 10:36	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		09/05/18 18:15	09/06/18 16:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010	0.0037	mg/L			08/30/18 15:01	1

Client Sample ID: GWE-2
Date Collected: 08/30/18 10:25
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-2
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050	0.0025	ug/L			09/05/18 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*09/05/18 22:01*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.067	ug/L			09/05/18 13:28	1
1,1,1-Trichloroethane	ND		0.50	0.20	ug/L			09/05/18 13:28	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.074	ug/L			09/05/18 13:28	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.091	ug/L			09/05/18 13:28	1
1,1,2-Trichloroethane	ND		0.50	0.11	ug/L			09/05/18 13:28	1
1,1-Dichloroethane	ND		0.50	0.11	ug/L			09/05/18 13:28	1
1,1-Dichloroethene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
1,1-Dichloropropene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			09/05/18 13:28	1
1,2,3-Trichloropropane	ND		0.50	0.087	ug/L			09/05/18 13:28	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L			09/05/18 13:28	1
1,2,4-Trimethylbenzene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.30	ug/L			09/05/18 13:28	1
1,2-Dichlorobenzene	ND		0.50	0.21	ug/L			09/05/18 13:28	1
1,2-Dichloroethane	ND		0.50	0.077	ug/L			09/05/18 13:28	1
1,2-Dichloropropane	ND		0.50	0.20	ug/L			09/05/18 13:28	1
1,3,5-Trimethylbenzene	ND		0.50	0.17	ug/L			09/05/18 13:28	1
1,3-Dichlorobenzene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
1,3-Dichloropropane	ND		1.0	0.17	ug/L			09/05/18 13:28	1
1,4-Dichlorobenzene	ND		0.50	0.16	ug/L			09/05/18 13:28	1
2,2-Dichloropropane	ND		0.50	0.17	ug/L			09/05/18 13:28	1
2-Butanone (MEK)	ND		50	8.4	ug/L			09/05/18 13:28	1
2-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
2-Hexanone	ND		50	3.0	ug/L			09/05/18 13:28	1
4-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
4-Isopropyltoluene	ND		1.0	0.20	ug/L			09/05/18 13:28	1
4-Methyl-2-pentanone (MIBK)	ND		50	4.5	ug/L			09/05/18 13:28	1
Acetone	ND		50	20	ug/L			09/05/18 13:28	1
Benzene	ND		0.50	0.25	ug/L			09/05/18 13:28	1
Bromobenzene	ND		1.0	0.20	ug/L			09/05/18 13:28	1
Bromoform	ND		1.0	0.50	ug/L			09/05/18 13:28	1
Bromomethane	ND		1.0	0.49	ug/L			09/05/18 13:28	1
Carbon disulfide	ND		5.0	0.78	ug/L			09/05/18 13:28	1
Carbon tetrachloride	ND		0.50	0.11	ug/L			09/05/18 13:28	1
Chlorobenzene	ND		0.50	0.13	ug/L			09/05/18 13:28	1
Chlorobromomethane	ND		1.0	0.25	ug/L			09/05/18 13:28	1
Chlorodibromomethane	ND		0.50	0.10	ug/L			09/05/18 13:28	1
Chloroethane	ND		1.0	0.17	ug/L			09/05/18 13:28	1
Chloroform	ND		1.0	0.40	ug/L			09/05/18 13:28	1
Chloromethane	ND		1.0	0.19	ug/L			09/05/18 13:28	1
cis-1,2-Dichloroethene	**0.34**	**J**	0.50	0.076	ug/L			09/05/18 13:28	1
cis-1,3-Dichloropropene	ND		0.50	0.10	ug/L			09/05/18 13:28	1
Dibromomethane	ND		0.50	0.30	ug/L			09/05/18 13:28	1

Client Sample ID: GWE-2
Date Collected: 08/30/18 10:25
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorobromomethane	ND		0.50	0.20	ug/L			09/05/18 13:28	1
Dichlorodifluoromethane	ND		0.50	0.25	ug/L			09/05/18 13:28	1
Ethylbenzene	ND		0.50	0.13	ug/L			09/05/18 13:28	1
Ethylene Dibromide	ND		0.50	0.075	ug/L			09/05/18 13:28	1
Gasoline Range Organics (GRO) -C4-C12	ND		50	21	ug/L			09/05/18 13:28	1
Hexachlorobutadiene	ND		1.0	0.27	ug/L			09/05/18 13:28	1
Isopropylbenzene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
Methyl tert-butyl ether	ND		0.50	0.11	ug/L			09/05/18 13:28	1
Methylene Chloride	ND		5.0	1.5	ug/L			09/08/18 02:34	1
Naphthalene	ND		1.0	0.22	ug/L			09/05/18 13:28	1
n-Butylbenzene	ND		1.0	0.30	ug/L			09/05/18 13:28	1
N-Propylbenzene	ND		1.0	0.20	ug/L			09/05/18 13:28	1
sec-Butylbenzene	ND		1.0	0.17	ug/L			09/05/18 13:28	1
Styrene	ND		0.50	0.22	ug/L			09/05/18 13:28	1
tert-Butylbenzene	ND		1.0	0.20	ug/L			09/05/18 13:28	1
Tetrachloroethene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
Toluene	ND		0.50	0.17	ug/L			09/05/18 13:28	1
trans-1,2-Dichloroethene	**0.15**	**J**	0.50	0.13	ug/L			09/05/18 13:28	1
trans-1,3-Dichloropropene	ND		0.50	0.17	ug/L			09/05/18 13:28	1
Trichloroethene	ND		0.50	0.20	ug/L			09/05/18 13:28	1
Trichlorofluoromethane	ND		1.0	0.30	ug/L			09/05/18 13:28	1
Vinyl acetate	ND		10	0.60	ug/L			09/05/18 13:28	1
Vinyl chloride	**0.34**	**J**	0.50	0.20	ug/L			09/08/18 02:34	1
Xylenes, Total	ND		0.50	0.40	ug/L			09/05/18 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*72 - 130*		*09/05/18 13:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*72 - 130*		*09/08/18 02:34*	*1*
4-Bromofluorobenzene	*100*		*67 - 130*		*09/05/18 13:28*	*1*
4-Bromofluorobenzene	*92*		*67 - 130*		*09/08/18 02:34*	*1*
Toluene-d8 (Surr)	*96*		*70 - 130*		*09/05/18 13:28*	*1*
Toluene-d8 (Surr)	*96*		*70 - 130*		*09/08/18 02:34*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**73**		54	33	ug/L		09/04/18 21:23	09/06/18 04:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*84*		*23 - 156*	*09/04/18 21:23*	*09/06/18 04:27*	*1*

Method: 6010B - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010	0.0027	mg/L		09/04/18 08:51	09/05/18 10:41	1
Arsenic	**0.021**		0.010	0.0026	mg/L		09/04/18 08:51	09/05/18 10:41	1
Barium	**0.79**		0.010	0.0014	mg/L		09/04/18 08:51	09/05/18 10:41	1
Beryllium	ND		0.0020	0.00033	mg/L		09/04/18 08:51	09/05/18 10:41	1
Cadmium	ND		0.0025	0.0013	mg/L		09/04/18 08:51	09/05/18 10:41	1
Chromium	ND		0.010	0.0015	mg/L		09/04/18 08:51	09/05/18 10:41	1
Cobalt	**0.0026**		0.0020	0.0012	mg/L		09/04/18 08:51	09/05/18 10:41	1
Copper	**0.0020**	**J**	0.020	0.0015	mg/L		09/04/18 08:51	09/05/18 10:41	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Client Sample ID: GWE-2
Date Collected: 08/30/18 10:25
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-2
Matrix: Water

Method: 6010B - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**0.0096**		0.0050	0.0023	mg/L		09/04/18 08:51	09/05/18 10:41	1
Molybdenum	ND		0.010	0.0023	mg/L		09/04/18 08:51	09/05/18 10:41	1
Nickel	**0.0066**	**J**	0.010	0.00080	mg/L		09/04/18 08:51	09/05/18 10:41	1
Selenium	ND		0.020	0.0071	mg/L		09/04/18 08:51	09/05/18 10:41	1
Silver	ND		0.0050	0.0012	mg/L		09/04/18 08:51	09/05/18 10:41	1
Thallium	ND		0.010	0.0035	mg/L		09/04/18 08:51	09/05/18 10:41	1
Vanadium	ND		0.010	0.00070	mg/L		09/04/18 08:51	09/05/18 10:41	1
Zinc	**0.013**	**J**	0.020	0.0096	mg/L		09/04/18 08:51	09/05/18 10:41	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		09/05/18 18:15	09/06/18 16:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010	0.0037	mg/L			08/30/18 15:01	1

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Client Sample ID: GWE-3
Date Collected: 08/30/18 11:05
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-3
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050	0.0025	ug/L			09/05/18 22:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*09/05/18 22:27*	*1*

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Client Sample ID: TB-1
Date Collected: 08/30/18 12:00
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-4
Matrix: Water

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050	0.0025	ug/L			09/05/18 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*09/05/18 23:13*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.067	ug/L			09/05/18 13:58	1
1,1,1-Trichloroethane	ND		0.50	0.20	ug/L			09/05/18 13:58	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.074	ug/L			09/05/18 13:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.091	ug/L			09/05/18 13:58	1
1,1,2-Trichloroethane	ND		0.50	0.11	ug/L			09/05/18 13:58	1
1,1-Dichloroethane	ND		0.50	0.11	ug/L			09/05/18 13:58	1
1,1-Dichloroethene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
1,1-Dichloropropene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			09/05/18 13:58	1
1,2,3-Trichloropropane	ND		0.50	0.087	ug/L			09/05/18 13:58	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L			09/05/18 13:58	1
1,2,4-Trimethylbenzene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.30	ug/L			09/05/18 13:58	1
1,2-Dichlorobenzene	ND		0.50	0.21	ug/L			09/05/18 13:58	1
1,2-Dichloroethane	ND		0.50	0.077	ug/L			09/05/18 13:58	1
1,2-Dichloropropane	ND		0.50	0.20	ug/L			09/05/18 13:58	1
1,3,5-Trimethylbenzene	ND		0.50	0.17	ug/L			09/05/18 13:58	1
1,3-Dichlorobenzene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
1,3-Dichloropropane	ND		1.0	0.17	ug/L			09/05/18 13:58	1
1,4-Dichlorobenzene	ND		0.50	0.16	ug/L			09/05/18 13:58	1
2,2-Dichloropropane	ND		0.50	0.17	ug/L			09/05/18 13:58	1
2-Butanone (MEK)	ND		50	8.4	ug/L			09/05/18 13:58	1
2-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
2-Hexanone	ND		50	3.0	ug/L			09/05/18 13:58	1
4-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
4-Isopropyltoluene	ND		1.0	0.20	ug/L			09/05/18 13:58	1
4-Methyl-2-pentanone (MIBK)	ND		50	4.5	ug/L			09/05/18 13:58	1
Acetone	ND		50	20	ug/L			09/05/18 13:58	1
Benzene	ND		0.50	0.25	ug/L			09/05/18 13:58	1
Bromobenzene	ND		1.0	0.20	ug/L			09/05/18 13:58	1
Bromoform	ND		1.0	0.50	ug/L			09/05/18 13:58	1
Bromomethane	ND		1.0	0.49	ug/L			09/05/18 13:58	1
Carbon disulfide	ND		5.0	0.78	ug/L			09/05/18 13:58	1
Carbon tetrachloride	ND		0.50	0.11	ug/L			09/05/18 13:58	1
Chlorobenzene	ND		0.50	0.13	ug/L			09/05/18 13:58	1
Chlorobromomethane	ND		1.0	0.25	ug/L			09/05/18 13:58	1
Chlorodibromomethane	ND		0.50	0.10	ug/L			09/05/18 13:58	1
Chloroethane	ND		1.0	0.17	ug/L			09/05/18 13:58	1
Chloroform	ND		1.0	0.40	ug/L			09/05/18 13:58	1
Chloromethane	ND		1.0	0.19	ug/L			09/05/18 13:58	1
cis-1,2-Dichloroethene	ND		0.50	0.076	ug/L			09/05/18 13:58	1
cis-1,3-Dichloropropene	ND		0.50	0.10	ug/L			09/05/18 13:58	1
Dibromomethane	ND		0.50	0.30	ug/L			09/05/18 13:58	1

Client Sample ID: TB-1
Date Collected: 08/30/18 12:00
Date Received: 08/30/18 14:05

Lab Sample ID: 720-88324-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorobromomethane	ND		0.50	0.20	ug/L			09/05/18 13:58	1
Dichlorodifluoromethane	ND		0.50	0.25	ug/L			09/05/18 13:58	1
Ethylbenzene	ND		0.50	0.13	ug/L			09/05/18 13:58	1
Ethylene Dibromide	ND		0.50	0.075	ug/L			09/05/18 13:58	1
Gasoline Range Organics (GRO) -C4-C12	ND		50	21	ug/L			09/05/18 13:58	1
Hexachlorobutadiene	ND		1.0	0.27	ug/L			09/05/18 13:58	1
Isopropylbenzene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
Methyl tert-butyl ether	ND		0.50	0.11	ug/L			09/05/18 13:58	1
Methylene Chloride	**1.7**	**J**	5.0	1.5	ug/L			09/05/18 13:58	1
Naphthalene	ND		1.0	0.22	ug/L			09/05/18 13:58	1
n-Butylbenzene	ND		1.0	0.30	ug/L			09/05/18 13:58	1
N-Propylbenzene	ND		1.0	0.20	ug/L			09/05/18 13:58	1
sec-Butylbenzene	ND		1.0	0.17	ug/L			09/05/18 13:58	1
Styrene	ND		0.50	0.22	ug/L			09/05/18 13:58	1
tert-Butylbenzene	ND		1.0	0.20	ug/L			09/05/18 13:58	1
Tetrachloroethene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
Toluene	ND		0.50	0.17	ug/L			09/05/18 13:58	1
trans-1,2-Dichloroethene	ND		0.50	0.13	ug/L			09/05/18 13:58	1
trans-1,3-Dichloropropene	ND		0.50	0.17	ug/L			09/05/18 13:58	1
Trichloroethene	ND		0.50	0.20	ug/L			09/05/18 13:58	1
Trichlorofluoromethane	ND		1.0	0.30	ug/L			09/05/18 13:58	1
Vinyl acetate	ND		10	0.60	ug/L			09/05/18 13:58	1
Vinyl chloride	ND		0.50	0.20	ug/L			09/05/18 13:58	1
Xylenes, Total	ND		0.50	0.40	ug/L			09/05/18 13:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*72 - 130*		*09/05/18 13:58*	*1*
4-Bromofluorobenzene	*100*		*67 - 130*		*09/05/18 13:58*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*		*09/05/18 13:58*	*1*

FORM I
DIESEL RANGE ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-1 Lab Sample ID: 720-88324-1

Matrix: Water Lab File ID: FID1000046.D

Analysis Method: 8015B Date Collected: 08/30/2018 11:45

Extraction Method: 3510C Date Extracted: 09/04/2018 21:23

Sample wt/vol: 839.7(mL) Date Analyzed: 09/06/2018 04:03

Con. Extract Vol.: 2(mL) Dilution Factor: 1

Injection Volume: 1(uL) GC Column: MXT-1 ID: 530(um)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 250884 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00143	Diesel Range Organics [C10-C28]	64		59	35

CAS NO.	SURROGATE	%REC	Q	LIMITS
92-94-4	p-Terphenyl	80		23-156

TestAmerica Pleasanton
Target Compound Quantitation Report

Data File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000046.D
Lims ID: 720-88324-E-1-A
Client ID: GWE-1
Sample Type: Client
Inject. Date: 06-Sep-2018 04:03:09 ALS Bottle#: 46 Worklist Smp#: 46
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 720-0053661-046
Operator ID: DCH Instrument ID: CHDRO6

Method: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\DRO6_A.m
Limit Group: DRO
Last Update: 06-Sep-2018 12:51:47 Calib Date: 05-Sep-2018 09:01:58
Integrator: Genie
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000003.D

Column 1 : Det: GC FID1A
Process Host: XAWRK007

First Level Reviewer: luj Date: 06-Sep-2018 12:51:47

	Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt mg/L	Flags
	22 n-Nonane	1.287	1.229	0.058	3464	NC	
	23 n-Decane	2.132	2.116	0.016	21253	NC	
A	1 C9-C13	2.734	(1.229-4.240)		1789163	1.01	
A	21 Stoddard Solvent	2.734	(1.229-4.240)		1789163	1.00	
A	57 C10-C12	2.865	(2.116-3.613)		1046521	0.6785	
	24 Dodecane	3.632	3.613	0.019	11739	NC	
A	3 C9 - C17	3.780	(1.229-6.331)		4421494	2.27	
A	60 C10-C16	3.983	(2.116-5.850)		3387901	1.94	
A	47 C9 - C18	4.005	(1.229-6.782)		6443879	3.99	
A	15 Kerosene	4.220	(1.229-7.212)		8688556	5.38	
A	25 C9-C19	4.220	(1.229-7.212)		8688556	4.43	
	26 C13	4.227	4.240	-0.013	51337	NC	
$	27 n-Decanoic Acid (Surr)		4.608			ND	U
A	59 C12-C16	4.732	(3.613-5.850)		2355037	1.53	
A	62 C10-C20	4.871	(2.116-7.625)		16929924	11.0	
A	28 C9-C24	5.172	(1.229-9.115)		31553720	20.5	
A	29 C9-C25	5.341	(1.229-9.453)		36074083	23.4	
A	54 C10-C23	5.440	(2.116-8.764)		28631975	18.6	
A	4 C10-C24	5.616	(2.116-9.115)		31303563	20.3	
A	16 C10-C25	5.785	(2.116-9.453)		35823926	23.2	
	45 Hexadecane	5.851	5.850	0.001	157833	NC	
A	14 C10-C26	5.948	(2.116-9.780)		38737350	25.1	
A	67 C12-C22	6.006	(3.613-8.400)		25627977	16.6	
A	32 C10-C28	6.258	(2.116-10.400)		41438701	26.9	
A	5 Diesel	6.258	(2.116-10.400)		41438701	26.9	
A	12 Unknown Hydrocarbons	6.258	(2.116-10.400)		41438701	NC	
A	30 C13-C22	6.320	(4.240-8.400)		25173172	16.3	
	44 Heptadecane	6.369	6.331	0.038	757191	NC	
A	31 C12-C24	6.364	(3.613-9.115)		30270699	19.6	
	51 n-Octadecane	6.786	6.782	0.004	398707	NC	
A	9 Crude Oil Range Organics (	6.880	(1.229-12.531)		54164290	NC	
A	11 Bunker Range Organics (C9-	6.880	(1.229-12.531)		54164290	NC	

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt mg/L	Flags
A 52 Mineral oil	6.880	(1.229-12.531)		54164290	30.6	
33 C19	7.202	7.212	-0.010	370820	NC	
A 64 C13-C28	7.320	(4.240-10.400)		39951032	25.9	
A 17 C10-C36	7.324	(2.116-12.531)		53914133	35.0	
A 68 Crude Oil Range Organics (	7.391	(1.229-13.553)		66274918	NC	
A 13 C9-C40	7.391	(1.229-13.553)		66274918	49.2	
A 58 C16-C24	7.483	(5.850-9.115)		27915662	18.1	
61 icosane	7.612	7.625	-0.013	669456	NC	
A 6 C10-C40	7.835	(2.116-13.553)		66024761	49.0	
$ 34 p-Terphenyl	8.093	8.110	-0.017	38231025	19.9	
35 n-Docosane		8.400			ND	
A 18 C12-C40	8.583	(3.613-13.553)		64991897	48.4	
36 Tricosane	8.800	8.764	0.036	846813	NC	
A 66 C13-C40	8.897	(4.240-13.553)		64537092	48.1	
37 n-Tetracosane	9.117	9.115	0.002	459010	NC	
A 2 C16-C36 ORO	9.191	(5.850-12.531)		95425774	83.7	
38 C25	9.437	9.453	-0.016	3014359	NC	
A 19 C16-C40	9.702	(5.850-13.553)		62636860	46.8	
46 n-Hexacosane	9.760	9.780	-0.020	2072140	NC	
A 20 C19-C36	9.872	(7.212-12.531)		84617473	63.7	
A 55 C23-C32	10.146	(8.764-11.528)		19030509	27.4	
39 n-Octacosane	10.404	10.400	0.004	484295	NC	
65 C29	10.716	10.695	0.021	748576	NC	
A 40 C24-C36	10.823	(9.115-12.531)		15830100	17.8	
A 7 Motor Oil	10.823	(9.115-12.531)		15830100	17.8	
A 10 C22-C40	10.977	(8.400-13.553)		31101995	25.0	
A 49 C25-C36	10.992	(9.453-12.531)		21104566	23.6	
A 41 C23-C40	11.159	(8.764-13.553)		38435614	30.1	
A 8 C24-C40	11.334	(9.115-13.553)		34721198	28.5	
56 Dotriacontane	11.545	11.528	0.017	377710	NC	
A 50 C28-C40	11.977	(10.400-13.553)		24586060	25.9	
A 63 C29-C40	12.124	(10.695-13.553)		23282326	26.9	
42 n-Hexatriacontane	12.557	12.531	0.026	1382749	NC	
43 C40	13.557	13.553	0.004	1125400	NC	
$ 69 Stearic Acid (Surr)		0.000			ND	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

U - Marked Undetected

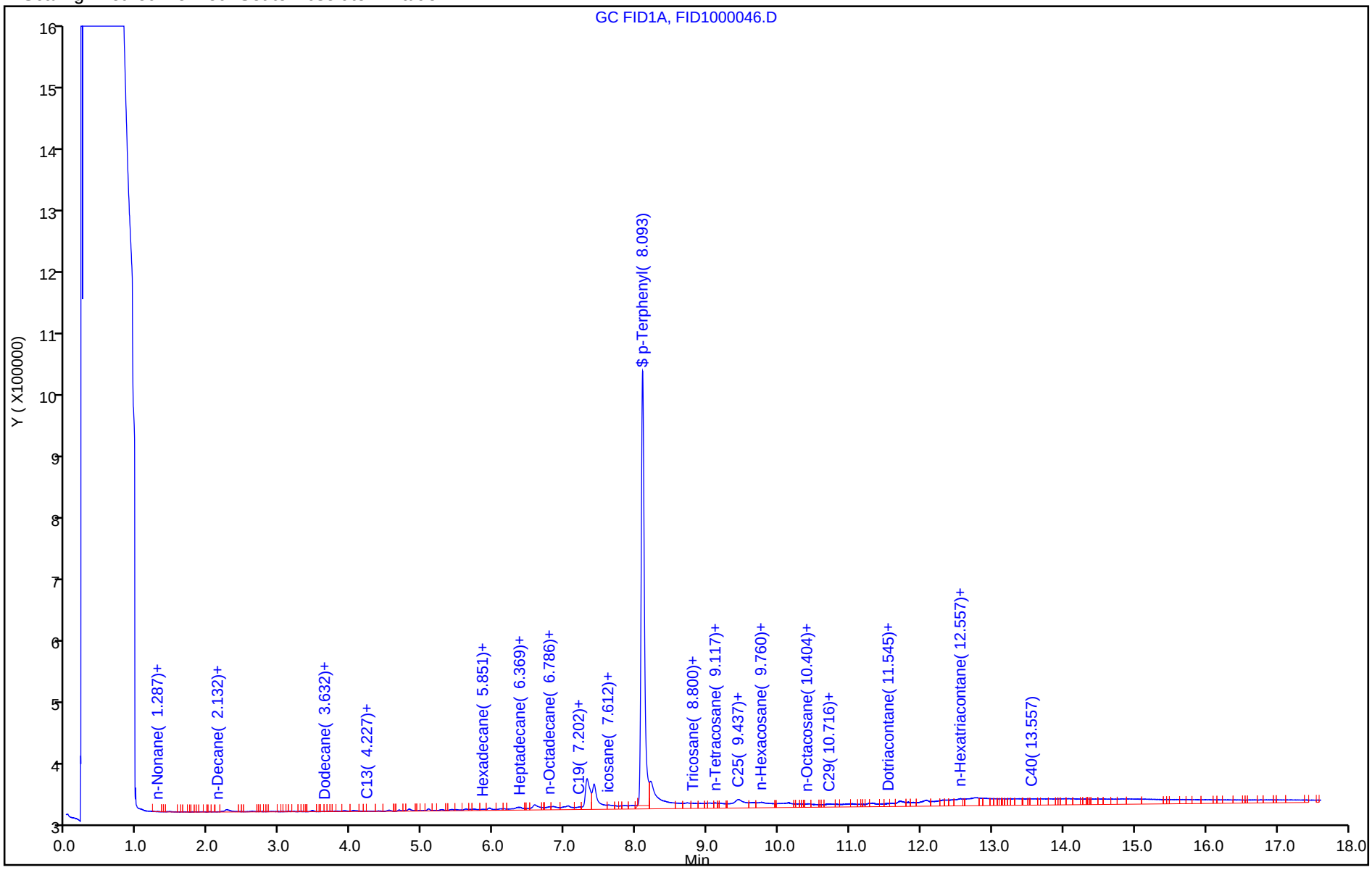
Report Date: 06-Sep-2018 12:51:48 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000046.D

Injection Date:	06-Sep-2018 04:03:09	Instrument ID:	CHDRO6	Operator ID:	DCH
Lims ID:	720-88324-E-1-A	Lab Sample ID:	720-88324-1	Worklist Smp#:	46
Client ID:	GWE-1				
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	46
Method:	DRO6_A	Limit Group:	DRO		

Y Scaling: Method Defined: Set to Absolute Y Value



TestAmerica Pleasanton
Recovery Report

Data File:	\\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000046.D				
Lims ID:	720-88324-E-1-A				
Client ID:	GWE-1				
Sample Type:	Client				
Inject. Date:	06-Sep-2018 04:03:09	ALS Bottle#:	46	Worklist Smp#:	46
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Sample Info:	720-0053661-046				
Operator ID:	DCH	Instrument ID:	CHDRO6		
Method:	\\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\DRO6_A.m				
Limit Group:	DRO				
Last Update:	06-Sep-2018 12:51:47	Calib Date:	05-Sep-2018 09:01:58		
Integrator:	Genie				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000003.D				
Column 1 :			Det: GC FID1A		
Process Host:	XAWRK007				
First Level Reviewer: luj		Date:	06-Sep-2018 12:51:47		

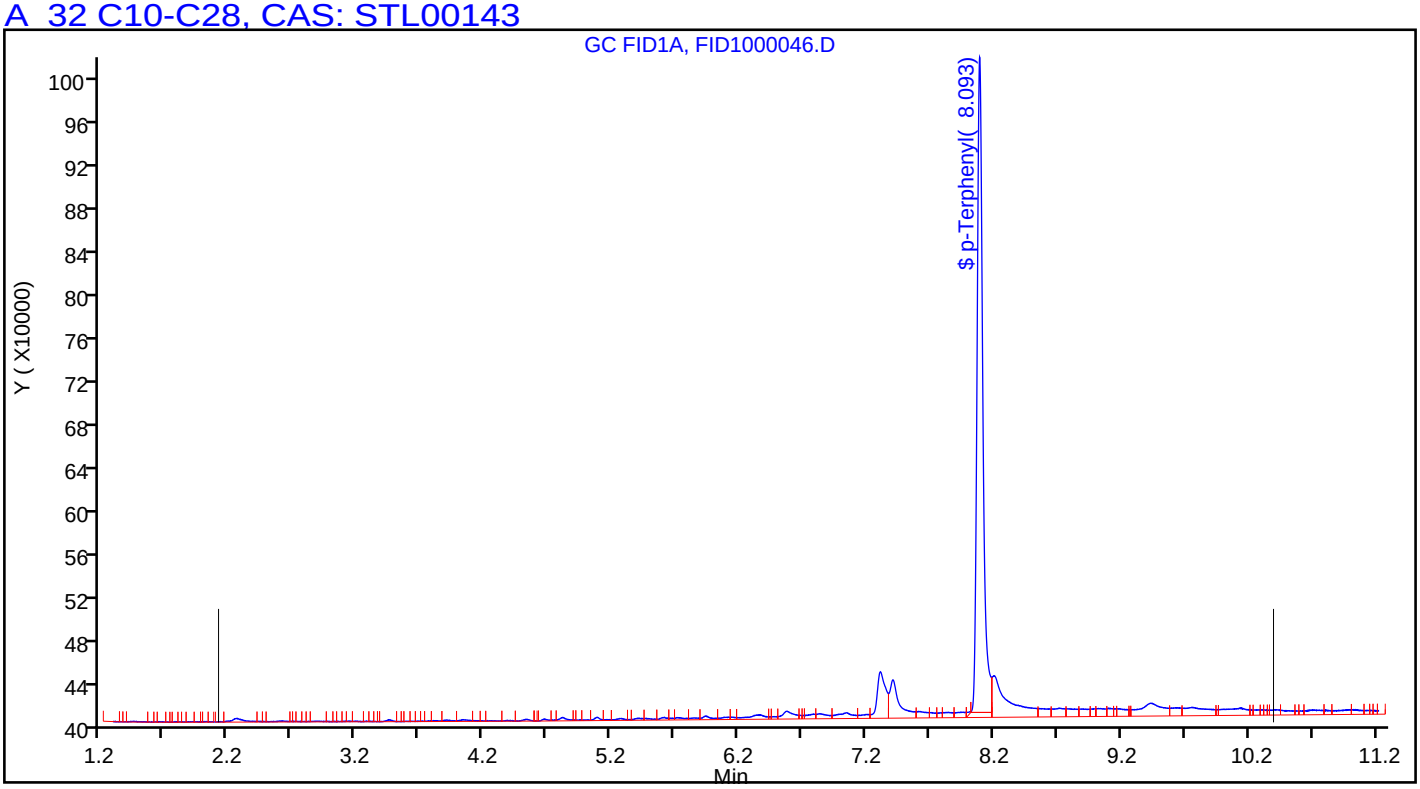
Compound	Amount Added	Amount Recovered	% Rec.
$ 34 p-Terphenyl	25.0	19.9	79.63

Report Date: 06-Sep-2018 12:51:49 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000046.D				
Injection Date:	06-Sep-2018 04:03:09	Instrument ID:	CHDRO6		
Lims ID:	720-88324-E-1-A	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	DCH	ALS Bottle#:	46	Worklist Smp#:	46
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	DRO6_A	Limit Group:	DRO		
Column:		Detector	GC FID1A		

A 32 C10-C28, CAS: STL00143



FORM I
DIESEL RANGE ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-2 Lab Sample ID: 720-88324-2

Matrix: Water Lab File ID: FID1000047.D

Analysis Method: 8015B Date Collected: 08/30/2018 10:25

Extraction Method: 3510C Date Extracted: 09/04/2018 21:23

Sample wt/vol: 912.3(mL) Date Analyzed: 09/06/2018 04:27

Con. Extract Vol.: 2(mL) Dilution Factor: 1

Injection Volume: 1(uL) GC Column: MXT-1 ID: 530(um)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 250884 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00143	Diesel Range Organics [C10-C28]	73		54	33

CAS NO.	SURROGATE	%REC	Q	LIMITS
92-94-4	p-Terphenyl	84		23-156

TestAmerica Pleasanton
Target Compound Quantitation Report

Data File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000047.D
Lims ID: 720-88324-D-2-A
Client ID: GWE-2
Sample Type: Client
Inject. Date: 06-Sep-2018 04:27:31 ALS Bottle#: 47 Worklist Smp#: 47
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 720-0053661-047
Operator ID: DCH Instrument ID: CHDRO6

Method: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\DRO6_A.m
Limit Group: DRO
Last Update: 06-Sep-2018 12:56:19 Calib Date: 05-Sep-2018 09:01:58
Integrator: Genie
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000003.D

Column 1 : Det: GC FID1A
Process Host: XAWRK007

First Level Reviewer: luj Date: 06-Sep-2018 16:51:13

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt mg/L	Flags
22 n-Nonane	1.202	1.229	-0.027	9210	NC	
23 n-Decane	2.111	2.116	-0.005	41692	NC	
A 1 C9-C13	2.734	(1.229-4.240)		3153469	1.78	
A 21 Stoddard Solvent	2.734	(1.229-4.240)		3153469	1.77	
A 57 C10-C12	2.865	(2.116-3.613)		2005006	1.30	
24 Dodecane	3.622	3.613	0.009	17386	NC	
A 3 C9 - C17	3.780	(1.229-6.331)		6710102	3.44	
A 60 C10-C16	3.983	(2.116-5.850)		4803045	2.75	
A 47 C9 - C18	4.005	(1.229-6.782)		9159356	5.67	
A 15 Kerosene	4.220	(1.229-7.212)		12908148	7.99	
A 25 C9-C19	4.220	(1.229-7.212)		12908148	6.58	
26 C13	4.216	4.240	-0.024	37932	NC	
$ 27 n-Decanoic Acid (Surr)		4.608			ND	U
A 59 C12-C16	4.732	(3.613-5.850)		2798039	1.81	
A 62 C10-C20	4.871	(2.116-7.625)		17721507	11.5	
A 28 C9-C24	5.172	(1.229-9.115)		35283115	22.9	
A 29 C9-C25	5.341	(1.229-9.453)		42317858	27.4	
A 54 C10-C23	5.440	(2.116-8.764)		28041598	18.2	
A 4 C10-C24	5.616	(2.116-9.115)		34667626	22.5	
A 16 C10-C25	5.785	(2.116-9.453)		41702369	27.0	
45 Hexadecane	5.856	5.850	0.006	196952	NC	
A 14 C10-C26	5.948	(2.116-9.780)		44878829	29.1	
A 67 C12-C22	6.006	(3.613-8.400)		17068394	11.1	
A 32 C10-C28	6.258	(2.116-10.400)		51405692	33.3	
A 5 Diesel	6.258	(2.116-10.400)		51405692	33.3	
A 12 Unknown Hydrocarbons	6.258	(2.116-10.400)		51405692	NC	
A 30 C13-C22	6.320	(4.240-8.400)		16573352	10.7	
44 Heptadecane	6.369	6.331	0.038	1213146	NC	
A 31 C12-C24	6.364	(3.613-9.115)		32662620	21.2	
51 n-Octadecane	6.838	6.782	0.056	1573351	NC	
A 9 Crude Oil Range Organics (	6.880	(1.229-12.531)		71013689	NC	
A 11 Bunker Range Organics (C9-	6.880	(1.229-12.531)		71013689	NC	

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt mg/L	Flags
A 52 Mineral oil	6.880	(1.229-12.531)		71013689	40.1	
33 C19	7.210	7.212	-0.002	738206	NC	
A 64 C13-C28	7.320	(4.240-10.400)		48905644	31.7	
A 17 C10-C36	7.324	(2.116-12.531)		70398200	45.6	
A 68 Crude Oil Range Organics (	7.391	(1.229-13.553)		82672710	NC	
A 13 C9-C40	7.391	(1.229-13.553)		82672710	61.3	
A 58 C16-C24	7.483	(5.850-9.115)		29864581	19.4	
61 icosane	7.620	7.625	-0.005	1571503	NC	
A 6 C10-C40	7.835	(2.116-13.553)		82057221	60.9	
$ 34 p-Terphenyl	8.093	8.110	-0.017	40259842	21.0	
35 n-Docosane		8.400			ND	
A 18 C12-C40	8.583	(3.613-13.553)		80052215	59.6	
36 Tricosane	8.765	8.764	0.001	3322179	NC	
A 66 C13-C40	8.897	(4.240-13.553)		79557173	59.3	
37 n-Tetracosane	9.100	9.115	-0.015	542816	NC	
A 2 C16-C36 ORO	9.191	(5.850-12.531)		124946533	109.5	
38 C25	9.429	9.453	-0.024	5221142	NC	
A 19 C16-C40	9.702	(5.850-13.553)		77254176	57.8	
46 n-Hexacosane	9.753	9.780	-0.027	1028373	NC	
A 20 C19-C36	9.872	(7.212-12.531)		101220887	76.2	
A 55 C23-C32	10.146	(8.764-11.528)		33459525	48.2	
39 n-Octacosane	10.417	10.400	0.017	1761146	NC	
65 C29	10.702	10.695	0.007	1678776	NC	
A 40 C24-C36	10.823	(9.115-12.531)		25338272	28.5	
A 7 Motor Oil	10.823	(9.115-12.531)		25338272	28.5	
A 10 C22-C40	10.977	(8.400-13.553)		1269196	1.02	
A 49 C25-C36	10.992	(9.453-12.531)		33916973	37.9	
A 41 C23-C40	11.159	(8.764-13.553)		54015623	42.3	
A 8 C24-C40	11.334	(9.115-13.553)		47932411	39.4	
56 Dotriacontane	11.536	11.528	0.008	476137	NC	
A 50 C28-C40	11.977	(10.400-13.553)		30651529	32.3	
A 63 C29-C40	12.124	(10.695-13.553)		28100192	32.4	
42 n-Hexatriacontane	12.546	12.531	0.015	2237914	NC	
43 C40	13.578	13.553	0.025	999869	NC	
$ 69 Stearic Acid (Surr)		0.000			ND	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

U - Marked Undetected

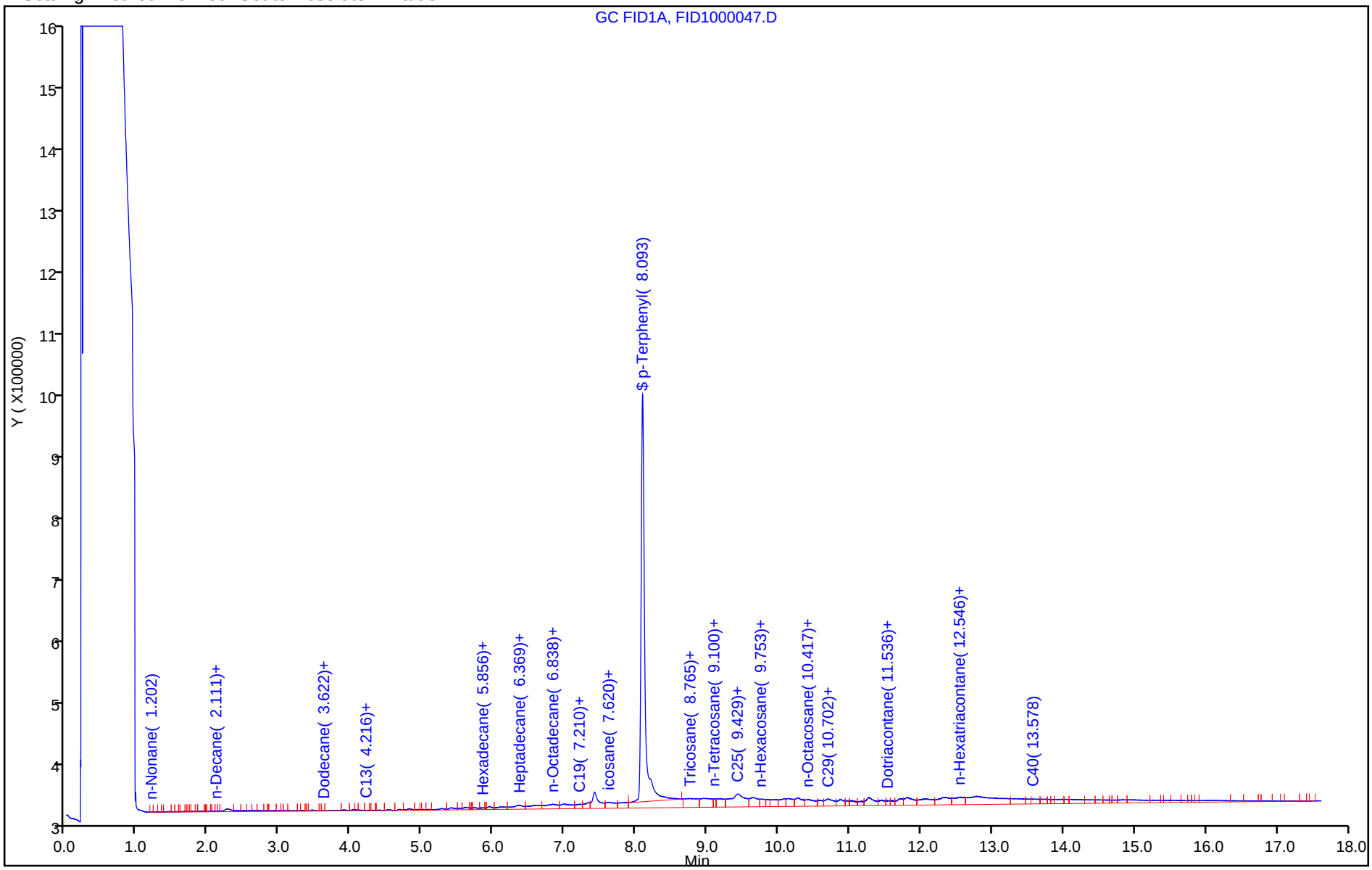
Report Date: 06-Sep-2018 16:51:15 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000047.D

Injection Date:	06-Sep-2018 04:27:31	Instrument ID:	CHDRO6	Operator ID:	DCH
Lims ID:	720-88324-D-2-A	Lab Sample ID:	720-88324-2	Worklist Smp#:	47
Client ID:	GWE-2				
Injection Vol:	1.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	47
Method:	DRO6_A	Limit Group:	DRO		

Y Scaling: Method Defined: Set to Absolute Y Value



TestAmerica Pleasanton
Recovery Report

Data File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000047.D
Lims ID: 720-88324-D-2-A
Client ID: GWE-2
Sample Type: Client
Inject. Date: 06-Sep-2018 04:27:31 ALS Bottle#: 47 Worklist Smp#: 47
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: 720-0053661-047
Operator ID: DCH Instrument ID: CHDRO6

Method: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\DRO6_A.m
Limit Group: DRO
Last Update: 06-Sep-2018 12:56:19 Calib Date: 05-Sep-2018 09:01:58
Integrator: Genie
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000003.D

Column 1 : Det: GC FID1A
Process Host: XAWRK007

First Level Reviewer: luj Date: 06-Sep-2018 16:51:13

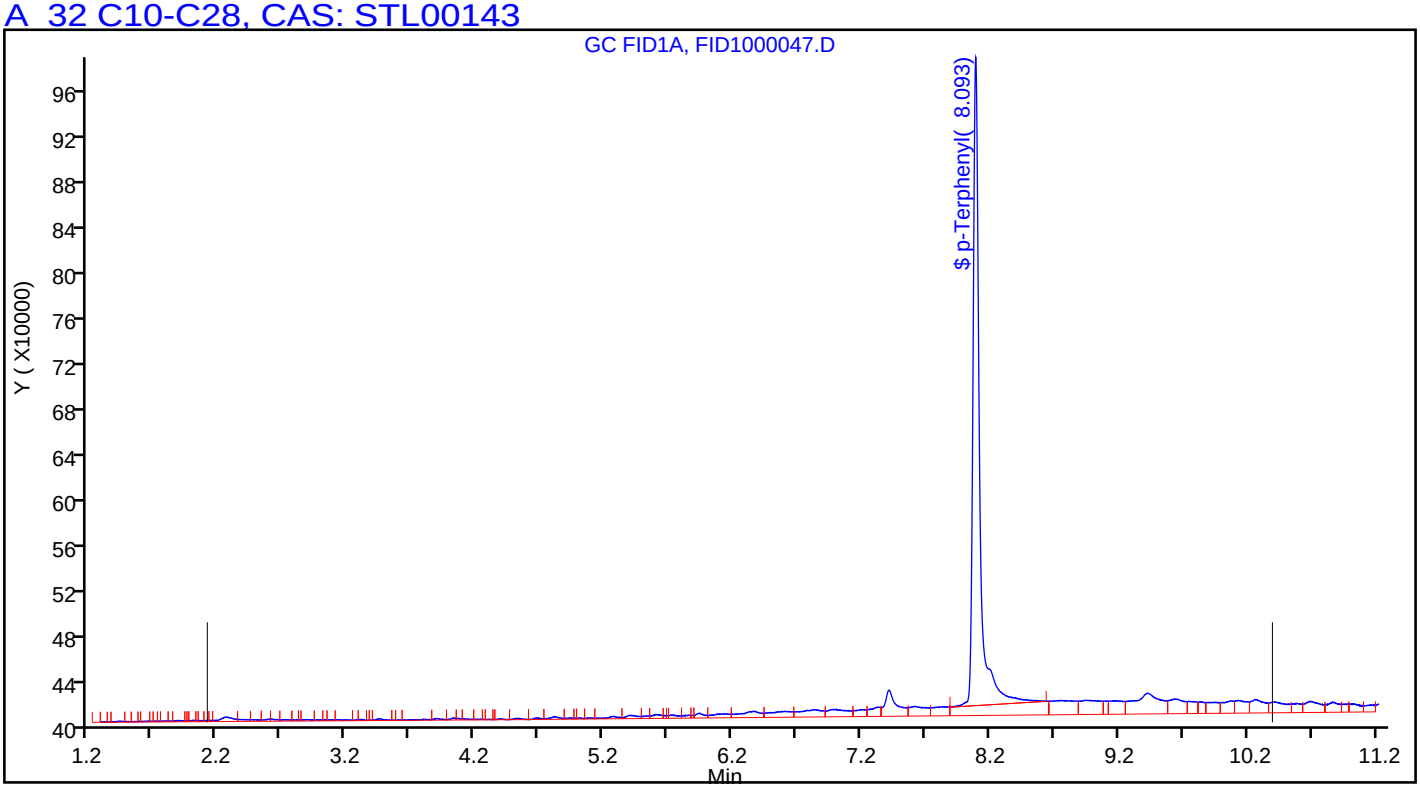
Compound	Amount Added	Amount Recovered	% Rec.
$ 34 p-Terphenyl	25.0	21.0	83.86

Report Date: 06-Sep-2018 16:51:16 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\CHDRO6\20180905-53661.b\FID1000047.D				
Injection Date:	06-Sep-2018 04:27:31	Instrument ID:	CHDRO6		
Lims ID:	720-88324-D-2-A	Lab Sample ID:	720-88324-2		
Client ID:	GWE-2				
Operator ID:	DCH	ALS Bottle#:	47	Worklist Smp#:	47
Injection Vol:	1.0 ul	Dil. Factor:	1.0000		
Method:	DRO6_A	Limit Group:	DRO		
Column:		Detector	GC FID1A		

A 32 C10-C28, CAS: STL00143



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-1 Lab Sample ID: 720-88324-1

Matrix: Water Lab File ID: 09051811.D

Analysis Method: 8260B Date Collected: 08/30/2018 11:45

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 12:58

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.067
71-55-6	1,1,1-Trichloroethane	ND		0.50	0.20
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.074
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.091
79-00-5	1,1,2-Trichloroethane	ND		0.50	0.11
75-34-3	1,1-Dichloroethane	0.35	J	0.50	0.11
75-35-4	1,1-Dichloroethene	ND		0.50	0.20
563-58-6	1,1-Dichloropropene	ND		0.50	0.20
87-61-6	1,2,3-Trichlorobenzene	ND		1.0	0.21
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.087
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.13
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.20
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.30
95-50-1	1,2-Dichlorobenzene	ND		0.50	0.21
107-06-2	1,2-Dichloroethane	ND		0.50	0.077
78-87-5	1,2-Dichloropropane	ND		0.50	0.20
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.17
541-73-1	1,3-Dichlorobenzene	ND		0.50	0.20
142-28-9	1,3-Dichloropropane	ND		1.0	0.17
106-46-7	1,4-Dichlorobenzene	ND		0.50	0.16
594-20-7	2,2-Dichloropropane	ND		0.50	0.17
78-93-3	2-Butanone (MEK)	ND		50	8.4
95-49-8	2-Chlorotoluene	ND		0.50	0.20
591-78-6	2-Hexanone	ND		50	3.0
106-43-4	4-Chlorotoluene	ND		0.50	0.20
99-87-6	4-Isopropyltoluene	ND		1.0	0.20
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	4.5
67-64-1	Acetone	ND		50	20
71-43-2	Benzene	ND		0.50	0.25
108-86-1	Bromobenzene	ND		1.0	0.20
75-25-2	Bromoform	ND		1.0	0.50
74-83-9	Bromomethane	ND		1.0	0.49
75-15-0	Carbon disulfide	ND		5.0	0.78
56-23-5	Carbon tetrachloride	ND		0.50	0.11
108-90-7	Chlorobenzene	ND		0.50	0.13

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-1 Lab Sample ID: 720-88324-1

Matrix: Water Lab File ID: 09051811.D

Analysis Method: 8260B Date Collected: 08/30/2018 11:45

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 12:58

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-97-5	Chlorobromomethane	ND		1.0	0.25
124-48-1	Chlorodibromomethane	ND		0.50	0.10
75-00-3	Chloroethane	ND		1.0	0.17
67-66-3	Chloroform	ND		1.0	0.40
74-87-3	Chloromethane	ND		1.0	0.19
156-59-2	cis-1,2-Dichloroethene	70		0.50	0.076
10061-01-5	cis-1,3-Dichloropropene	ND		0.50	0.10
74-95-3	Dibromomethane	ND		0.50	0.30
75-27-4	Dichlorobromomethane	ND		0.50	0.20
75-71-8	Dichlorodifluoromethane	ND		0.50	0.25
100-41-4	Ethylbenzene	ND		0.50	0.13
106-93-4	Ethylene Dibromide	ND		0.50	0.075
STL00350	Gasoline Range Organics (GRO)-C4-C12	120		50	21
87-68-3	Hexachlorobutadiene	ND		1.0	0.27
98-82-8	Isopropylbenzene	ND		0.50	0.20
1634-04-4	Methyl tert-butyl ether	ND		0.50	0.11
91-20-3	Naphthalene	ND		1.0	0.22
104-51-8	n-Butylbenzene	ND		1.0	0.30
103-65-1	N-Propylbenzene	ND		1.0	0.20
135-98-8	sec-Butylbenzene	ND		1.0	0.17
100-42-5	Styrene	ND		0.50	0.22
98-06-6	tert-Butylbenzene	ND		1.0	0.20
127-18-4	Tetrachloroethene	0.28	J	0.50	0.20
108-88-3	Toluene	ND		0.50	0.17
156-60-5	trans-1,2-Dichloroethene	0.85		0.50	0.13
10061-02-6	trans-1,3-Dichloropropene	ND		0.50	0.17
79-01-6	Trichloroethene	3.0		0.50	0.20
75-69-4	Trichlorofluoromethane	ND		1.0	0.30
108-05-4	Vinyl acetate	ND		10	0.60
1330-20-7	Xylenes, Total	ND		0.50	0.40

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-1 Lab Sample ID: 720-88324-1

Matrix: Water Lab File ID: 09051811.D

Analysis Method: 8260B Date Collected: 08/30/2018 11:45

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 12:58

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	95		72-130
460-00-4	4-Bromofluorobenzene	100		67-130
2037-26-5	Toluene-d8 (Surr)	96		70-130

TestAmerica Pleasanton
Target Compound Quantitation Report

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D
Lims ID: 720-88324-A-1
Client ID: GWE-1
Sample Type: Client
Inject. Date: 05-Sep-2018 12:58:30 ALS Bottle#: 10 Worklist Smp#: 11
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-A-1
Misc. Info.: HP13
Operator ID: VOA Instrument ID: HP13

Method: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\HP13_8260_LL.m
Limit Group: 8260B
Last Update: 06-Sep-2018 10:45:35 Calib Date: 25-Aug-2018 20:24:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP13\20180825-53479.b\08251822.D

Column 1 : Det: MS SCAN
Process Host: XAWRK005

First Level Reviewer: sanjumnair Date: 06-Sep-2018 10:14:57

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
* 1 TBA-d9 (IS)	65	6.819	6.825	-0.006	0	292642	250.0	
* 2 Fluorobenzene	96	10.604	10.605	-0.001	98	1063793	25.0	
* 4 Chlorobenzene-d5	117	14.439	14.445	-0.006	87	874663	25.0	
* 5 1,4-Dichlorobenzene-d4	152	17.579	17.585	-0.006	95	498981	25.0	
$ 7 Dibromofluoromethane (Surr	113	9.190	9.196	-0.006	94	88245	7.39	
$ 8 1,2-Dichloroethane-d4 (Sur	65	9.708	9.708	0.000	0	106425	7.12	
$ 10 Toluene-d8 (Surr)	98	12.708	12.714	-0.006	93	310525	7.22	
$ 11 4-Bromofluorobenzene	95	15.933	15.939	-0.006	94	126943	7.46	
$ 12 1,2-Dichlorobenzene-d4	152	18.042	18.042	0.000	84	115437	5.97	
$ 6 BFB	95	8.818	6.434	2.384	0	20518	NR	
19 Vinyl chloride	62	4.776	4.776	0.000	98	3316471	261.0	E
27 Isopropyl alcohol	45	6.288	6.288	0.000	100	33395	42.5	
28 Acetone	58	6.398	6.380	0.018	68	2335	1.87	
31 1,1-Dichloroethene	96	6.916	6.904	0.012	1	942	0.1166	
34 Methylene Chloride	84	7.087	7.081	0.006	98	17881	1.55	
38 trans-1,2-Dichloroethene	96	7.873	7.880	-0.007	95	8951	0.8520	
39 Methyl tert-butyl ether	73	7.995	7.995	0.000	34	1062	0.0313	
40 1,1-Dichloroethane	63	8.160	8.166	-0.006	95	7200	0.3482	
49 cis-1,2-Dichloroethene	61	8.818	8.818	0.000	82	1232132	70.4	
146 n-Butanol	56	9.989	9.958	0.031	31	1250	3.55	M
59 Benzene	78	10.379	10.379	0.000	95	4057	0.0896	
66 Trichloroethene	132	11.098	11.098	0.000	95	35017	2.99	
75 Toluene	92	12.799	12.799	0.000	98	1688	0.0587	
81 Tetrachloroethene	164	13.671	13.671	0.000	97	2867	0.2790	
85 m-Xylene & p-Xylene	91	14.939	14.939	0.000	0	743	0.0168	
101 1,2,4-Trimethylbenzene	105	17.286	17.280	0.006	1	1031	0.0192	
105 4-Isopropyltoluene	119	17.646	17.646	0.000	82	1921	0.0346	
142 1,3,5-Trichlorobenzene	180	19.725	19.725	0.000	1	306	0.0127	
111 1,2,4-Trichlorobenzene	180	20.414	20.414	0.000	80	659	0.0300	
112 Naphthalene	128	20.743	20.749	-0.006	14	3533	0.0688	
113 Hexachlorobutadiene	225	20.804	20.804	0.000	1	482	0.0373	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
114 1,2,3-Trichlorobenzene	180	21.017	21.017	0.000	1	789	0.0381	
29 Pentane	43	6.380	6.410	-0.030	71	6514	NR	
131 n-Octane	43	13.104	13.110	-0.006	87	1078	NR	
135 n-Nonane	57	15.067	15.055	0.012	86	556	NR	
99 n-Decane	57	16.829	16.829	0.000	90	831	NR	
110 Dodecane	57	19.938	19.938	0.000	93	2666	NR	
115 C13	57	21.383	21.377	0.006	77	6034	NR	
A 116 C4-C10	1	10.849	(4.783-16.914)		0	10616385	108.8	
A 154 C6-C8	1	10.855	(8.556-13.153)		0	4261062	43.7	
A 155 C6-C9	1	11.845	(8.556-15.134)		0	4471710	45.8	
A 117 C4-C12	1	12.394	(4.783-20.005)		0	11408483	117.0	
A 119 C6-C10	1	12.735	(8.556-16.914)		0	4740572	48.6	
A 118 C5-C12	1	13.168	(6.331-20.005)		0	5937939	60.9	
A 120 C6-C12	1	14.281	(8.556-20.005)		0	5532670	56.7	
A 156 C8-C10	1	14.982	(13.049-16.914)		0	484970	4.97	
A 121 C7-C12	1	15.454	(10.903-20.005)		0	1543053	15.8	
S 122 Xylenes, Total	1				0		0.0168	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Reagents:

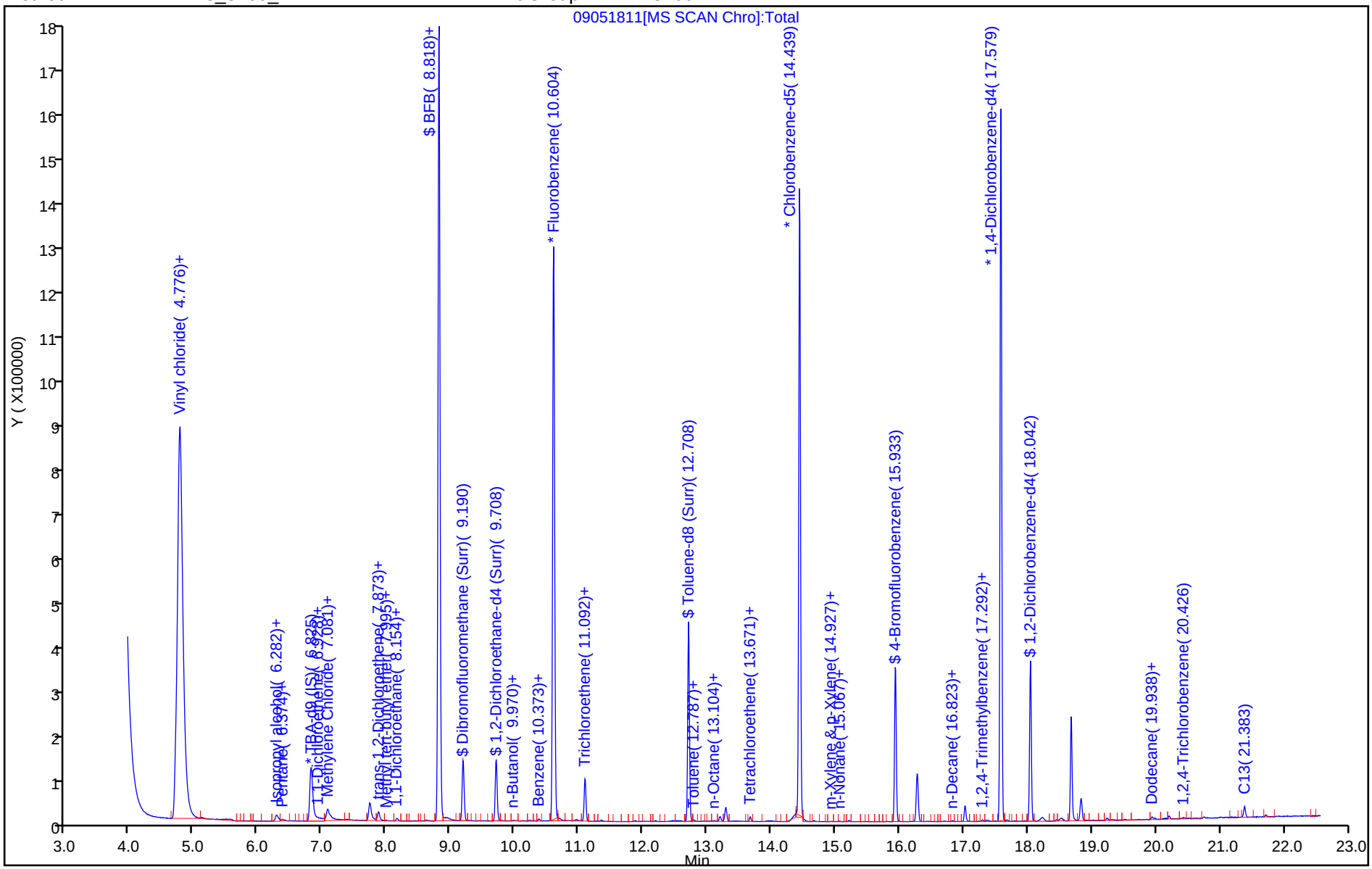
I_IS/SS_00092 Amount Added: 5.00 Units: uL Run Reagent

Report Date: 06-Sep-2018 10:51:28 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D

Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13	Operator ID:	VOA
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1	Worklist Smp#:	11
Client ID:	GWE-1				
Purge Vol:	10.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	10
Method:	HP13_8260_LL	Limit Group:	8260B		



TestAmerica Pleasanton
Recovery Report

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D
Lims ID: 720-88324-A-1
Client ID: GWE-1
Sample Type: Client
Inject. Date: 05-Sep-2018 12:58:30 ALS Bottle#: 10 Worklist Smp#: 11
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-A-1
Misc. Info.: HP13
Operator ID: VOA Instrument ID: HP13

Method: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\HP13_8260_LL.m
Limit Group: 8260B
Last Update: 06-Sep-2018 10:45:35 Calib Date: 25-Aug-2018 20:24:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP13\20180825-53479.b\08251822.D

Column 1 : Det: MS SCAN
Process Host: XAWRK005

First Level Reviewer: sanjumnair Date: 06-Sep-2018 10:14:57

Compound	Amount Added	Amount Recovered	% Rec.
$ 7 Dibromofluoromethane (Surr)	0.0	0	0.00
$ 8 1,2-Dichloroethane-d4 (Surr)	7.50	7.12	94.87
$ 10 Toluene-d8 (Surr)	7.50	7.22	96.24
$ 11 4-Bromofluorobenzene	7.50	7.46	99.50
$ 12 1,2-Dichlorobenzene-d4	0.0	0	0.00
$ 6 BFB	0.0	0	0.00

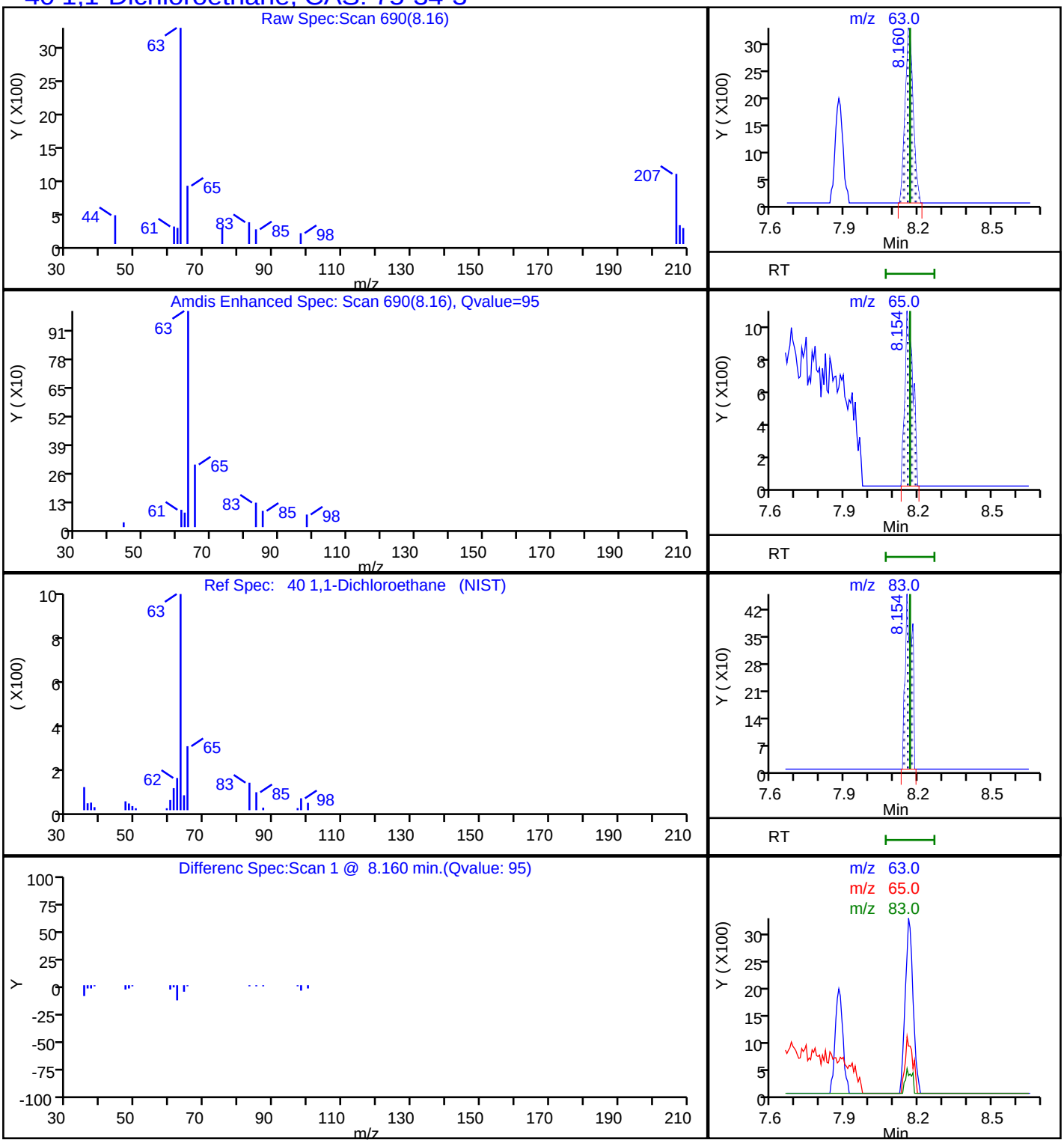
Report Date: 06-Sep-2018 10:51:29 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D

Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	VOA	ALS Bottle#:	10	Worklist Smp#:	11
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

40 1,1-Dichloroethane, CAS: 75-34-3



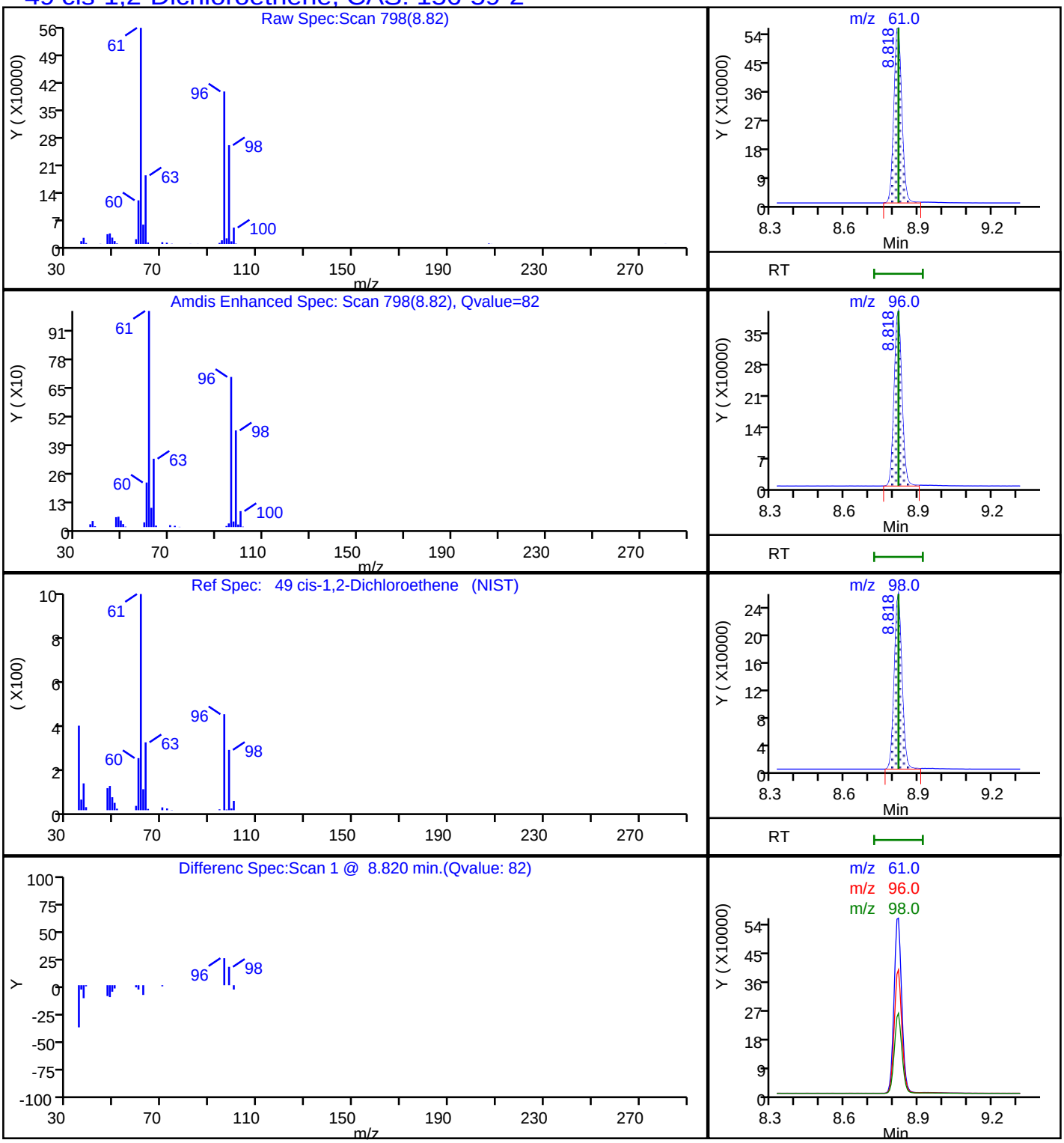
Report Date: 06-Sep-2018 10:51:29 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D

Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	VOA	ALS Bottle#:	10	Worklist Smp#:	11
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

49 cis-1,2-Dichloroethene, CAS: 156-59-2

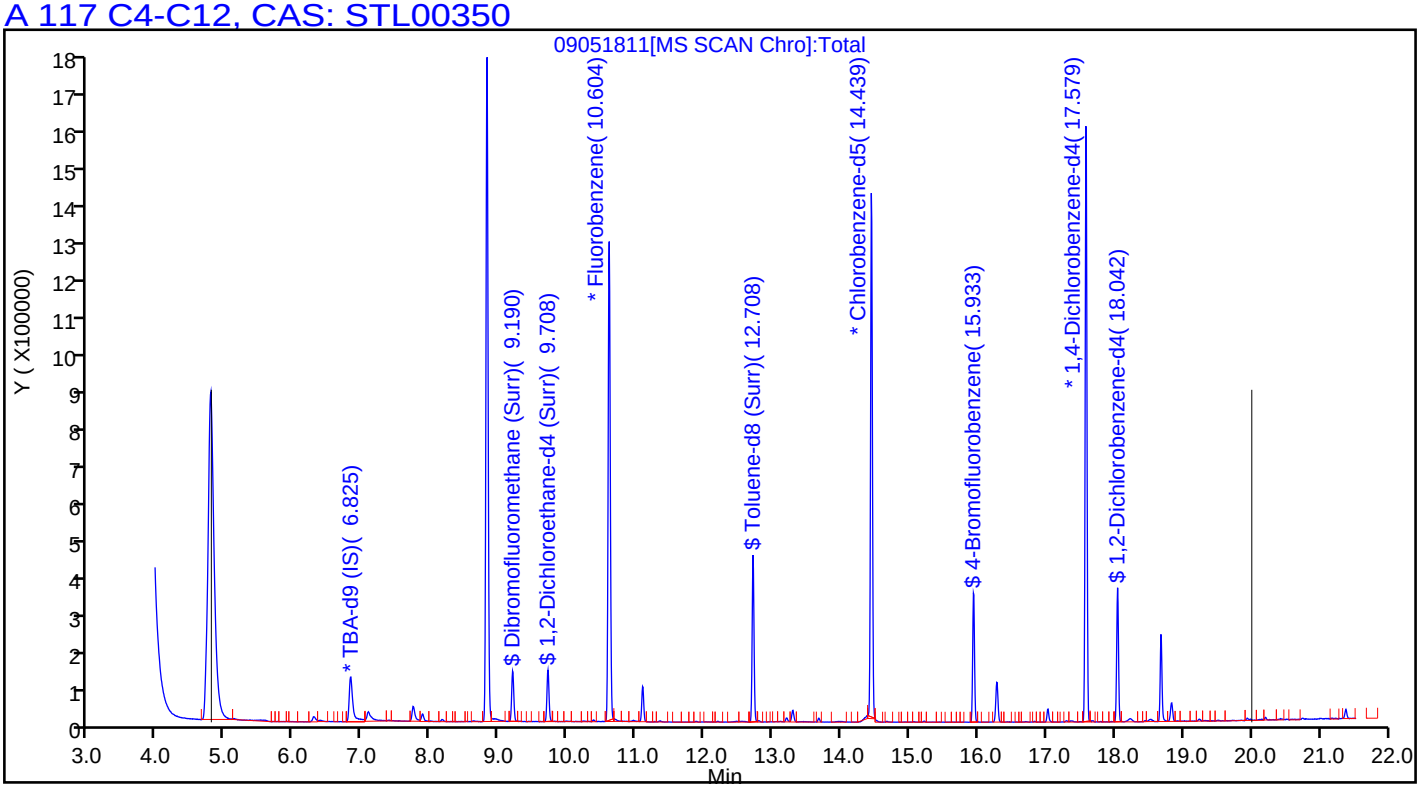


Report Date: 06-Sep-2018 10:51:34 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D				
Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	VOA	ALS Bottle#:	10	Worklist Smp#:	11
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

A 117 C4-C12, CAS: STL00350



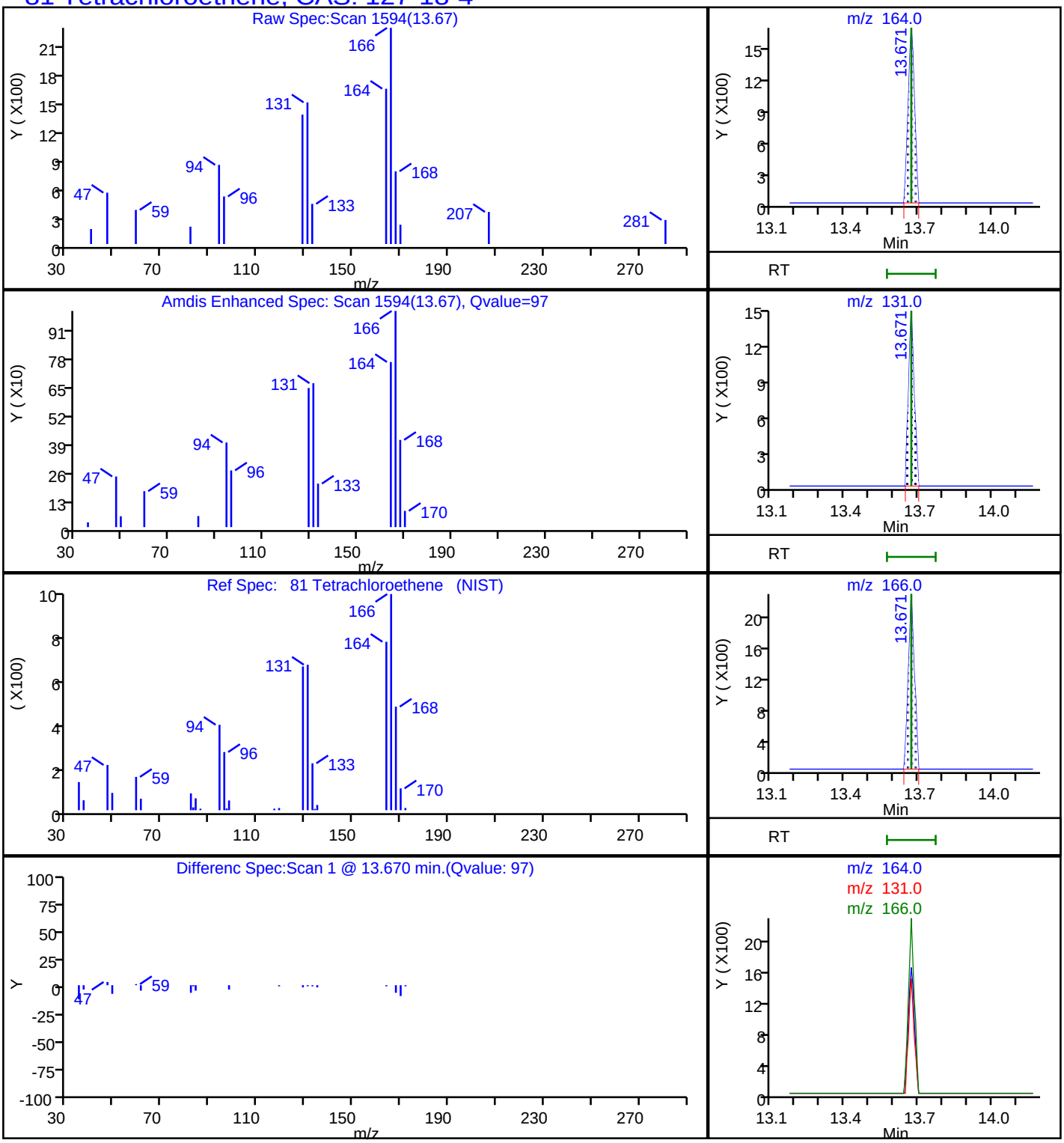
Report Date: 06-Sep-2018 10:51:31 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D

Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	VOA	ALS Bottle#:	10	Worklist Smp#:	11
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

81 Tetrachloroethene, CAS: 127-18-4



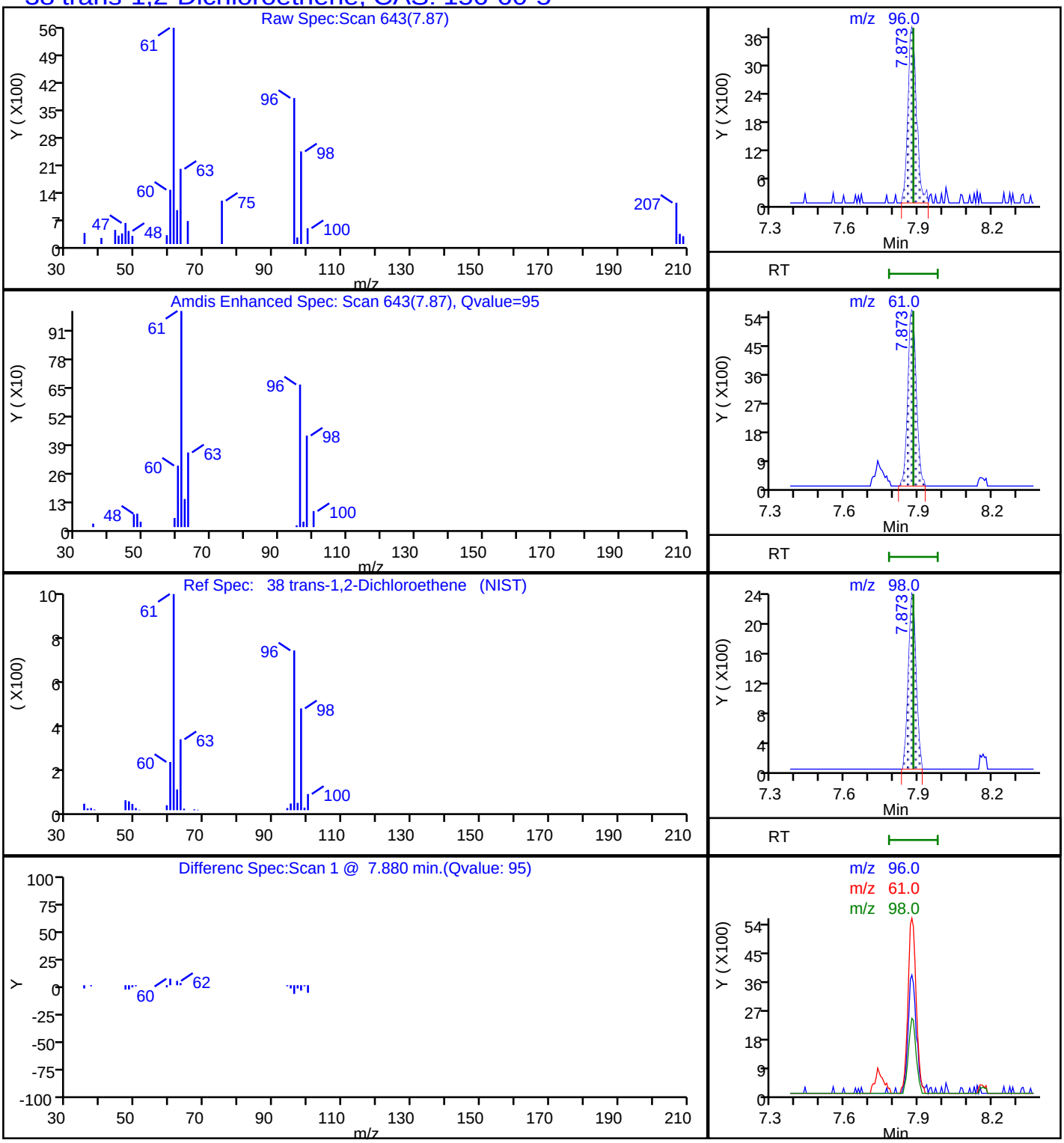
Report Date: 06-Sep-2018 10:51:29 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D

Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	VOA	ALS Bottle#:	10	Worklist Smp#:	11
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

38 trans-1,2-Dichloroethene, CAS: 156-60-5



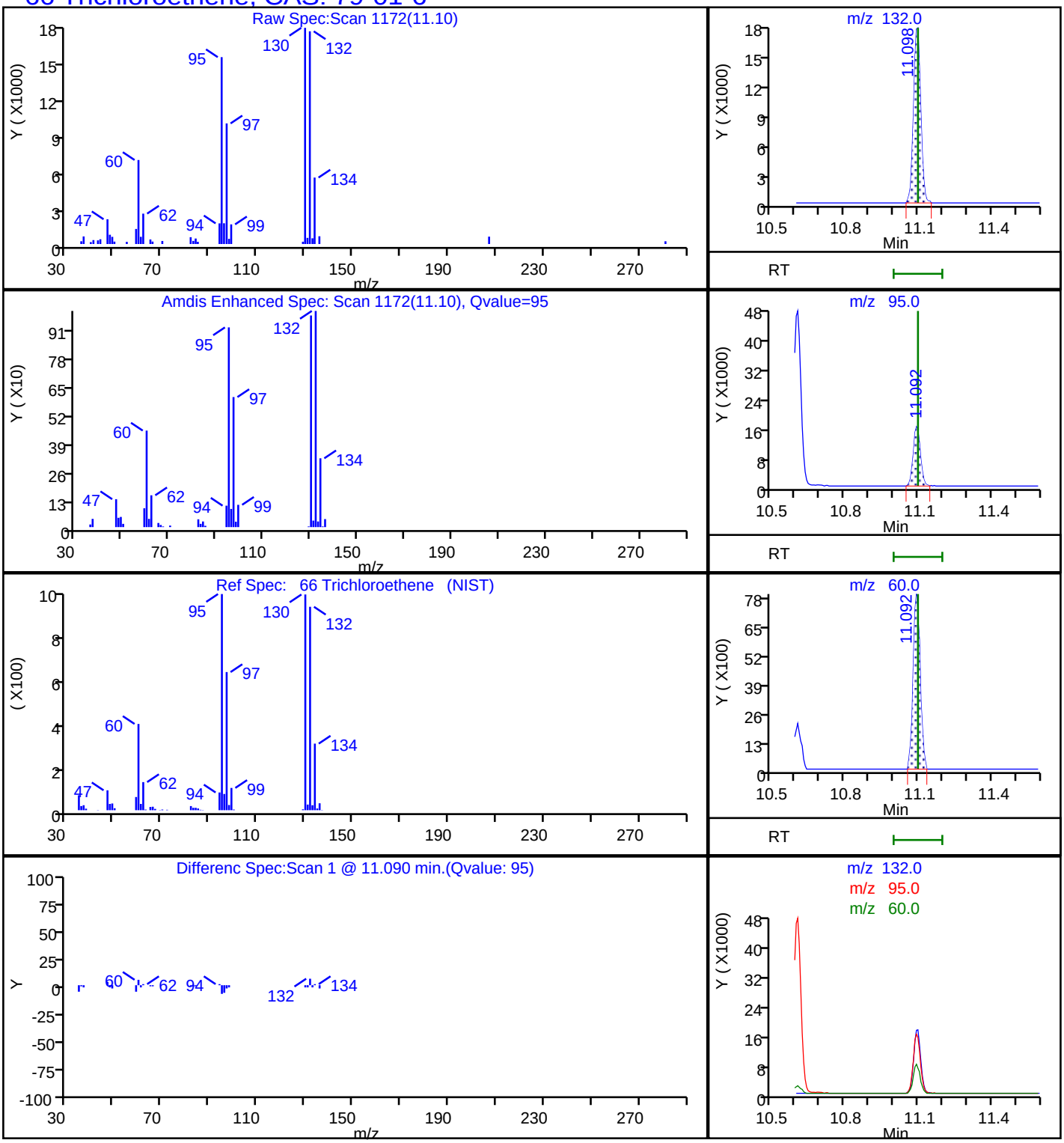
Report Date: 06-Sep-2018 10:51:29 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D

Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	VOA	ALS Bottle#:	10	Worklist Smp#:	11
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

66 Trichloroethene, CAS: 79-01-6



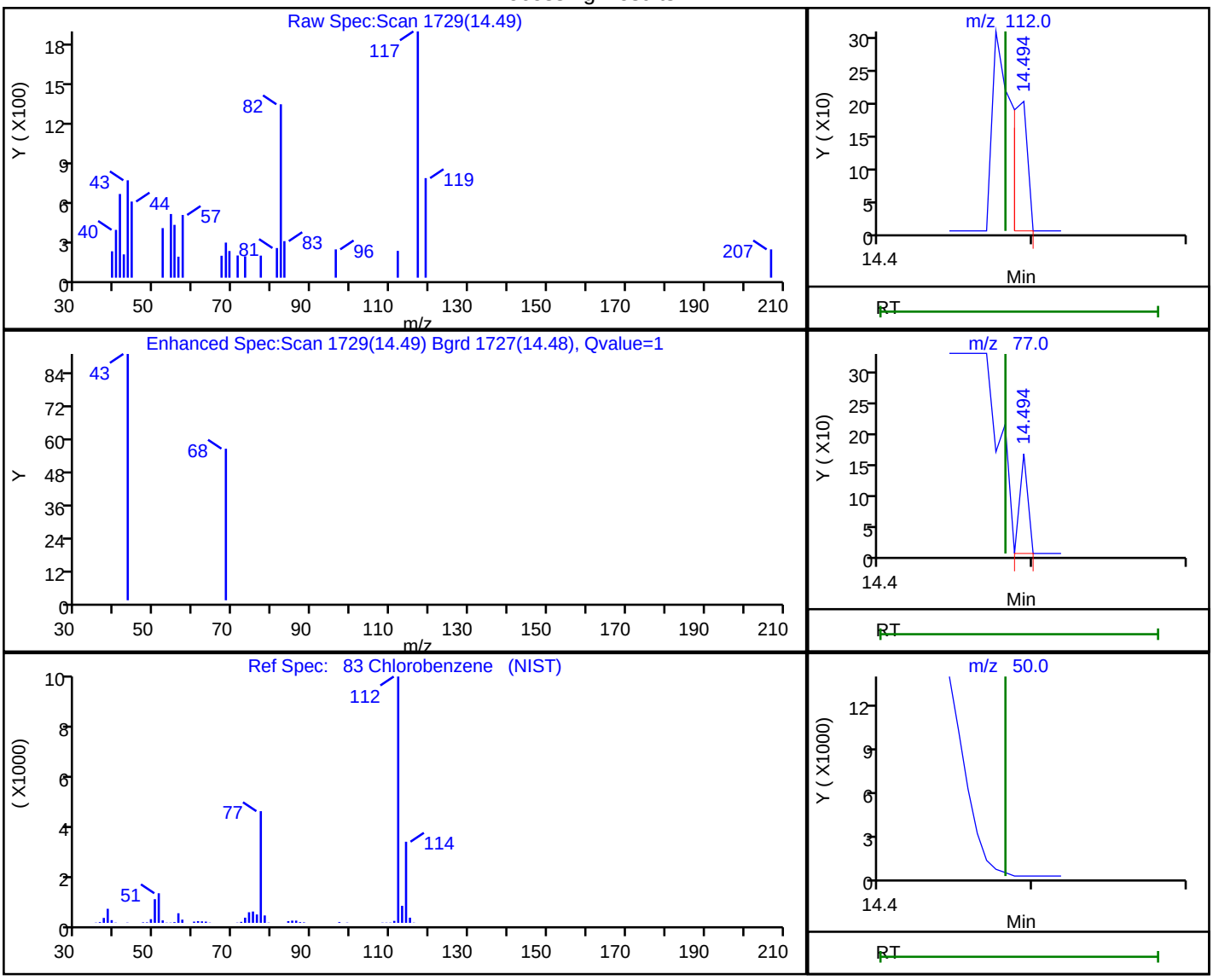
User Disabled Compound Report

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051811.D				
Injection Date:	05-Sep-2018 12:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	VOA	ALS Bottle#:	10	Worklist Smp#:	11
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

83 Chlorobenzene, CAS: 108-90-7

Processing Results



RT	Mass	Response	Amount
14.49	112.00	140	0.004287
14.49	77.00	60	
14.48	50.00	0	

Reviewer: sanjumnair, 06-Sep-2018 10:13:21

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-1 Lab Sample ID: 720-88324-1

Matrix: Water Lab File ID: 09071842.D

Analysis Method: 8260B Date Collected: 08/30/2018 11:45

Sample wt/vol: 10(mL) Date Analyzed: 09/08/2018 03:03

Soil Aliquot Vol: Dilution Factor: 10

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 251099 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-09-2	Methylene Chloride	ND		50	15
75-01-4	Vinyl chloride	210		5.0	2.0

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	96		72-130
460-00-4	4-Bromofluorobenzene	87		67-130
2037-26-5	Toluene-d8 (Surr)	96		70-130

TestAmerica Pleasanton
Target Compound Quantitation Report

Data File: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071842.D
Lims ID: 720-88324-B-1
Client ID: GWE-1
Sample Type: Client
Inject. Date: 08-Sep-2018 03:03:30 ALS Bottle#: 20 Worklist Smp#: 21
Purge Vol: 10.000 mL Dil. Factor: 10.0000
Sample Info: 88324-B-1 RR10X
Operator ID: SF Instrument ID: HP9

Method: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\HP9_8260_LL.m
Limit Group: 8260B
Last Update: 10-Sep-2018 09:43:29 Calib Date: 23-Aug-2018 18:09:30
Integrator: RTE ID Type: RT Order ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP9\20180823-53445.b\08231828.D

Column 1 : Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: chaijita Date: 10-Sep-2018 09:45:58

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
* 1 TBA-d9 (IS)	65	7.159	7.159	0.000	0	65018	250.0	
* 2 Fluorobenzene	96	10.926	10.936	-0.010	98	687714	25.0	
* 4 Chlorobenzene-d5	117	14.764	14.764	0.000	82	566301	25.0	
* 5 1,4-Dichlorobenzene-d4	152	17.903	17.903	0.000	92	300643	25.0	
$ 7 Dibromofluoromethane (Surr	113	9.528	9.519	0.000	51	51047	7.32	
$ 8 1,2-Dichloroethane-d4 (Sur	65	10.045	10.035	0.000	0	34557	7.18	
$ 10 Toluene-d8 (Surr)	98	13.032	13.020	0.000	91	181965	7.23	
$ 11 4-Bromofluorobenzene	95	16.252	16.252	0.000	90	60146	6.55	
$ 12 1,2-Dichlorobenzene-d4	152	18.358	18.368	-0.011	80	67900	5.86	
19 Vinyl chloride	62	5.093	5.088	0.000	83	454353	21.2	
48 cis-1,2-Dichloroethene	61	9.154	9.154	0.000	66	60573	5.57	
127 Butyl Ether	87	14.976	14.952	0.010	50	1119	0.2046	
A 116 C4-C10	1	11.189	(5.123-17.255)		0	1672510	25.9	
A 153 C6-C8	1	11.194	(8.890-13.498)		0	414453	6.41	
A 154 C6-C9	1	12.161	(8.890-15.432)		0	535815	8.29	
A 117 C4-C12	1	12.738	(5.123-20.353)		0	1882320	29.1	
A 123 Aviation Gas	1	12.991	(8.890-17.093)		0	679658	NC	
A 119 C6-C10	1	13.072	(8.890-17.255)		0	686359	10.6	
A 118 C5-C12	1	13.528	(6.703-20.353)		0	992889	15.4	
A 120 C6-C12	1	14.622	(8.890-20.353)		0	890508	13.8	
A 155 C8-C10	1	15.336	(13.417-17.255)		0	273760	4.24	
A 121 C7-C12	1	15.786	(11.219-20.353)		0	548350	8.48	

QC Flag Legend

Processing Flags
NC - Not Calibrated

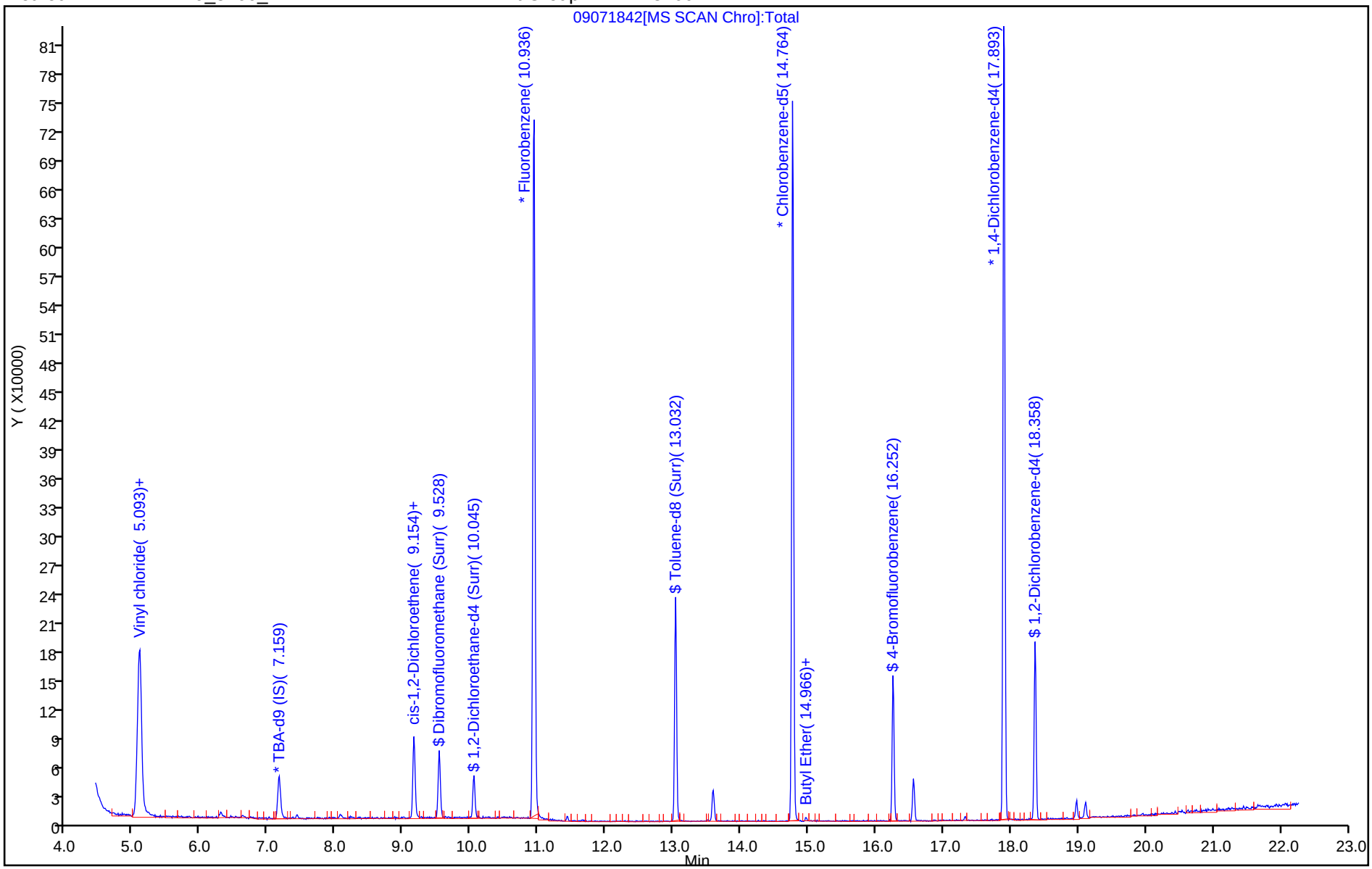
Reagents:

I_IS/SS_00092 Amount Added: 5.00 Units: uL Run Reagent

Report Date: 10-Sep-2018 09:46:00 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071842.D				
Injection Date:	08-Sep-2018 03:03:30	Instrument ID:	HP9	Operator ID:	SF
Lims ID:	720-88324-B-1	Lab Sample ID:	720-88324-1	Worklist Smp#:	21
Client ID:	GWE-1				
Purge Vol:	10.000 mL	Dil. Factor:	10.0000	ALS Bottle#:	20
Method:	HP9_8260_LL	Limit Group:	8260B		



TestAmerica Pleasanton
Recovery Report

Data File: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071842.D
Lims ID: 720-88324-B-1
Client ID: GWE-1
Sample Type: Client
Inject. Date: 08-Sep-2018 03:03:30 ALS Bottle#: 20 Worklist Smp#: 21
Purge Vol: 10.000 mL Dil. Factor: 10.0000
Sample Info: 88324-B-1 RR10X
Operator ID: SF Instrument ID: HP9

Method: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\HP9_8260_LL.m
Limit Group: 8260B
Last Update: 10-Sep-2018 09:43:29 Calib Date: 23-Aug-2018 18:09:30
Integrator: RTE ID Type: RT Order ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP9\20180823-53445.b\08231828.D

Column 1 : Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: chaijita Date: 10-Sep-2018 09:45:58

Compound	Amount Added	Amount Recovered	% Rec.
$ 7 Dibromofluoromethane (Surr)	0.0	0	0.00
$ 8 1,2-Dichloroethane-d4 (Surr)	7.50	7.18	95.76
$ 10 Toluene-d8 (Surr)	7.50	7.23	96.44
$ 11 4-Bromofluorobenzene	7.50	6.55	87.38
$ 12 1,2-Dichlorobenzene-d4	0.0	0	0.00

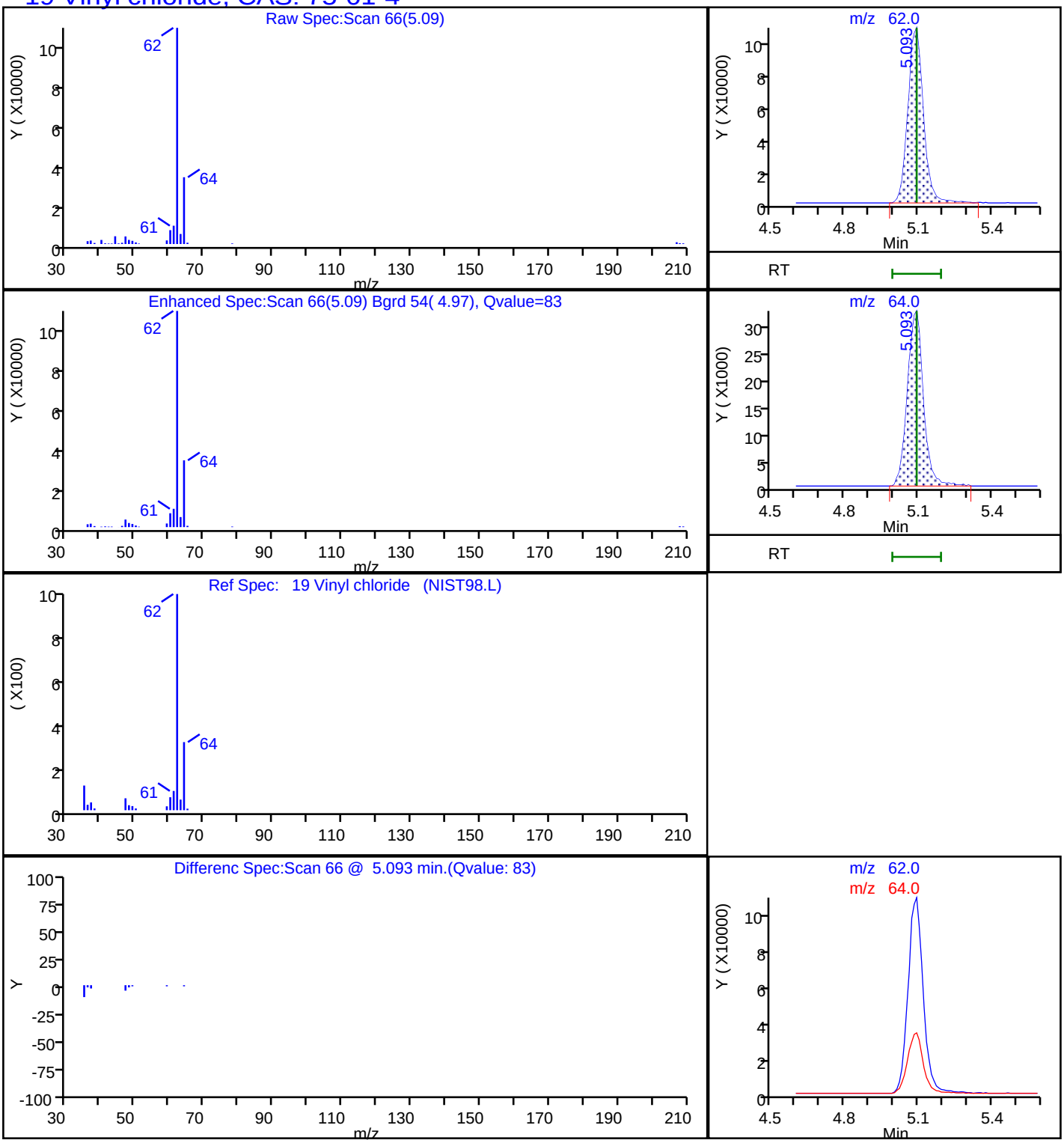
Report Date: 10-Sep-2018 09:46:01 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071842.D

Injection Date:	08-Sep-2018 03:03:30	Instrument ID:	HP9		
Lims ID:	720-88324-B-1	Lab Sample ID:	720-88324-1		
Client ID:	GWE-1				
Operator ID:	SF	ALS Bottle#:	20	Worklist Smp#:	21
Purge Vol:	10.000 mL	Dil. Factor:	10.0000		
Method:	HP9_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

19 Vinyl chloride, CAS: 75-01-4



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-2 Lab Sample ID: 720-88324-2

Matrix: Water Lab File ID: 09051812.D

Analysis Method: 8260B Date Collected: 08/30/2018 10:25

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 13:28

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.067
71-55-6	1,1,1-Trichloroethane	ND		0.50	0.20
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.074
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.091
79-00-5	1,1,2-Trichloroethane	ND		0.50	0.11
75-34-3	1,1-Dichloroethane	ND		0.50	0.11
75-35-4	1,1-Dichloroethene	ND		0.50	0.20
563-58-6	1,1-Dichloropropene	ND		0.50	0.20
87-61-6	1,2,3-Trichlorobenzene	ND		1.0	0.21
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.087
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.13
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.20
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.30
95-50-1	1,2-Dichlorobenzene	ND		0.50	0.21
107-06-2	1,2-Dichloroethane	ND		0.50	0.077
78-87-5	1,2-Dichloropropane	ND		0.50	0.20
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.17
541-73-1	1,3-Dichlorobenzene	ND		0.50	0.20
142-28-9	1,3-Dichloropropane	ND		1.0	0.17
106-46-7	1,4-Dichlorobenzene	ND		0.50	0.16
594-20-7	2,2-Dichloropropane	ND		0.50	0.17
78-93-3	2-Butanone (MEK)	ND		50	8.4
95-49-8	2-Chlorotoluene	ND		0.50	0.20
591-78-6	2-Hexanone	ND		50	3.0
106-43-4	4-Chlorotoluene	ND		0.50	0.20
99-87-6	4-Isopropyltoluene	ND		1.0	0.20
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	4.5
67-64-1	Acetone	ND		50	20
71-43-2	Benzene	ND		0.50	0.25
108-86-1	Bromobenzene	ND		1.0	0.20
75-25-2	Bromoform	ND		1.0	0.50
74-83-9	Bromomethane	ND		1.0	0.49
75-15-0	Carbon disulfide	ND		5.0	0.78
56-23-5	Carbon tetrachloride	ND		0.50	0.11
108-90-7	Chlorobenzene	ND		0.50	0.13

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-2 Lab Sample ID: 720-88324-2

Matrix: Water Lab File ID: 09051812.D

Analysis Method: 8260B Date Collected: 08/30/2018 10:25

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 13:28

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-97-5	Chlorobromomethane	ND		1.0	0.25
124-48-1	Chlorodibromomethane	ND		0.50	0.10
75-00-3	Chloroethane	ND		1.0	0.17
67-66-3	Chloroform	ND		1.0	0.40
74-87-3	Chloromethane	ND		1.0	0.19
156-59-2	cis-1,2-Dichloroethene	0.34	J	0.50	0.076
10061-01-5	cis-1,3-Dichloropropene	ND		0.50	0.10
74-95-3	Dibromomethane	ND		0.50	0.30
75-27-4	Dichlorobromomethane	ND		0.50	0.20
75-71-8	Dichlorodifluoromethane	ND		0.50	0.25
100-41-4	Ethylbenzene	ND		0.50	0.13
106-93-4	Ethylene Dibromide	ND		0.50	0.075
STL00350	Gasoline Range Organics (GRO)-C4-C12	ND		50	21
87-68-3	Hexachlorobutadiene	ND		1.0	0.27
98-82-8	Isopropylbenzene	ND		0.50	0.20
1634-04-4	Methyl tert-butyl ether	ND		0.50	0.11
91-20-3	Naphthalene	ND		1.0	0.22
104-51-8	n-Butylbenzene	ND		1.0	0.30
103-65-1	N-Propylbenzene	ND		1.0	0.20
135-98-8	sec-Butylbenzene	ND		1.0	0.17
100-42-5	Styrene	ND		0.50	0.22
98-06-6	tert-Butylbenzene	ND		1.0	0.20
127-18-4	Tetrachloroethene	ND		0.50	0.20
108-88-3	Toluene	ND		0.50	0.17
156-60-5	trans-1,2-Dichloroethene	0.15	J	0.50	0.13
10061-02-6	trans-1,3-Dichloropropene	ND		0.50	0.17
79-01-6	Trichloroethene	ND		0.50	0.20
75-69-4	Trichlorofluoromethane	ND		1.0	0.30
108-05-4	Vinyl acetate	ND		10	0.60
1330-20-7	Xylenes, Total	ND		0.50	0.40

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-2 Lab Sample ID: 720-88324-2

Matrix: Water Lab File ID: 09051812.D

Analysis Method: 8260B Date Collected: 08/30/2018 10:25

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 13:28

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	99		72-130
460-00-4	4-Bromofluorobenzene	100		67-130
2037-26-5	Toluene-d8 (Surr)	96		70-130

TestAmerica Pleasanton
Target Compound Quantitation Report

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051812.D
Lims ID: 720-88324-A-2
Client ID: GWE-2
Sample Type: Client
Inject. Date: 05-Sep-2018 13:28:30 ALS Bottle#: 11 Worklist Smp#: 12
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-A-2
Misc. Info.: HP13
Operator ID: VOA Instrument ID: HP13

Method: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\HP13_8260_LL.m
Limit Group: 8260B
Last Update: 06-Sep-2018 10:45:35 Calib Date: 25-Aug-2018 20:24:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP13\20180825-53479.b\08251822.D

Column 1 : Det: MS SCAN
Process Host: XAWRK005

First Level Reviewer: sanjumnair Date: 06-Sep-2018 10:17:29

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
* 1 TBA-d9 (IS)	65	6.825	6.825	0.000	0	331483	250.0	
* 2 Fluorobenzene	96	10.599	10.605	-0.006	98	1052264	25.0	
* 4 Chlorobenzene-d5	117	14.439	14.445	-0.006	87	873784	25.0	
* 5 1,4-Dichlorobenzene-d4	152	17.579	17.585	-0.006	95	503468	25.0	
$ 7 Dibromofluoromethane (Surr	113	9.190	9.196	-0.006	93	87422	7.40	
$ 8 1,2-Dichloroethane-d4 (Sur	65	9.709	9.708	0.001	0	109778	7.42	
$ 10 Toluene-d8 (Surr)	98	12.708	12.714	-0.006	94	305806	7.19	
$ 11 4-Bromofluorobenzene	95	15.933	15.939	-0.006	94	127397	7.50	
$ 12 1,2-Dichlorobenzene-d4	152	18.042	18.042	0.000	84	114560	5.88	
19 Vinyl chloride	62	4.758	4.776	-0.018	21	3699	0.2943	
27 Isopropyl alcohol	45	6.288	6.288	0.000	100	66678	75.0	
28 Acetone	58	6.368	6.380	-0.012	98	2960	2.40	
34 Methylene Chloride	84	7.081	7.081	0.000	99	17211	1.51	
38 trans-1,2-Dichloroethene	96	7.874	7.880	-0.006	93	1604	0.1544	
40 1,1-Dichloroethane	63	8.154	8.166	-0.012	1	1350	0.0660	
49 cis-1,2-Dichloroethene	61	8.812	8.818	-0.006	82	5966	0.3448	
146 n-Butanol	56	9.983	9.958	0.025	91	3023	7.58	M
59 Benzene	78	10.373	10.379	-0.006	91	1763	0.0394	
66 Trichloroethene	132	11.105	11.098	0.007	24	610	0.0526	
128 Butyl Ether	87	14.659	14.665	-0.006	92	446	0.0513	
85 m-Xylene & p-Xylene	91	14.927	14.939	-0.012	0	931	0.0211	
111 1,2,4-Trichlorobenzene	180	20.420	20.414	0.006	1	548	0.0247	
112 Naphthalene	128	20.749	20.749	0.000	96	6129	0.1182	
29 Pentane	43	6.380	6.410	-0.030	70	11956	NR	
99 n-Decane	57	16.823	16.829	-0.006	88	847	NR	
110 Dodecane	57	19.938	19.938	0.000	92	2333	NR	
115 C13	57	21.383	21.377	0.006	49	4490	NR	
A 116 C4-C10	1	10.849	(4.783-16.914)		0	944495	9.79	
A 154 C6-C8	1	10.855	(8.556-13.153)		0	211078	2.19	
A 155 C6-C9	1	11.845	(8.556-15.134)		0	325090	3.37	
A 117 C4-C12	1	12.394	(4.783-20.005)		0	1226640	12.7	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
A 119 C6-C10	1	12.735	(8.556-16.914)		0	515926	5.35	
A 118 C5-C12	1	13.168	(6.331-20.005)		0	1178018	12.2	
A 120 C6-C12	1	14.281	(8.556-20.005)		0	798071	8.27	
A 156 C8-C10	1	14.982	(13.049-16.914)		0	312392	3.24	
A 121 C7-C12	1	15.454	(10.903-20.005)		0	654021	6.78	
S 122 Xylenes, Total	1				0		0.0211	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Reagents:

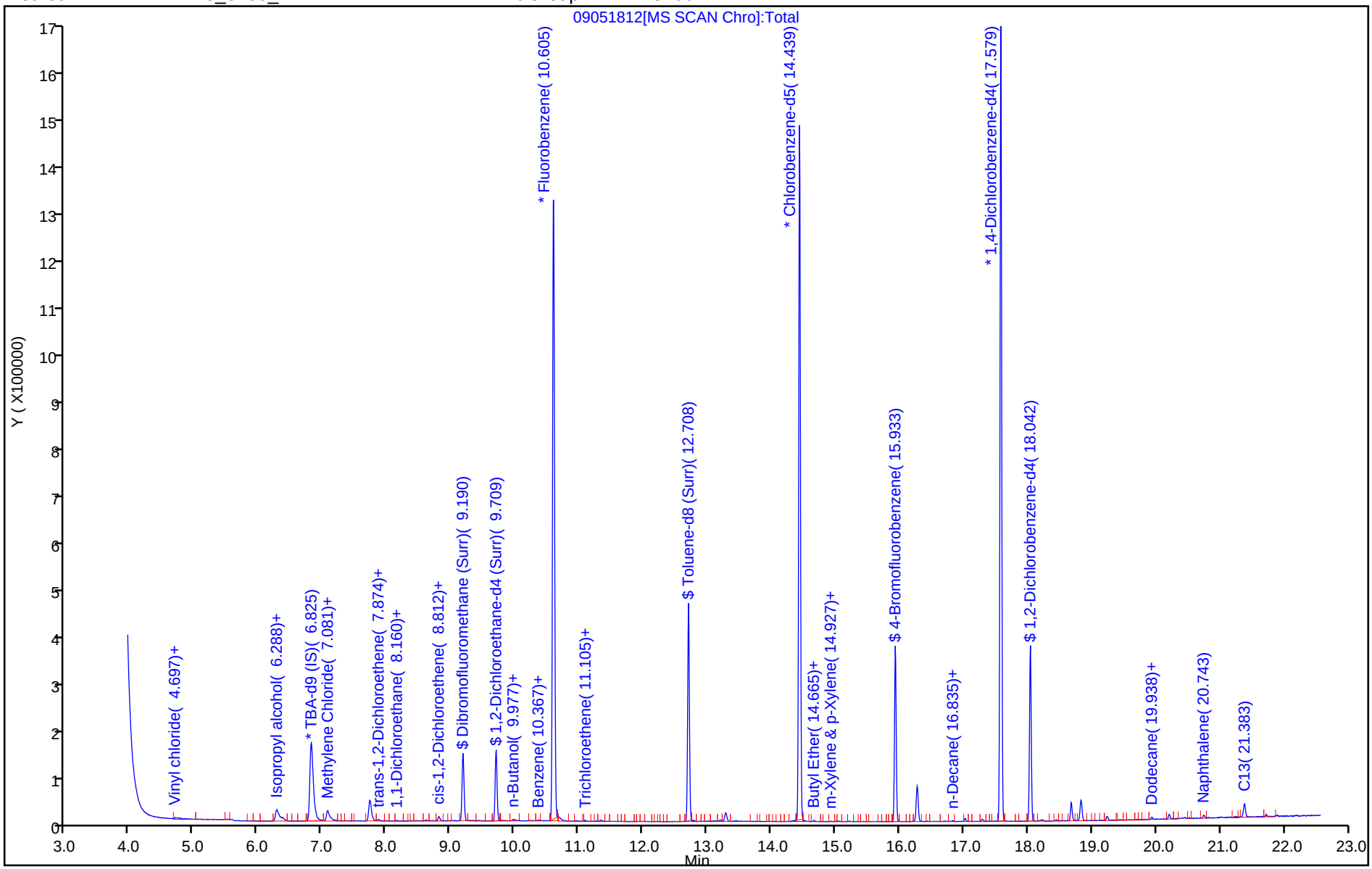
I_IS/SS_00092 Amount Added: 5.00 Units: uL Run Reagent

Report Date: 06-Sep-2018 10:51:48 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051812.D

Injection Date:	05-Sep-2018 13:28:30	Instrument ID:	HP13	Operator ID:	VOA
Lims ID:	720-88324-A-2	Lab Sample ID:	720-88324-2	Worklist Smp#:	12
Client ID:	GWE-2				
Purge Vol:	10.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	11
Method:	HP13_8260_LL	Limit Group:	8260B		



TestAmerica Pleasanton
Recovery Report

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051812.D
Lims ID: 720-88324-A-2
Client ID: GWE-2
Sample Type: Client
Inject. Date: 05-Sep-2018 13:28:30 ALS Bottle#: 11 Worklist Smp#: 12
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-A-2
Misc. Info.: HP13
Operator ID: VOA Instrument ID: HP13

Method: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\HP13_8260_LL.m
Limit Group: 8260B
Last Update: 06-Sep-2018 10:45:35 Calib Date: 25-Aug-2018 20:24:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP13\20180825-53479.b\08251822.D

Column 1 : Det: MS SCAN
Process Host: XAWRK005

First Level Reviewer: sanjumnair Date: 06-Sep-2018 10:17:29

Compound	Amount Added	Amount Recovered	% Rec.
$ 7 Dibromofluoromethane (Surr)	0.0	0	0.00
$ 8 1,2-Dichloroethane-d4 (Surr)	7.50	7.42	98.93
$ 10 Toluene-d8 (Surr)	7.50	7.19	95.81
$ 11 4-Bromofluorobenzene	7.50	7.50	99.96
$ 12 1,2-Dichlorobenzene-d4	0.0	0	0.00

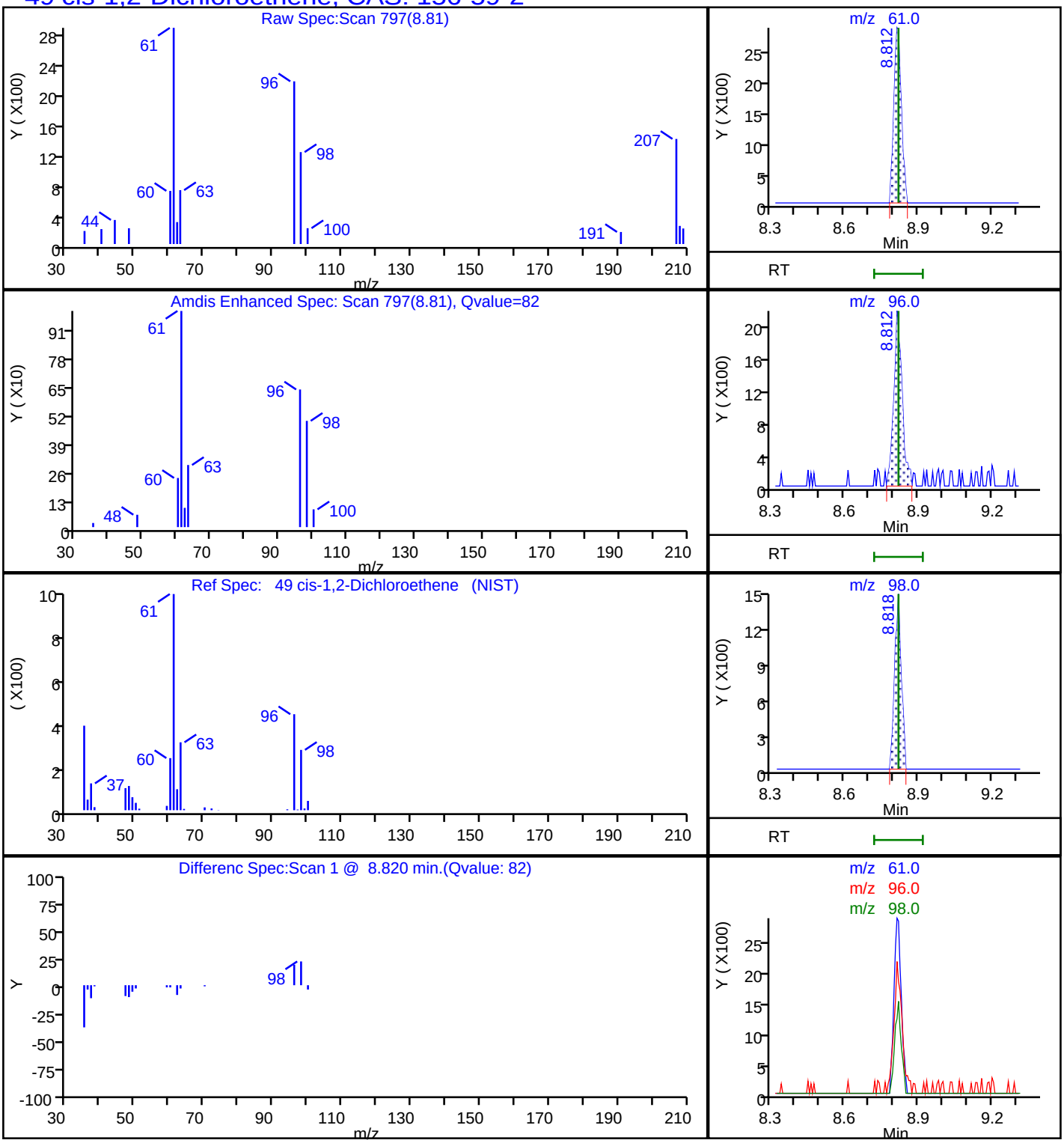
Report Date: 06-Sep-2018 10:51:50 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051812.D

Injection Date:	05-Sep-2018 13:28:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-2	Lab Sample ID:	720-88324-2		
Client ID:	GWE-2				
Operator ID:	VOA	ALS Bottle#:	11	Worklist Smp#:	12
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

49 cis-1,2-Dichloroethene, CAS: 156-59-2

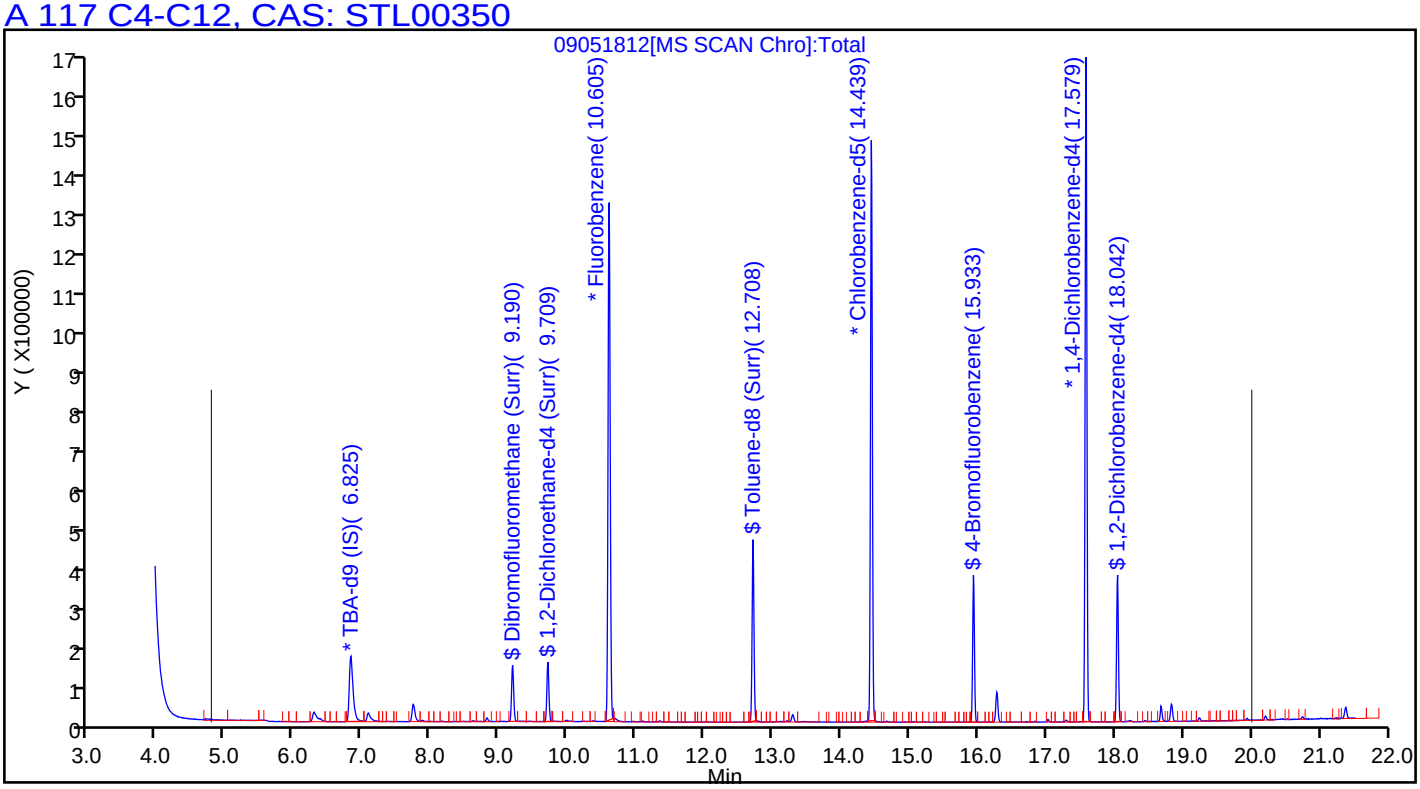


Report Date: 06-Sep-2018 10:51:51 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051812.D				
Injection Date:	05-Sep-2018 13:28:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-2	Lab Sample ID:	720-88324-2		
Client ID:	GWE-2				
Operator ID:	VOA	ALS Bottle#:	11	Worklist Smp#:	12
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

A 117 C4-C12, CAS: STL00350



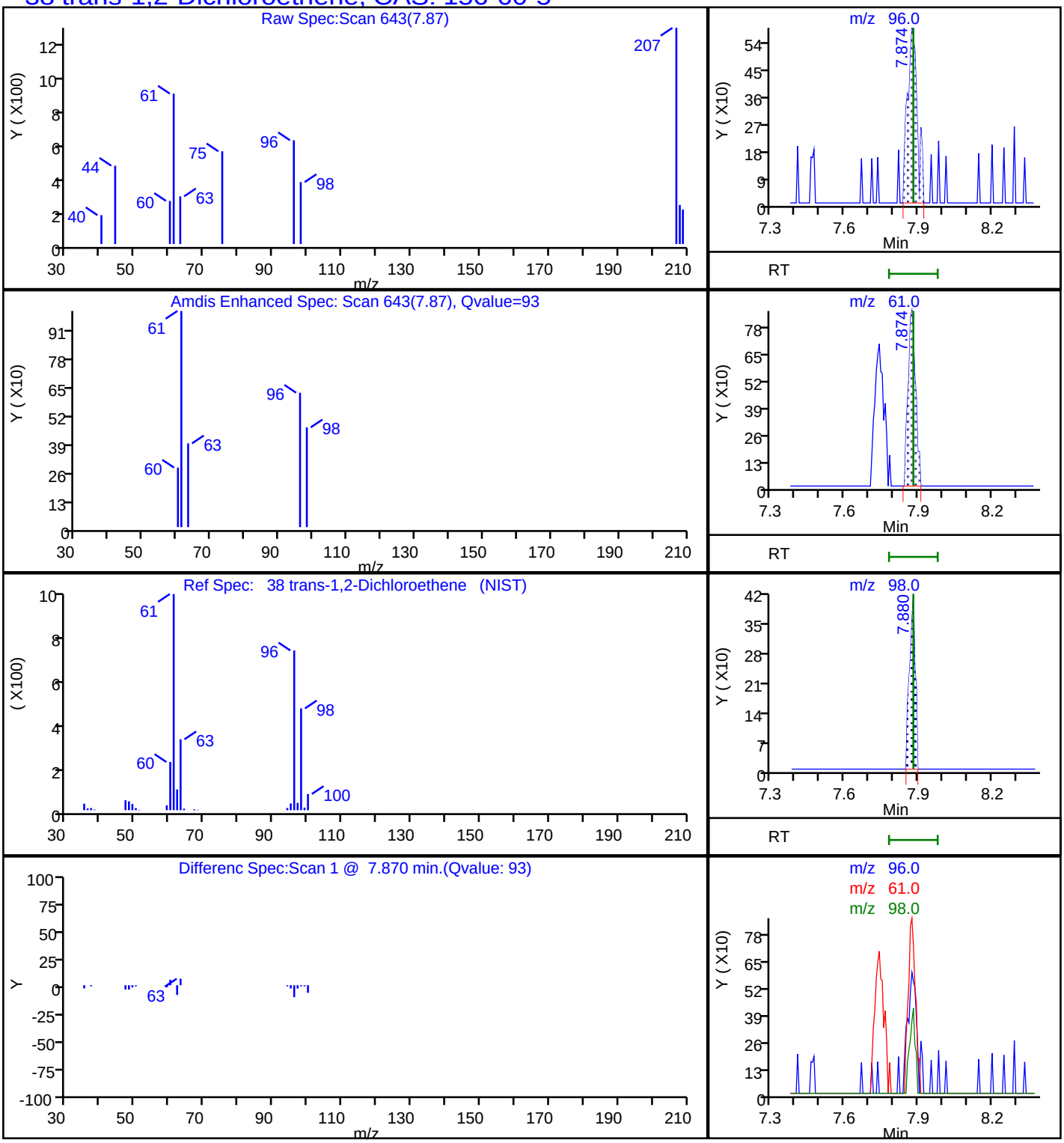
Report Date: 06-Sep-2018 10:51:49 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051812.D

Injection Date:	05-Sep-2018 13:28:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-2	Lab Sample ID:	720-88324-2		
Client ID:	GWE-2				
Operator ID:	VOA	ALS Bottle#:	11	Worklist Smp#:	12
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

38 trans-1,2-Dichloroethene, CAS: 156-60-5



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: GWE-2 Lab Sample ID: 720-88324-2

Matrix: Water Lab File ID: 09071841.D

Analysis Method: 8260B Date Collected: 08/30/2018 10:25

Sample wt/vol: 10(mL) Date Analyzed: 09/08/2018 02:34

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 251099 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
75-09-2	Methylene Chloride	ND		5.0	1.5
75-01-4	Vinyl chloride	0.34	J	0.50	0.20

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	98		72-130
460-00-4	4-Bromofluorobenzene	92		67-130
2037-26-5	Toluene-d8 (Surr)	96		70-130

TestAmerica Pleasanton
Target Compound Quantitation Report

Data File: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071841.D
Lims ID: 720-88324-B-2
Client ID: GWE-2
Sample Type: Client
Inject. Date: 08-Sep-2018 02:34:30 ALS Bottle#: 19 Worklist Smp#: 20
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-B-2 RR
Operator ID: SF Instrument ID: HP9

Method: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\HP9_8260_LL.m
Limit Group: 8260B
Last Update: 10-Sep-2018 09:43:29 Calib Date: 23-Aug-2018 18:09:30
Integrator: RTE ID Type: RT Order ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP9\20180823-53445.b\08231828.D

Column 1 : Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: chaijita Date: 10-Sep-2018 09:44:23

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
* 1 TBA-d9 (IS)	65	7.159	7.159	0.000	0	61921	250.0	
* 2 Fluorobenzene	96	10.926	10.936	-0.010	99	661872	25.0	
* 4 Chlorobenzene-d5	117	14.763	14.764	-0.001	82	543090	25.0	
* 5 1,4-Dichlorobenzene-d4	152	17.903	17.903	0.000	92	311058	25.0	
$ 7 Dibromofluoromethane (Surr	113	9.528	9.519	0.000	54	51128	7.61	
$ 8 1,2-Dichloroethane-d4 (Sur	65	10.045	10.035	0.000	0	33950	7.33	
$ 10 Toluene-d8 (Surr)	98	13.032	13.020	0.000	92	173730	7.18	
$ 11 4-Bromofluorobenzene	95	16.252	16.252	0.000	90	60950	6.92	
$ 12 1,2-Dichlorobenzene-d4	152	18.358	18.368	-0.011	75	69925	5.83	
19 Vinyl chloride	62	5.083	5.088	-0.010	28	7036	0.3413	
27 Isopropyl alcohol	45	6.622	6.622	0.000	81	20543	83.1	
127 Butyl Ether	87	14.966	14.952	0.000	51	812	0.1543	
A 116 C4-C10	1	11.189	(5.123-17.255)		0	1068180	17.2	
A 153 C6-C8	1	11.194	(8.890-13.498)		0	217483	3.50	
A 154 C6-C9	1	12.161	(8.890-15.432)		0	357647	5.75	
A 117 C4-C12	1	12.738	(5.123-20.353)		0	1314650	21.1	
A 123 Aviation Gas	1	12.991	(8.890-17.093)		0	508085	NC	
A 119 C6-C10	1	13.072	(8.890-17.255)		0	516161	8.30	
A 118 C5-C12	1	13.528	(6.703-20.353)		0	958578	15.4	
A 120 C6-C12	1	14.622	(8.890-20.353)		0	762638	12.3	
A 155 C8-C10	1	15.336	(13.417-17.255)		0	298678	4.80	
A 121 C7-C12	1	15.786	(11.219-20.353)		0	650483	10.5	

QC Flag Legend

Processing Flags
NC - Not Calibrated

Reagents:

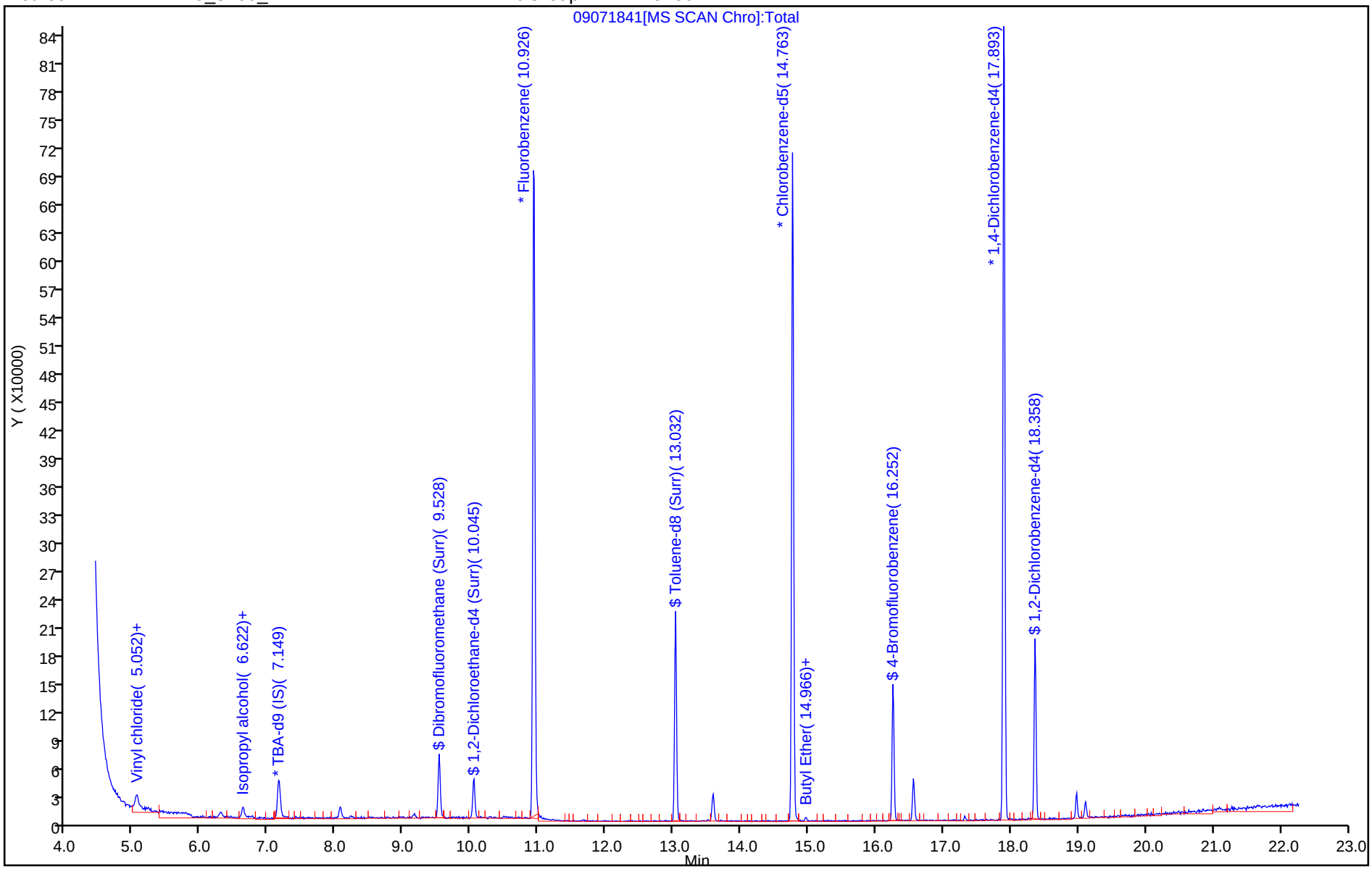
I_IS/SS_00092 Amount Added: 5.00 Units: uL Run Reagent

Report Date: 10-Sep-2018 09:44:24 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071841.D

Injection Date:	08-Sep-2018 02:34:30	Instrument ID:	HP9	Operator ID:	SF
Lims ID:	720-88324-B-2	Lab Sample ID:	720-88324-2	Worklist Smp#:	20
Client ID:	GWE-2				
Purge Vol:	10.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	19
Method:	HP9_8260_LL	Limit Group:	8260B		



TestAmerica Pleasanton
Recovery Report

Data File: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071841.D
Lims ID: 720-88324-B-2
Client ID: GWE-2
Sample Type: Client
Inject. Date: 08-Sep-2018 02:34:30 ALS Bottle#: 19 Worklist Smp#: 20
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-B-2 RR
Operator ID: SF Instrument ID: HP9

Method: \\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\HP9_8260_LL.m
Limit Group: 8260B
Last Update: 10-Sep-2018 09:43:29 Calib Date: 23-Aug-2018 18:09:30
Integrator: RTE ID Type: RT Order ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP9\20180823-53445.b\08231828.D

Column 1 : Det: MS SCAN
Process Host: XAWRK024

First Level Reviewer: chaijita Date: 10-Sep-2018 09:44:23

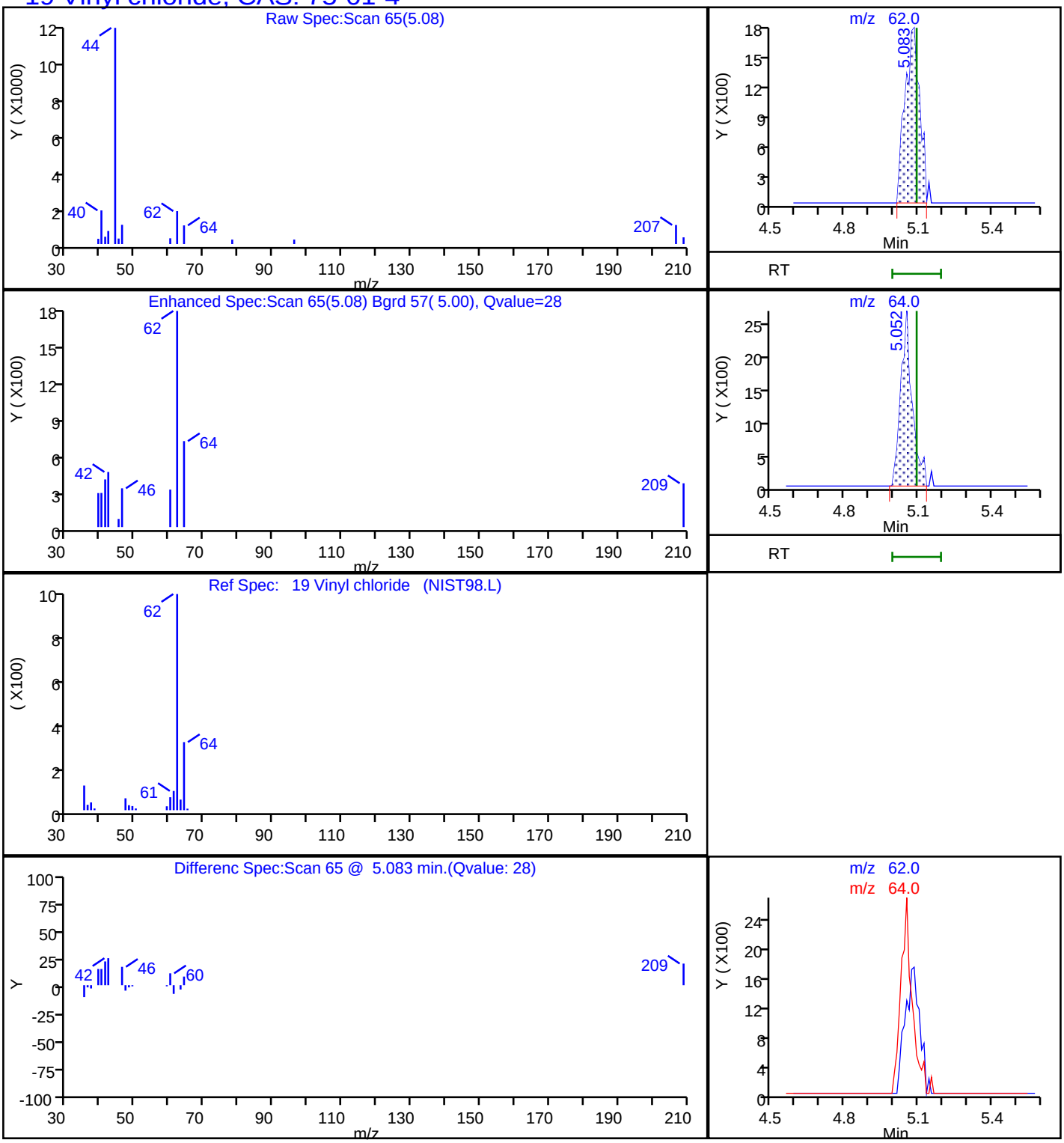
Compound	Amount Added	Amount Recovered	% Rec.
$ 7 Dibromofluoromethane (Surr)	0.0	0	0.00
$ 8 1,2-Dichloroethane-d4 (Surr)	7.50	7.33	97.76
$ 10 Toluene-d8 (Surr)	7.50	7.18	95.67
$ 11 4-Bromofluorobenzene	7.50	6.92	92.33
$ 12 1,2-Dichlorobenzene-d4	0.0	0	0.00

Report Date: 10-Sep-2018 09:44:24 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\HP9\20180907-53736.b\09071841.D				
Injection Date:	08-Sep-2018 02:34:30	Instrument ID:	HP9		
Lims ID:	720-88324-B-2	Lab Sample ID:	720-88324-2		
Client ID:	GWE-2				
Operator ID:	SF	ALS Bottle#:	19	Worklist Smp#:	20
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP9_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

19 Vinyl chloride, CAS: 75-01-4



FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: TB-1 Lab Sample ID: 720-88324-4

Matrix: Water Lab File ID: 09051813.D

Analysis Method: 8260B Date Collected: 08/30/2018 12:00

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 13:58

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
630-20-6	1,1,1,2-Tetrachloroethane	ND		0.50	0.067
71-55-6	1,1,1-Trichloroethane	ND		0.50	0.20
79-34-5	1,1,2,2-Tetrachloroethane	ND		0.50	0.074
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.091
79-00-5	1,1,2-Trichloroethane	ND		0.50	0.11
75-34-3	1,1-Dichloroethane	ND		0.50	0.11
75-35-4	1,1-Dichloroethene	ND		0.50	0.20
563-58-6	1,1-Dichloropropene	ND		0.50	0.20
87-61-6	1,2,3-Trichlorobenzene	ND		1.0	0.21
96-18-4	1,2,3-Trichloropropane	ND		0.50	0.087
120-82-1	1,2,4-Trichlorobenzene	ND		1.0	0.13
95-63-6	1,2,4-Trimethylbenzene	ND		0.50	0.20
96-12-8	1,2-Dibromo-3-Chloropropane	ND		1.0	0.30
95-50-1	1,2-Dichlorobenzene	ND		0.50	0.21
107-06-2	1,2-Dichloroethane	ND		0.50	0.077
78-87-5	1,2-Dichloropropane	ND		0.50	0.20
108-67-8	1,3,5-Trimethylbenzene	ND		0.50	0.17
541-73-1	1,3-Dichlorobenzene	ND		0.50	0.20
142-28-9	1,3-Dichloropropane	ND		1.0	0.17
106-46-7	1,4-Dichlorobenzene	ND		0.50	0.16
594-20-7	2,2-Dichloropropane	ND		0.50	0.17
78-93-3	2-Butanone (MEK)	ND		50	8.4
95-49-8	2-Chlorotoluene	ND		0.50	0.20
591-78-6	2-Hexanone	ND		50	3.0
106-43-4	4-Chlorotoluene	ND		0.50	0.20
99-87-6	4-Isopropyltoluene	ND		1.0	0.20
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		50	4.5
67-64-1	Acetone	ND		50	20
71-43-2	Benzene	ND		0.50	0.25
108-86-1	Bromobenzene	ND		1.0	0.20
75-25-2	Bromoform	ND		1.0	0.50
74-83-9	Bromomethane	ND		1.0	0.49
75-15-0	Carbon disulfide	ND		5.0	0.78
56-23-5	Carbon tetrachloride	ND		0.50	0.11
108-90-7	Chlorobenzene	ND		0.50	0.13

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: TB-1 Lab Sample ID: 720-88324-4

Matrix: Water Lab File ID: 09051813.D

Analysis Method: 8260B Date Collected: 08/30/2018 12:00

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 13:58

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-97-5	Chlorobromomethane	ND		1.0	0.25
124-48-1	Chlorodibromomethane	ND		0.50	0.10
75-00-3	Chloroethane	ND		1.0	0.17
67-66-3	Chloroform	ND		1.0	0.40
74-87-3	Chloromethane	ND		1.0	0.19
156-59-2	cis-1,2-Dichloroethene	ND		0.50	0.076
10061-01-5	cis-1,3-Dichloropropene	ND		0.50	0.10
74-95-3	Dibromomethane	ND		0.50	0.30
75-27-4	Dichlorobromomethane	ND		0.50	0.20
75-71-8	Dichlorodifluoromethane	ND		0.50	0.25
100-41-4	Ethylbenzene	ND		0.50	0.13
106-93-4	Ethylene Dibromide	ND		0.50	0.075
STL00350	Gasoline Range Organics (GRO)-C4-C12	ND		50	21
87-68-3	Hexachlorobutadiene	ND		1.0	0.27
98-82-8	Isopropylbenzene	ND		0.50	0.20
1634-04-4	Methyl tert-butyl ether	ND		0.50	0.11
75-09-2	Methylene Chloride	1.7	J	5.0	1.5
91-20-3	Naphthalene	ND		1.0	0.22
104-51-8	n-Butylbenzene	ND		1.0	0.30
103-65-1	N-Propylbenzene	ND		1.0	0.20
135-98-8	sec-Butylbenzene	ND		1.0	0.17
100-42-5	Styrene	ND		0.50	0.22
98-06-6	tert-Butylbenzene	ND		1.0	0.20
127-18-4	Tetrachloroethene	ND		0.50	0.20
108-88-3	Toluene	ND		0.50	0.17
156-60-5	trans-1,2-Dichloroethene	ND		0.50	0.13
10061-02-6	trans-1,3-Dichloropropene	ND		0.50	0.17
79-01-6	Trichloroethene	ND		0.50	0.20
75-69-4	Trichlorofluoromethane	ND		1.0	0.30
108-05-4	Vinyl acetate	ND		10	0.60
75-01-4	Vinyl chloride	ND		0.50	0.20
1330-20-7	Xylenes, Total	ND		0.50	0.40

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Pleasanton Job No.: 720-88324-1

SDG No.:

Client Sample ID: TB-1 Lab Sample ID: 720-88324-4

Matrix: Water Lab File ID: 09051813.D

Analysis Method: 8260B Date Collected: 08/30/2018 12:00

Sample wt/vol: 10(mL) Date Analyzed: 09/05/2018 13:58

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: DB-VRX ID: 250(um)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 250881 Units: ug/L

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	97		72-130
460-00-4	4-Bromofluorobenzene	100		67-130
2037-26-5	Toluene-d8 (Surr)	97		70-130

TestAmerica Pleasanton
Target Compound Quantitation Report

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051813.D
Lims ID: 720-88324-A-4
Client ID: TB-1
Sample Type: Client
Inject. Date: 05-Sep-2018 13:58:30 ALS Bottle#: 12 Worklist Smp#: 13
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-A-4
Misc. Info.: HP13
Operator ID: VOA Instrument ID: HP13

Method: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\HP13_8260_LL.m
Limit Group: 8260B
Last Update: 06-Sep-2018 10:45:35 Calib Date: 25-Aug-2018 20:24:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP13\20180825-53479.b\08251822.D

Column 1 : Det: MS SCAN
Process Host: XAWRK005

First Level Reviewer: sanjumnair Date: 06-Sep-2018 10:19:31

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
* 1 TBA-d9 (IS)	65	6.813	6.825	-0.012	0	283207	250.0	
* 2 Fluorobenzene	96	10.599	10.605	-0.006	99	1028129	25.0	
* 4 Chlorobenzene-d5	117	14.439	14.445	-0.006	87	857861	25.0	
* 5 1,4-Dichlorobenzene-d4	152	17.579	17.585	-0.006	95	475390	25.0	
$ 7 Dibromofluoromethane (Surr	113	9.190	9.196	-0.006	94	84881	7.36	
$ 8 1,2-Dichloroethane-d4 (Sur	65	9.708	9.708	0.000	0	104685	7.24	
$ 10 Toluene-d8 (Surr)	98	12.708	12.714	-0.006	93	302624	7.28	
$ 11 4-Bromofluorobenzene	95	15.933	15.939	-0.006	93	124786	7.48	
$ 12 1,2-Dichlorobenzene-d4	152	18.042	18.042	0.000	84	107966	5.86	
28 Acetone	58	6.368	6.380	-0.012	99	2669	2.21	
34 Methylene Chloride	84	7.075	7.081	-0.006	97	18636	1.68	
54 Tetrahydrofuran	42	9.434	9.428	0.006	91	4800	1.14	
75 Toluene	92	12.793	12.799	-0.006	97	1754	0.0622	
128 Butyl Ether	87	14.659	14.665	-0.006	92	438	0.0513	
85 m-Xylene & p-Xylene	91	14.927	14.939	-0.012	0	796	0.0184	M
111 1,2,4-Trichlorobenzene	180	20.401	20.414	-0.013	1	151	0.007215	7
112 Naphthalene	128	20.749	20.749	0.000	1	2413	0.0493	
29 Pentane	43	6.276	6.410	-0.134	1	513	NR	
135 n-Nonane	57	15.055	15.055	0.000	1	499	NR	
99 n-Decane	57	16.823	16.829	-0.006	83	660	NR	
110 Dodecane	57	19.938	19.938	0.000	89	1691	NR	
115 C13	57	21.383	21.377	0.006	57	3388	NR	
A 116 C4-C10	1	10.849	(4.783-16.914)		0	857792	9.10	
A 154 C6-C8	1	10.855	(8.556-13.153)		0	160731	1.71	
A 155 C6-C9	1	11.845	(8.556-15.134)		0	353476	3.75	
A 117 C4-C12	1	12.394	(4.783-20.005)		0	1061942	11.3	
A 119 C6-C10	1	12.735	(8.556-16.914)		0	629809	6.68	
A 118 C5-C12	1	13.168	(6.331-20.005)		0	1022978	10.9	
A 120 C6-C12	1	14.281	(8.556-20.005)		0	833959	8.85	
A 156 C8-C10	1	14.982	(13.049-16.914)		0	473488	5.02	
A 121 C7-C12	1	15.454	(10.903-20.005)		0	723018	7.67	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ug/L	Flags
S 122 Xylenes, Total	1				0		0.0184	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

7 - Failed Limit of Detection

Review Flags

M - Manually Integrated

Reagents:

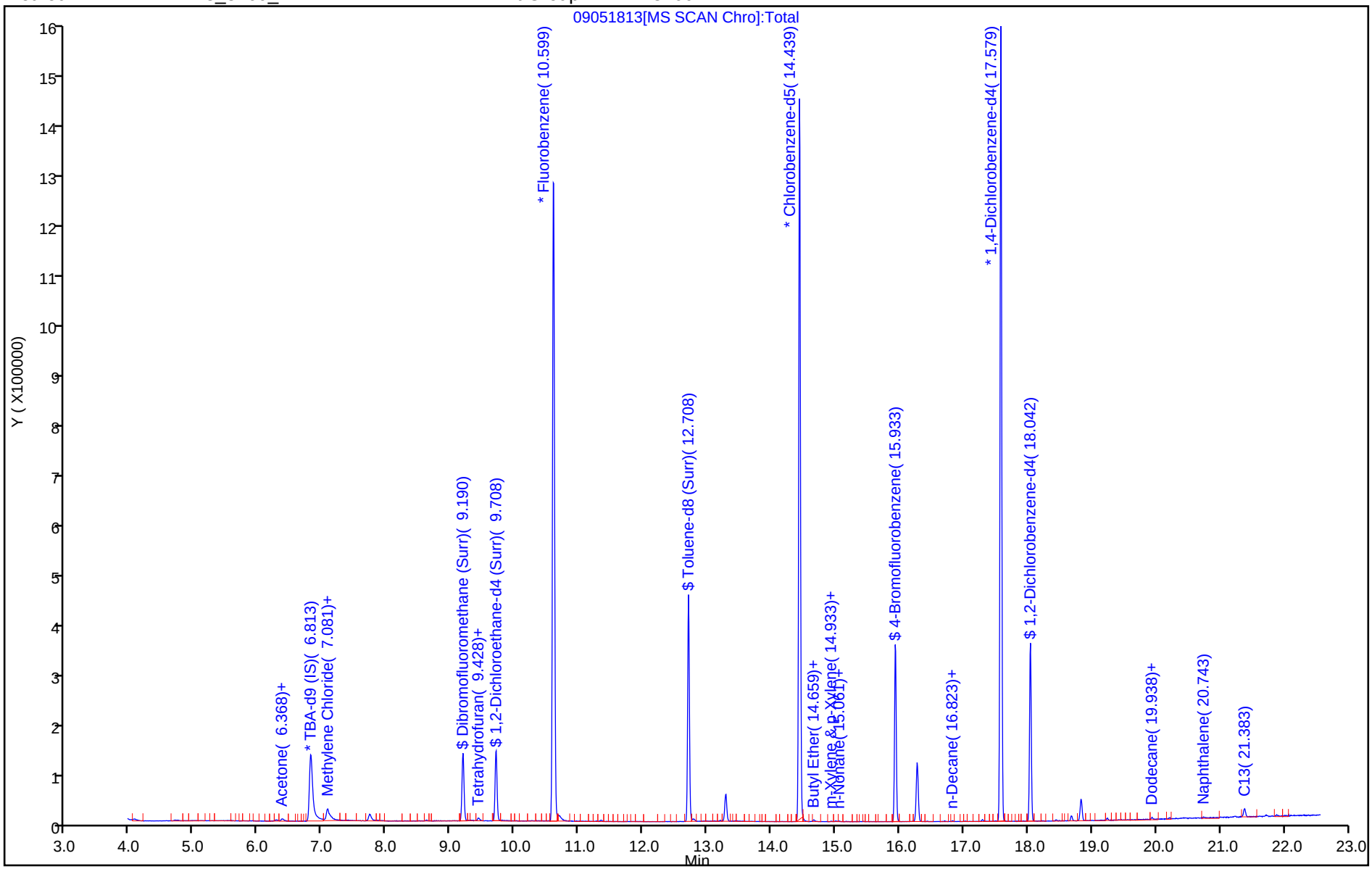
I_IS/SS_00092 Amount Added: 5.00 Units: uL Run Reagent

Report Date: 06-Sep-2018 10:52:01 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051813.D

Injection Date:	05-Sep-2018 13:58:30	Instrument ID:	HP13	Operator ID:	VOA
Lims ID:	720-88324-A-4	Lab Sample ID:	720-88324-4	Worklist Smp#:	13
Client ID:	TB-1				
Purge Vol:	10.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	HP13_8260_LL	Limit Group:	8260B		



TestAmerica Pleasanton
Recovery Report

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051813.D
Lims ID: 720-88324-A-4
Client ID: TB-1
Sample Type: Client
Inject. Date: 05-Sep-2018 13:58:30 ALS Bottle#: 12 Worklist Smp#: 13
Purge Vol: 10.000 mL Dil. Factor: 1.0000
Sample Info: 88324-A-4
Misc. Info.: HP13
Operator ID: VOA Instrument ID: HP13

Method: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\HP13_8260_LL.m
Limit Group: 8260B
Last Update: 06-Sep-2018 10:45:35 Calib Date: 25-Aug-2018 20:24:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Pleasanton\ChromData\HP13\20180825-53479.b\08251822.D

Column 1 : Det: MS SCAN
Process Host: XAWRK005

First Level Reviewer: sanjumnair Date: 06-Sep-2018 10:19:31

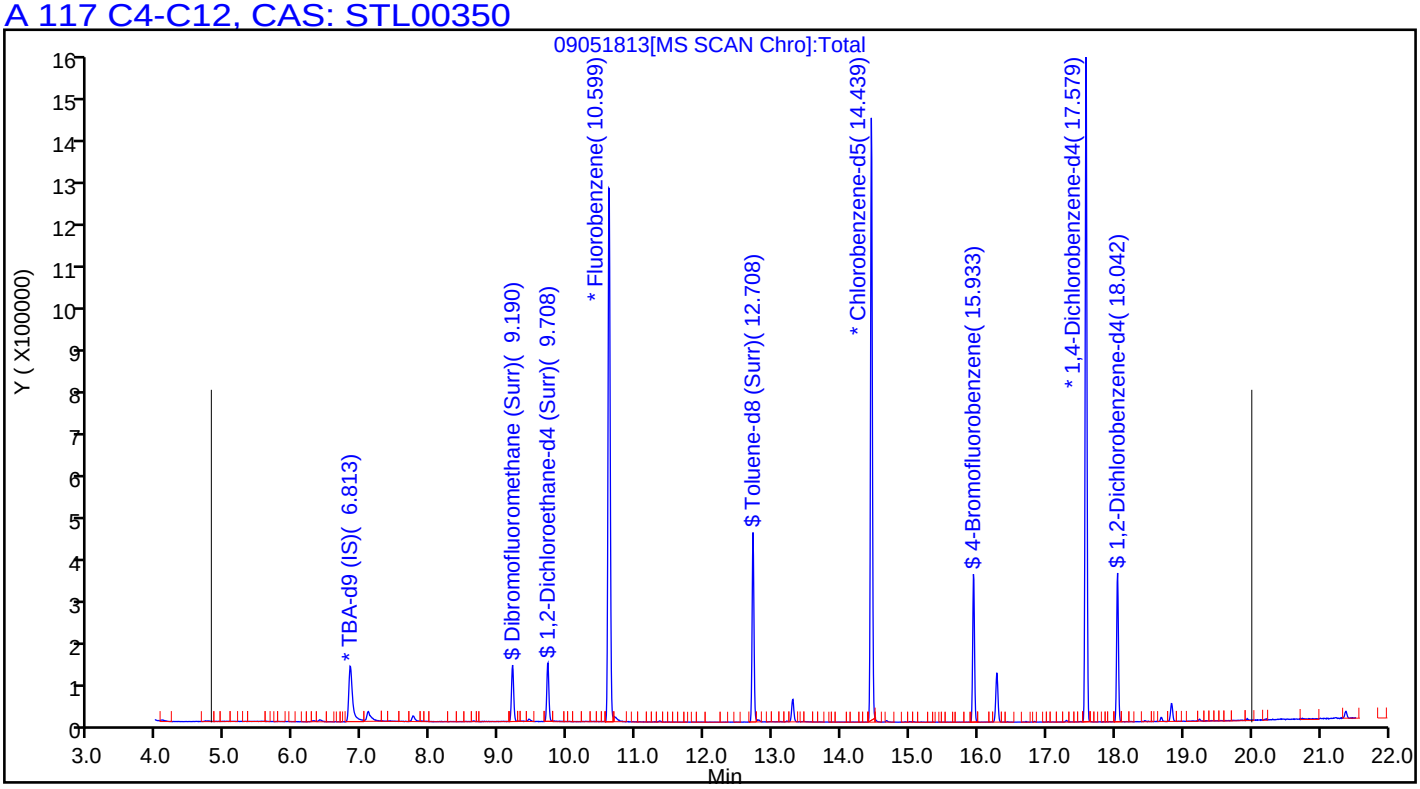
Compound	Amount Added	Amount Recovered	% Rec.
$ 7 Dibromofluoromethane (Surr)	0.0	0	0.00
$ 8 1,2-Dichloroethane-d4 (Surr)	7.50	7.24	96.55
$ 10 Toluene-d8 (Surr)	7.50	7.28	97.04
$ 11 4-Bromofluorobenzene	7.50	7.48	99.73
$ 12 1,2-Dichlorobenzene-d4	0.0	0	0.00

Report Date: 06-Sep-2018 10:52:06 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051813.D				
Injection Date:	05-Sep-2018 13:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-4	Lab Sample ID:	720-88324-4		
Client ID:	TB-1				
Operator ID:	VOA	ALS Bottle#:	12	Worklist Smp#:	13
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

A 117 C4-C12, CAS: STL00350



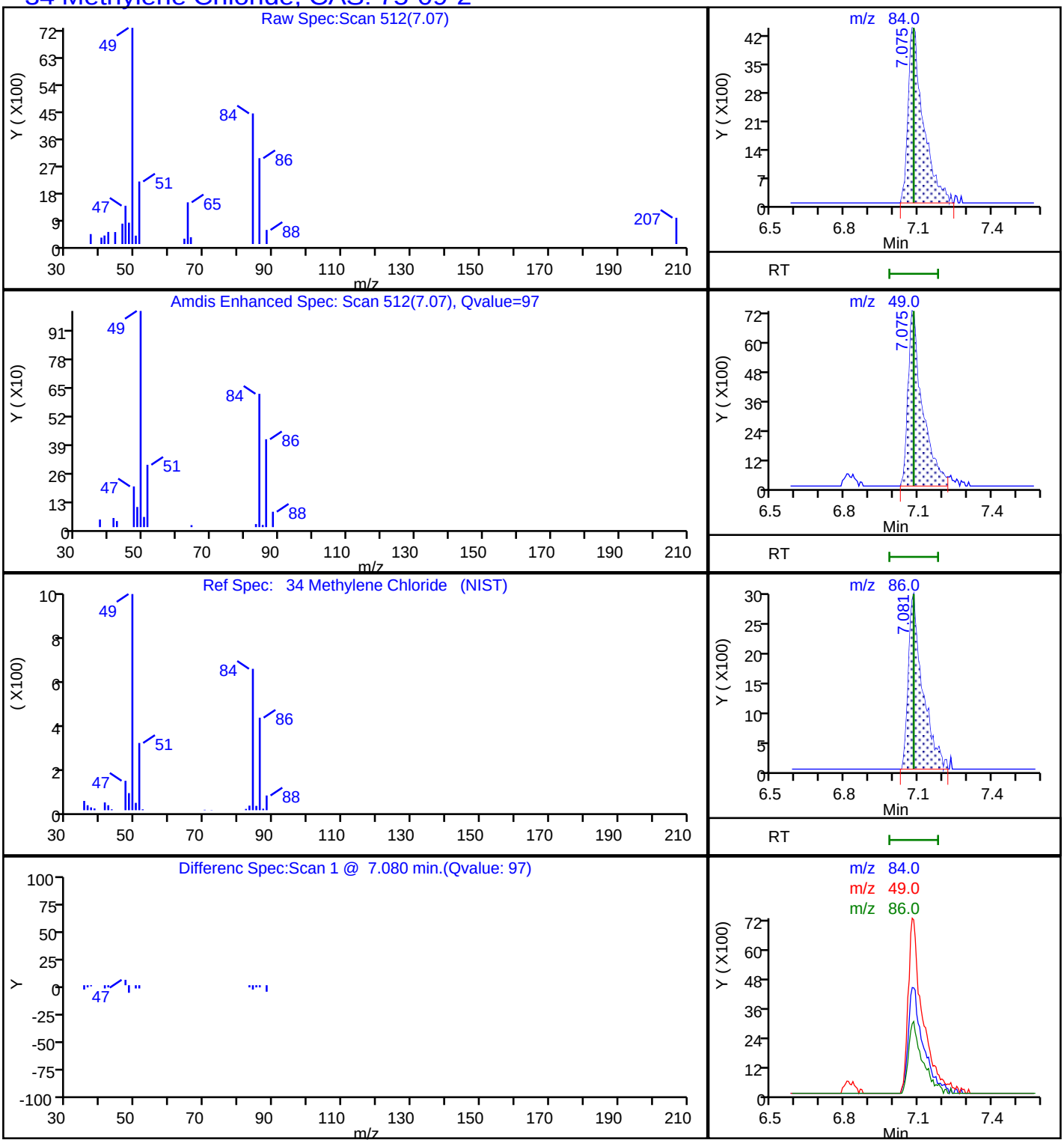
Report Date: 06-Sep-2018 10:52:02 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Pleasanton

Data File: \\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051813.D

Injection Date:	05-Sep-2018 13:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-4	Lab Sample ID:	720-88324-4		
Client ID:	TB-1				
Operator ID:	VOA	ALS Bottle#:	12	Worklist Smp#:	13
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

34 Methylene Chloride, CAS: 75-09-2



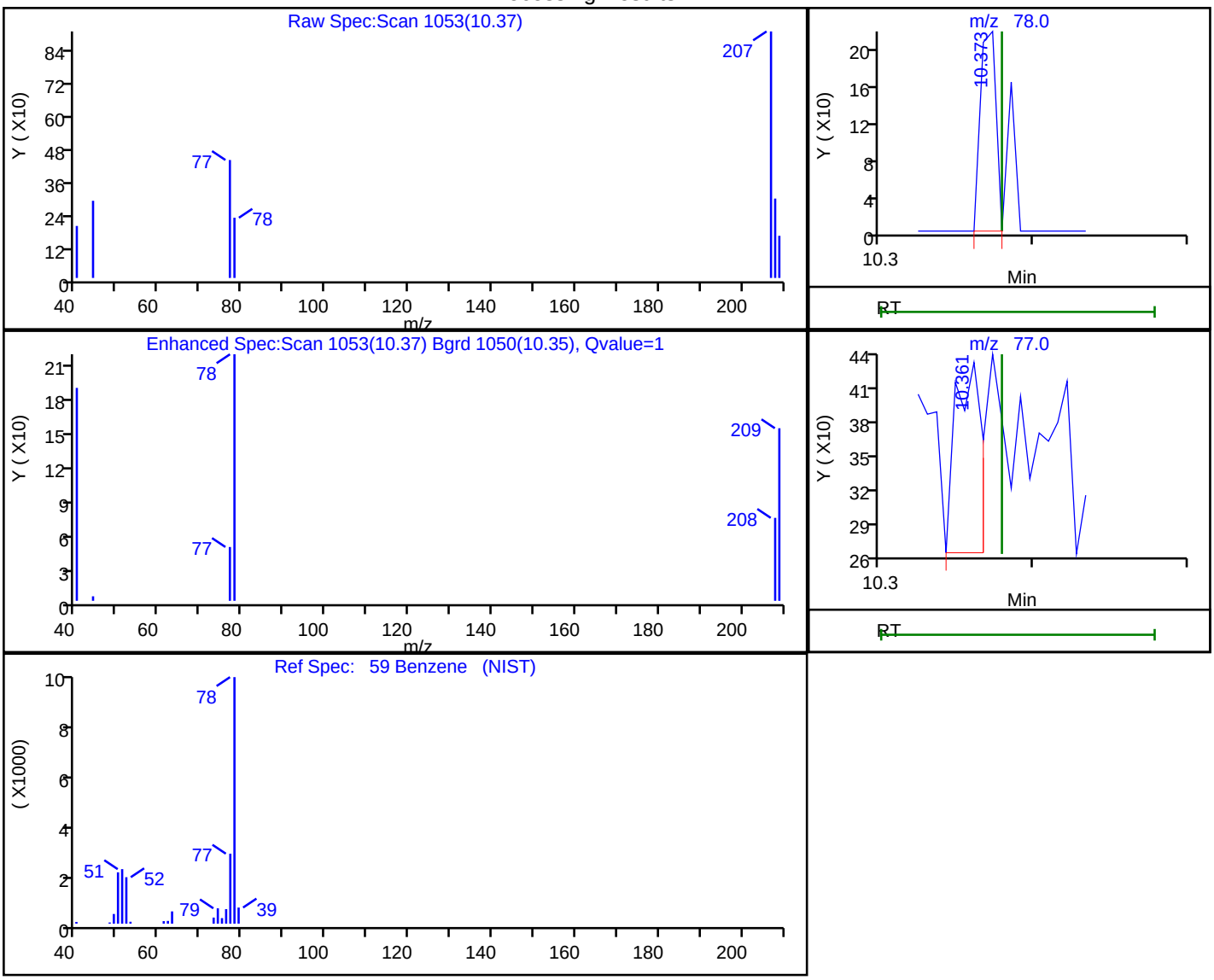
User Disabled Compound Report

TestAmerica Pleasanton

Data File:	\\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051813.D				
Injection Date:	05-Sep-2018 13:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-4	Lab Sample ID:	720-88324-4		
Client ID:	TB-1				
Operator ID:	VOA	ALS Bottle#:	12	Worklist Smp#:	13
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

59 Benzene, CAS: 71-43-2

Processing Results



RT	Mass	Response	Amount
10.37	78.00	157	0.003589
10.36	77.00	192	

Reviewer: sanjumnair, 06-Sep-2018 10:18:35

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

TestAmerica Pleasanton

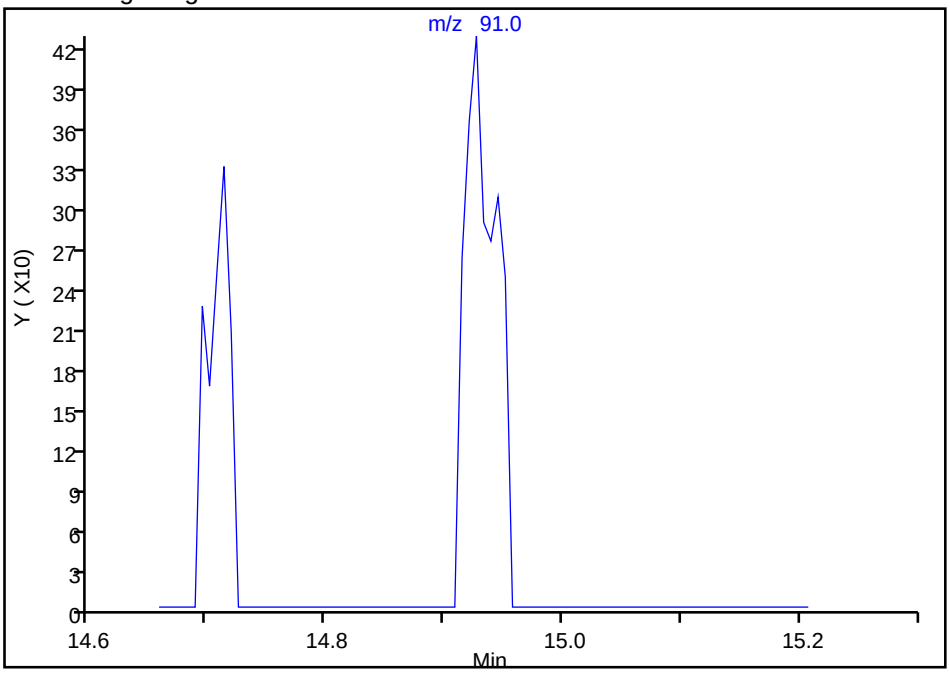
Data File:	\\ChromNA\Pleasanton\ChromData\HP13\20180905-53659.b\09051813.D				
Injection Date:	05-Sep-2018 13:58:30	Instrument ID:	HP13		
Lims ID:	720-88324-A-4	Lab Sample ID:	720-88324-4		
Client ID:	TB-1				
Operator ID:	VOA	ALS Bottle#:	12	Worklist Smp#:	13
Purge Vol:	10.000 mL	Dil. Factor:	1.0000		
Method:	HP13_8260_LL	Limit Group:	8260B		
Column:		Detector	MS SCAN		

85 m-Xylene & p-Xylene, CAS: 179601-23-1

Signal: 1

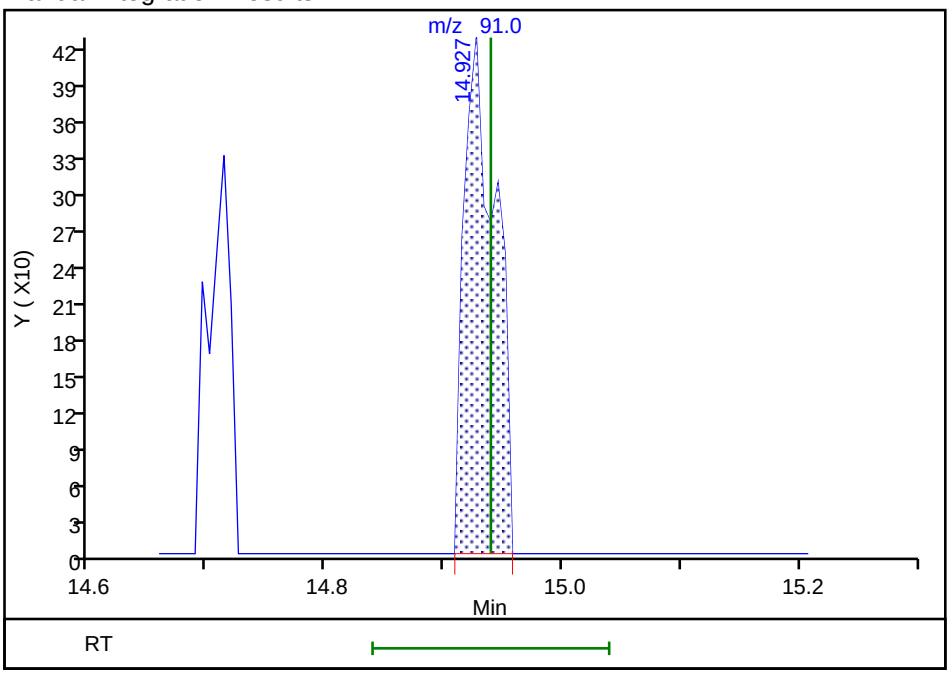
Not Detected
Expected RT: 14.94

Processing Integration Results



Manual Integration Results

RT: 14.93
Area: 796
Amount: 0.018384
Amount Units: ug/L



Reviewer: sanjumnair, 06-Sep-2018 10:19:07
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Surrogate Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		DCA	BFB	TOL
Lab Sample ID	Client Sample ID	(72-130)	(67-130)	(70-130)
720-88324-1	GWE-1	95	100	96
720-88324-1	GWE-1	96	87	96
720-88324-2	GWE-2	99	100	96
720-88324-2	GWE-2	98	92	96
720-88324-4	TB-1	97	100	97
720-88389-A-4 MS	Matrix Spike	102	98	97
720-88389-A-4 MSD	Matrix Spike Duplicate	103	98	99
720-88430-A-1 MS	Matrix Spike	95	99	94
720-88430-A-1 MSD	Matrix Spike Duplicate	88	99	95
LCS 720-250881/5	Lab Control Sample	95	96	98
LCS 720-250881/7	Lab Control Sample	94	99	96
LCS 720-251099/5	Lab Control Sample	98	95	98
LCS 720-251099/7	Lab Control Sample	92	100	99
LCSD 720-250881/6	Lab Control Sample Dup	95	97	99
LCSD 720-250881/8	Lab Control Sample Dup	95	99	97
LCSD 720-251099/6	Lab Control Sample Dup	97	92	93
LCSD 720-251099/8	Lab Control Sample Dup	91	99	101
MB 720-250881/4	Method Blank	94	97	95
MB 720-251099/4	Method Blank	90	92	97

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene
TOL = Toluene-d8 (Surr)

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		DBFM
Lab Sample ID	Client Sample ID	(80-120)
720-88324-1	GWE-1	98
720-88324-1 MS	GWE-1	99
720-88324-1 MSD	GWE-1	95
720-88324-2	GWE-2	97
720-88324-3	GWE-3	100
720-88324-4	TB-1	97
LCS 440-497407/4	Lab Control Sample	98
MB 440-497407/3	Method Blank	96

Surrogate Legend

DBFM = Dibromofluoromethane (Surr)

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		TPH1
Lab Sample ID	Client Sample ID	(23-156)
720-88324-1	GWE-1	80

Surrogate Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	TPH1 (23-156)								
720-88324-2	GWE-2	84								
LCS 720-250836/2-A	Lab Control Sample	78								
LCSD 720-250836/3-A	Lab Control Sample Dup	85								
MB 720-250836/1-A	Method Blank	83								

Surrogate Legend

TPH = p-Terphenyl

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 720-250881/4
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		0.50	0.067	ug/L			09/05/18 11:59	1
1,1,1-Trichloroethane	ND		0.50	0.20	ug/L			09/05/18 11:59	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.074	ug/L			09/05/18 11:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		0.50	0.091	ug/L			09/05/18 11:59	1
1,1,2-Trichloroethane	ND		0.50	0.11	ug/L			09/05/18 11:59	1
1,1-Dichloroethane	ND		0.50	0.11	ug/L			09/05/18 11:59	1
1,1-Dichloroethene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
1,1-Dichloropropene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			09/05/18 11:59	1
1,2,3-Trichloropropane	ND		0.50	0.087	ug/L			09/05/18 11:59	1
1,2,4-Trichlorobenzene	ND		1.0	0.13	ug/L			09/05/18 11:59	1
1,2,4-Trimethylbenzene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
1,2-Dibromo-3-Chloropropane	ND		1.0	0.30	ug/L			09/05/18 11:59	1
1,2-Dichlorobenzene	ND		0.50	0.21	ug/L			09/05/18 11:59	1
1,2-Dichloroethane	ND		0.50	0.077	ug/L			09/05/18 11:59	1
1,2-Dichloropropane	ND		0.50	0.20	ug/L			09/05/18 11:59	1
1,3,5-Trimethylbenzene	ND		0.50	0.17	ug/L			09/05/18 11:59	1
1,3-Dichlorobenzene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
1,3-Dichloropropane	ND		1.0	0.17	ug/L			09/05/18 11:59	1
1,4-Dichlorobenzene	ND		0.50	0.16	ug/L			09/05/18 11:59	1
2,2-Dichloropropane	ND		0.50	0.17	ug/L			09/05/18 11:59	1
2-Butanone (MEK)	ND		50	8.4	ug/L			09/05/18 11:59	1
2-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
2-Hexanone	ND		50	3.0	ug/L			09/05/18 11:59	1
4-Chlorotoluene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
4-Isopropyltoluene	ND		1.0	0.20	ug/L			09/05/18 11:59	1
4-Methyl-2-pentanone (MIBK)	ND		50	4.5	ug/L			09/05/18 11:59	1
Acetone	ND		50	20	ug/L			09/05/18 11:59	1
Benzene	ND		0.50	0.25	ug/L			09/05/18 11:59	1
Bromobenzene	ND		1.0	0.20	ug/L			09/05/18 11:59	1
Bromoform	ND		1.0	0.50	ug/L			09/05/18 11:59	1
Bromomethane	ND		1.0	0.49	ug/L			09/05/18 11:59	1
Carbon disulfide	ND		5.0	0.78	ug/L			09/05/18 11:59	1
Carbon tetrachloride	ND		0.50	0.11	ug/L			09/05/18 11:59	1
Chlorobenzene	ND		0.50	0.13	ug/L			09/05/18 11:59	1
Chlorobromomethane	ND		1.0	0.25	ug/L			09/05/18 11:59	1
Chlorodibromomethane	ND		0.50	0.10	ug/L			09/05/18 11:59	1
Chloroethane	ND		1.0	0.17	ug/L			09/05/18 11:59	1
Chloroform	ND		1.0	0.40	ug/L			09/05/18 11:59	1
Chloromethane	ND		1.0	0.19	ug/L			09/05/18 11:59	1
cis-1,2-Dichloroethene	ND		0.50	0.076	ug/L			09/05/18 11:59	1
cis-1,3-Dichloropropene	ND		0.50	0.10	ug/L			09/05/18 11:59	1
Dibromomethane	ND		0.50	0.30	ug/L			09/05/18 11:59	1
Dichlorobromomethane	ND		0.50	0.20	ug/L			09/05/18 11:59	1
Dichlorodifluoromethane	ND		0.50	0.25	ug/L			09/05/18 11:59	1
Ethylbenzene	ND		0.50	0.13	ug/L			09/05/18 11:59	1
Ethylene Dibromide	ND		0.50	0.075	ug/L			09/05/18 11:59	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-250881/4
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO) -C4-C12	ND		50	21	ug/L			09/05/18 11:59	1
Hexachlorobutadiene	ND		1.0	0.27	ug/L			09/05/18 11:59	1
Isopropylbenzene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
Methyl tert-butyl ether	ND		0.50	0.11	ug/L			09/05/18 11:59	1
Methylene Chloride	ND		5.0	1.5	ug/L			09/05/18 11:59	1
Naphthalene	0.227	J	1.0	0.22	ug/L			09/05/18 11:59	1
n-Butylbenzene	ND		1.0	0.30	ug/L			09/05/18 11:59	1
N-Propylbenzene	ND		1.0	0.20	ug/L			09/05/18 11:59	1
sec-Butylbenzene	ND		1.0	0.17	ug/L			09/05/18 11:59	1
Styrene	ND		0.50	0.22	ug/L			09/05/18 11:59	1
tert-Butylbenzene	ND		1.0	0.20	ug/L			09/05/18 11:59	1
Tetrachloroethene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
Toluene	ND		0.50	0.17	ug/L			09/05/18 11:59	1
trans-1,2-Dichloroethene	ND		0.50	0.13	ug/L			09/05/18 11:59	1
trans-1,3-Dichloropropene	ND		0.50	0.17	ug/L			09/05/18 11:59	1
Trichloroethene	ND		0.50	0.20	ug/L			09/05/18 11:59	1
Trichlorofluoromethane	ND		1.0	0.30	ug/L			09/05/18 11:59	1
Vinyl acetate	ND		10	0.60	ug/L			09/05/18 11:59	1
Vinyl chloride	ND		0.50	0.20	ug/L			09/05/18 11:59	1
Xylenes, Total	ND		0.50	0.40	ug/L			09/05/18 11:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*72 - 130*		*09/05/18 11:59*	*1*
4-Bromofluorobenzene	*97*		*67 - 130*		*09/05/18 11:59*	*1*
Toluene-d8 (Surr)	*95*		*70 - 130*		*09/05/18 11:59*	*1*

Lab Sample ID: LCS 720-250881/5
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	25.0	25.3		ug/L		101	81 - 121
1,1,1-Trichloroethane	25.0	26.4		ug/L		105	74 - 130
1,1,2,2-Tetrachloroethane	25.0	22.6		ug/L		90	70 - 115
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	29.0		ug/L		116	70 - 133
1,1,2-Trichloroethane	25.0	23.9		ug/L		96	80 - 117
1,1-Dichloroethane	25.0	24.3		ug/L		97	77 - 119
1,1-Dichloroethene	25.0	25.2		ug/L		101	69 - 119
1,1-Dichloropropene	25.0	25.7		ug/L		103	83 - 130
1,2,3-Trichlorobenzene	25.0	26.4		ug/L		106	87 - 123
1,2,3-Trichloropropane	25.0	23.6		ug/L		94	77 - 120
1,2,4-Trichlorobenzene	25.0	27.4		ug/L		110	78 - 120
1,2,4-Trimethylbenzene	25.0	24.5		ug/L		98	75 - 115
1,2-Dibromo-3-Chloropropane	25.0	24.8		ug/L		99	74 - 126
1,2-Dichlorobenzene	25.0	24.9		ug/L		99	77 - 117
1,2-Dichloroethane	25.0	24.7		ug/L		99	73 - 122

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-250881/5
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dichloropropane	25.0	23.7		ug/L		95	79 - 119
1,3,5-Trimethylbenzene	25.0	24.6		ug/L		98	77 - 117
1,3-Dichlorobenzene	25.0	24.9		ug/L		100	76 - 116
1,3-Dichloropropane	25.0	24.1		ug/L		96	77 - 117
1,4-Dichlorobenzene	25.0	25.1		ug/L		100	76 - 116
2,2-Dichloropropane	25.0	26.4		ug/L		106	74 - 156
2-Butanone (MEK)	125	126		ug/L		101	66 - 133
2-Chlorotoluene	25.0	23.7		ug/L		95	75 - 115
2-Hexanone	125	125		ug/L		100	63 - 140
4-Chlorotoluene	25.0	24.0		ug/L		96	73 - 119
4-Isopropyltoluene	25.0	26.0		ug/L		104	80 - 120
4-Methyl-2-pentanone (MIBK)	125	123		ug/L		98	66 - 140
Acetone	125	130		ug/L		104	61 - 147
Benzene	25.0	23.7		ug/L		95	79 - 119
Bromobenzene	25.0	24.2		ug/L		97	77 - 117
Bromoform	25.0	25.7		ug/L		103	75 - 127
Bromomethane	25.0	27.6		ug/L		110	70 - 132
Carbon disulfide	25.0	24.0		ug/L		96	64 - 127
Carbon tetrachloride	25.0	27.1		ug/L		108	72 - 142
Chlorobenzene	25.0	25.0		ug/L		100	76 - 116
Chlorobromomethane	25.0	25.1		ug/L		100	81 - 122
Chlorodibromomethane	25.0	25.4		ug/L		102	77 - 133
Chloroethane	25.0	27.2		ug/L		109	70 - 131
Chloroform	25.0	24.3		ug/L		97	82 - 119
Chloromethane	25.0	29.5		ug/L		118	49 - 134
cis-1,2-Dichloroethene	25.0	24.3		ug/L		97	77 - 117
cis-1,3-Dichloropropene	25.0	24.5		ug/L		98	82 - 119
Dibromomethane	25.0	24.6		ug/L		98	79 - 117
Dichlorobromomethane	25.0	24.4		ug/L		98	81 - 130
Dichlorodifluoromethane	25.0	36.2		ug/L		145	21 - 150
Ethylbenzene	25.0	25.0		ug/L		100	77 - 117
Ethylene Dibromide	25.0	24.8		ug/L		99	80 - 121
Hexachlorobutadiene	25.0	28.3		ug/L		113	78 - 140
Isopropylbenzene	25.0	25.8		ug/L		103	77 - 130
Methyl tert-butyl ether	25.0	23.6		ug/L		94	70 - 130
Methylene Chloride	25.0	23.5		ug/L		94	75 - 117
m-Xylene & p-Xylene	25.0	24.8		ug/L		99	74 - 119
Naphthalene	25.0	24.7		ug/L		99	81 - 121
n-Butylbenzene	25.0	27.3		ug/L		109	78 - 119
N-Propylbenzene	25.0	24.9		ug/L		100	77 - 117
o-Xylene	25.0	24.4		ug/L		98	77 - 118
sec-Butylbenzene	25.0	25.4		ug/L		101	78 - 118
Styrene	25.0	24.6		ug/L		98	76 - 116
tert-Butylbenzene	25.0	25.1		ug/L		100	78 - 118
Tetrachloroethene	25.0	27.6		ug/L		110	81 - 130
Toluene	25.0	24.7		ug/L		99	75 - 120
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	79 - 117
trans-1,3-Dichloropropene	25.0	24.6		ug/L		98	76 - 122

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-250881/5
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Trichloroethene	25.0	26.2		ug/L		105	80 - 123
Trichlorofluoromethane	25.0	31.1		ug/L		124	75 - 141
Vinyl acetate	25.0	24.6		ug/L		98	50 - 126
Vinyl chloride	25.0	29.2		ug/L		117	58 - 138

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*72 - 130*
4-Bromofluorobenzene	*96*		*67 - 130*
Toluene-d8 (Surr)	*98*		*70 - 130*

Lab Sample ID: LCS 720-250881/7
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C4-C12	500	474		ug/L		95	77 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*72 - 130*
4-Bromofluorobenzene	*99*		*67 - 130*
Toluene-d8 (Surr)	*96*		*70 - 130*

Lab Sample ID: LCSD 720-250881/6
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	25.0	25.9		ug/L		103	81 - 121	2	20
1,1,1-Trichloroethane	25.0	26.4		ug/L		106	74 - 130	0	20
1,1,2,2-Tetrachloroethane	25.0	22.1		ug/L		88	70 - 115	2	20
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	30.0		ug/L		120	70 - 133	4	20
1,1,2-Trichloroethane	25.0	24.0		ug/L		96	80 - 117	0	20
1,1-Dichloroethane	25.0	24.8		ug/L		99	77 - 119	2	20
1,1-Dichloroethene	25.0	25.8		ug/L		103	69 - 119	2	20
1,1-Dichloropropene	25.0	26.0		ug/L		104	83 - 130	1	20
1,2,3-Trichlorobenzene	25.0	26.7		ug/L		107	87 - 123	1	20
1,2,3-Trichloropropane	25.0	22.8		ug/L		91	77 - 120	4	20
1,2,4-Trichlorobenzene	25.0	27.5		ug/L		110	78 - 120	0	20
1,2,4-Trimethylbenzene	25.0	24.5		ug/L		98	75 - 115	0	20
1,2-Dibromo-3-Chloropropane	25.0	24.2		ug/L		97	74 - 126	2	20
1,2-Dichlorobenzene	25.0	24.9		ug/L		100	77 - 117	0	20
1,2-Dichloroethane	25.0	25.2		ug/L		101	73 - 122	2	20
1,2-Dichloropropane	25.0	24.5		ug/L		98	79 - 119	3	20
1,3,5-Trimethylbenzene	25.0	24.5		ug/L		98	77 - 117	0	20
1,3-Dichlorobenzene	25.0	24.9		ug/L		100	76 - 116	0	20
1,3-Dichloropropane	25.0	24.6		ug/L		98	77 - 117	2	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-250881/6
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dichlorobenzene			25.0	25.0		ug/L		100	76 - 116	0	20
2,2-Dichloropropane			25.0	26.7		ug/L		107	74 - 156	1	20
2-Butanone (MEK)			125	117		ug/L		94	66 - 133	7	22
2-Chlorotoluene			25.0	23.7		ug/L		95	75 - 115	0	20
2-Hexanone			125	120		ug/L		96	63 - 140	4	24
4-Chlorotoluene			25.0	23.8		ug/L		95	73 - 119	1	20
4-Isopropyltoluene			25.0	25.8		ug/L		103	80 - 120	1	20
4-Methyl-2-pentanone (MIBK)			125	120		ug/L		96	66 - 140	2	21
Acetone			125	119		ug/L		95	61 - 147	9	30
Benzene			25.0	24.2		ug/L		97	79 - 119	2	20
Bromobenzene			25.0	24.1		ug/L		97	77 - 117	0	20
Bromoform			25.0	25.7		ug/L		103	75 - 127	0	20
Bromomethane			25.0	28.8		ug/L		115	70 - 132	4	20
Carbon disulfide			25.0	24.9		ug/L		99	64 - 127	3	20
Carbon tetrachloride			25.0	27.9		ug/L		112	72 - 142	3	20
Chlorobenzene			25.0	25.0		ug/L		100	76 - 116	0	20
Chlorobromomethane			25.0	25.6		ug/L		103	81 - 122	2	20
Chlorodibromomethane			25.0	25.8		ug/L		103	77 - 133	1	20
Chloroethane			25.0	28.0		ug/L		112	70 - 131	3	20
Chloroform			25.0	24.8		ug/L		99	82 - 119	2	20
Chloromethane			25.0	31.1		ug/L		124	49 - 134	5	20
cis-1,2-Dichloroethene			25.0	24.8		ug/L		99	77 - 117	2	20
cis-1,3-Dichloropropene			25.0	24.9		ug/L		100	82 - 119	2	20
Dibromomethane			25.0	24.7		ug/L		99	79 - 117	0	20
Dichlorobromomethane			25.0	25.3		ug/L		101	81 - 130	3	20
Dichlorodifluoromethane			25.0	36.5		ug/L		146	21 - 150	1	20
Ethylbenzene			25.0	24.9		ug/L		100	77 - 117	0	20
Ethylene Dibromide			25.0	25.0		ug/L		100	80 - 121	1	20
Hexachlorobutadiene			25.0	28.5		ug/L		114	78 - 140	1	20
Isopropylbenzene			25.0	25.8		ug/L		103	77 - 130	0	20
Methyl tert-butyl ether			25.0	23.6		ug/L		94	70 - 130	0	20
Methylene Chloride			25.0	24.4		ug/L		98	75 - 117	4	20
m-Xylene & p-Xylene			25.0	24.7		ug/L		99	74 - 119	0	20
Naphthalene			25.0	24.6		ug/L		98	81 - 121	1	20
n-Butylbenzene			25.0	27.1		ug/L		109	78 - 119	1	20
N-Propylbenzene			25.0	24.7		ug/L		99	77 - 117	1	20
o-Xylene			25.0	24.7		ug/L		99	77 - 118	1	20
sec-Butylbenzene			25.0	25.2		ug/L		101	78 - 118	0	20
Styrene			25.0	24.7		ug/L		99	76 - 116	0	20
tert-Butylbenzene			25.0	25.0		ug/L		100	78 - 118	0	20
Tetrachloroethene			25.0	27.9		ug/L		112	81 - 130	1	20
Toluene			25.0	24.9		ug/L		99	75 - 120	1	20
trans-1,2-Dichloroethene			25.0	24.4		ug/L		98	79 - 117	1	20
trans-1,3-Dichloropropene			25.0	24.9		ug/L		100	76 - 122	1	20
Trichloroethene			25.0	26.5		ug/L		106	80 - 123	1	20
Trichlorofluoromethane			25.0	31.8		ug/L		127	75 - 141	2	20
Vinyl acetate			25.0	25.0		ug/L		100	50 - 126	1	20
Vinyl chloride			25.0	31.2		ug/L		125	58 - 138	7	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 720-250881/6
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*72 - 130*
4-Bromofluorobenzene	*97*		*67 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*

Lab Sample ID: LCSD 720-250881/8
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C4-C12			500	475		ug/L		95	77 - 130	0	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	*95*		*72 - 130*
4-Bromofluorobenzene	*99*		*67 - 130*
Toluene-d8 (Surr)	*97*		*70 - 130*

Lab Sample ID: 720-88389-A-4 MS
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1,2-Tetrachloroethane	ND		25.0	28.5		ug/L		114	60 - 140
1,1,1-Trichloroethane	0.37	J	25.0	30.0		ug/L		118	60 - 140
1,1,2,2-Tetrachloroethane	ND		25.0	25.6		ug/L		103	60 - 140
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	31.0		ug/L		124	60 - 140
1,1,2-Trichloroethane	ND		25.0	27.1		ug/L		108	60 - 140
1,1-Dichloroethane	15		25.0	43.7		ug/L		113	60 - 140
1,1-Dichloroethene	13		25.0	39.6		ug/L		108	60 - 140
1,1-Dichloropropene	ND		25.0	28.2		ug/L		113	60 - 140
1,2,3-Trichlorobenzene	4.2		25.0	32.7		ug/L		114	60 - 140
1,2,3-Trichloropropane	1.2		25.0	27.8		ug/L		106	60 - 140
1,2,4-Trichlorobenzene	35		25.0	66.0		ug/L		125	60 - 140
1,2,4-Trimethylbenzene	ND		25.0	26.4		ug/L		106	60 - 140
1,2-Dibromo-3-Chloropropane	ND		25.0	29.2		ug/L		117	60 - 140
1,2-Dichlorobenzene	0.84		25.0	28.1		ug/L		109	60 - 140
1,2-Dichloroethane	0.16	J	25.0	29.2		ug/L		116	60 - 140
1,2-Dichloropropane	ND		25.0	27.0		ug/L		108	60 - 140
1,3,5-Trimethylbenzene	ND		25.0	26.4		ug/L		105	60 - 140
1,3-Dichlorobenzene	8.5		25.0	35.7		ug/L		109	60 - 140
1,3-Dichloropropane	ND		25.0	27.3		ug/L		109	60 - 140
1,4-Dichlorobenzene	12		25.0	39.0		ug/L		110	60 - 140
2,2-Dichloropropane	ND		25.0	28.4		ug/L		114	60 - 140
2-Butanone (MEK)	ND		125	140		ug/L		112	60 - 140
2-Chlorotoluene	ND		25.0	25.5		ug/L		102	60 - 140
2-Hexanone	ND		125	149		ug/L		119	60 - 140
4-Chlorotoluene	ND		25.0	25.4		ug/L		102	60 - 140

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88389-A-4 MS
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
4-Isopropyltoluene	ND		25.0	27.6		ug/L		111	60 - 140
4-Methyl-2-pentanone (MIBK)	ND		125	147		ug/L		117	58 - 130
Acetone	ND		125	136		ug/L		108	60 - 140
Benzene	ND		25.0	26.5		ug/L		106	60 - 140
Bromobenzene	ND		25.0	26.4		ug/L		105	60 - 140
Bromoform	ND		25.0	29.1		ug/L		116	56 - 140
Bromomethane	ND		25.0	29.8		ug/L		119	23 - 140
Carbon disulfide	ND		25.0	26.1		ug/L		104	38 - 140
Carbon tetrachloride	ND		25.0	30.6		ug/L		122	60 - 140
Chlorobenzene	1.5		25.0	29.0		ug/L		110	60 - 140
Chlorobromomethane	ND		25.0	28.4		ug/L		114	60 - 140
Chlorodibromomethane	ND		25.0	29.0		ug/L		116	60 - 140
Chloroethane	ND		25.0	28.6		ug/L		115	51 - 140
Chloroform	ND		25.0	27.8		ug/L		111	60 - 140
Chloromethane	ND		25.0	33.6		ug/L		134	52 - 140
cis-1,2-Dichloroethene	4.2		25.0	32.1		ug/L		111	60 - 140
cis-1,3-Dichloropropene	ND		25.0	27.0		ug/L		108	60 - 140
Dibromomethane	ND		25.0	28.2		ug/L		113	60 - 140
Dichlorobromomethane	ND		25.0	28.3		ug/L		113	60 - 140
Dichlorodifluoromethane	ND	F1	25.0	40.1	F1	ug/L		160	38 - 140
Ethylbenzene	ND		25.0	27.1		ug/L		108	60 - 140
Ethylene Dibromide	ND		25.0	28.2		ug/L		113	60 - 140
Hexachlorobutadiene	ND		25.0	29.7		ug/L		119	60 - 140
Isopropylbenzene	ND		25.0	28.4		ug/L		114	60 - 140
Methyl tert-butyl ether	ND		25.0	26.8		ug/L		107	60 - 138
Methylene Chloride	ND		25.0	26.6		ug/L		106	40 - 140
m-Xylene & p-Xylene	ND		25.0	26.8		ug/L		107	60 - 140
Naphthalene	ND		25.0	27.6		ug/L		111	56 - 140
n-Butylbenzene	ND		25.0	28.0		ug/L		112	60 - 140
N-Propylbenzene	ND		25.0	26.4		ug/L		106	60 - 140
o-Xylene	ND		25.0	27.3		ug/L		109	60 - 140
sec-Butylbenzene	ND		25.0	27.2		ug/L		109	60 - 140
Styrene	ND		25.0	26.9		ug/L		107	60 - 140
tert-Butylbenzene	ND		25.0	27.2		ug/L		109	60 - 140
Tetrachloroethene	ND		25.0	29.8		ug/L		119	60 - 140
Toluene	ND		25.0	26.8		ug/L		107	60 - 140
trans-1,2-Dichloroethene	0.40	J	25.0	26.4		ug/L		104	60 - 140
trans-1,3-Dichloropropene	ND		25.0	27.7		ug/L		111	60 - 140
Trichloroethene	25		25.0	53.3		ug/L		115	60 - 140
Trichlorofluoromethane	ND		25.0	35.0		ug/L		140	60 - 140
Vinyl acetate	ND		25.0	28.6		ug/L		114	40 - 140
Vinyl chloride	5.3		25.0	37.8		ug/L		130	58 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*102*		*72 - 130*
4-Bromofluorobenzene	*98*		*67 - 130*
Toluene-d8 (Surr)	*97*		*70 - 130*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88389-A-4 MSD
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1,2-Tetrachloroethane	ND		25.0	28.4		ug/L		114	60 - 140	0	20
1,1,1-Trichloroethane	0.37	J	25.0	29.5		ug/L		117	60 - 140	2	20
1,1,2,2-Tetrachloroethane	ND		25.0	26.4		ug/L		106	60 - 140	3	20
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		25.0	31.3		ug/L		125	60 - 140	1	20
1,1,2-Trichloroethane	ND		25.0	27.7		ug/L		111	60 - 140	2	20
1,1-Dichloroethane	15		25.0	44.0		ug/L		114	60 - 140	1	20
1,1-Dichloroethene	13		25.0	39.2		ug/L		106	60 - 140	1	20
1,1-Dichloropropene	ND		25.0	28.3		ug/L		113	60 - 140	0	20
1,2,3-Trichlorobenzene	4.2		25.0	33.5		ug/L		117	60 - 140	2	20
1,2,3-Trichloropropane	1.2		25.0	28.3		ug/L		108	60 - 140	2	20
1,2,4-Trichlorobenzene	35		25.0	65.6		ug/L		123	60 - 140	1	20
1,2,4-Trimethylbenzene	ND		25.0	26.4		ug/L		106	60 - 140	0	20
1,2-Dibromo-3-Chloropropane	ND		25.0	30.5		ug/L		122	60 - 140	4	20
1,2-Dichlorobenzene	0.84		25.0	28.5		ug/L		111	60 - 140	2	20
1,2-Dichloroethane	0.16	J	25.0	29.5		ug/L		117	60 - 140	1	20
1,2-Dichloropropane	ND		25.0	27.3		ug/L		109	60 - 140	1	20
1,3,5-Trimethylbenzene	ND		25.0	26.2		ug/L		105	60 - 140	0	20
1,3-Dichlorobenzene	8.5		25.0	35.6		ug/L		108	60 - 140	0	20
1,3-Dichloropropane	ND		25.0	28.2		ug/L		113	60 - 140	3	20
1,4-Dichlorobenzene	12		25.0	39.1		ug/L		110	60 - 140	0	20
2,2-Dichloropropane	ND		25.0	27.9		ug/L		112	60 - 140	2	20
2-Butanone (MEK)	ND		125	150		ug/L		120	60 - 140	7	20
2-Chlorotoluene	ND		25.0	25.7		ug/L		103	60 - 140	1	20
2-Hexanone	ND		125	156		ug/L		125	60 - 140	5	20
4-Chlorotoluene	ND		25.0	25.6		ug/L		103	60 - 140	1	20
4-Isopropyltoluene	ND		25.0	27.5		ug/L		110	60 - 140	1	20
4-Methyl-2-pentanone (MIBK)	ND		125	154		ug/L		124	58 - 130	5	20
Acetone	ND		125	145		ug/L		116	60 - 140	6	20
Benzene	ND		25.0	26.6		ug/L		107	60 - 140	1	20
Bromobenzene	ND		25.0	26.5		ug/L		106	60 - 140	1	20
Bromoform	ND		25.0	29.1		ug/L		116	56 - 140	0	20
Bromomethane	ND		25.0	31.0		ug/L		124	23 - 140	4	20
Carbon disulfide	ND		25.0	26.4		ug/L		106	38 - 140	1	20
Carbon tetrachloride	ND		25.0	30.3		ug/L		121	60 - 140	1	20
Chlorobenzene	1.5		25.0	28.8		ug/L		109	60 - 140	1	20
Chlorobromomethane	ND		25.0	28.9		ug/L		116	60 - 140	2	20
Chlorodibromomethane	ND		25.0	29.6		ug/L		119	60 - 140	2	20
Chloroethane	ND		25.0	30.5		ug/L		122	51 - 140	6	20
Chloroform	ND		25.0	28.0		ug/L		112	60 - 140	1	20
Chloromethane	ND		25.0	35.0		ug/L		140	52 - 140	4	20
cis-1,2-Dichloroethene	4.2		25.0	32.0		ug/L		111	60 - 140	0	20
cis-1,3-Dichloropropene	ND		25.0	27.8		ug/L		111	60 - 140	3	20
Dibromomethane	ND		25.0	28.6		ug/L		115	60 - 140	2	20
Dichlorobromomethane	ND		25.0	28.6		ug/L		114	60 - 140	1	20
Dichlorodifluoromethane	ND	F1	25.0	40.8	F1	ug/L		163	38 - 140	2	20
Ethylbenzene	ND		25.0	26.9		ug/L		107	60 - 140	1	20
Ethylene Dibromide	ND		25.0	29.1		ug/L		117	60 - 140	3	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88389-A-4 MSD
Matrix: Water
Analysis Batch: 250881

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hexachlorobutadiene	ND		25.0	29.7		ug/L		119	60 - 140	0	20
Isopropylbenzene	ND		25.0	28.0		ug/L		112	60 - 140	2	20
Methyl tert-butyl ether	ND		25.0	27.6		ug/L		110	60 - 138	3	20
Methylene Chloride	ND		25.0	26.9		ug/L		107	40 - 140	1	20
m-Xylene & p-Xylene	ND		25.0	26.6		ug/L		106	60 - 140	1	20
Naphthalene	ND		25.0	28.8		ug/L		115	56 - 140	4	20
n-Butylbenzene	ND		25.0	28.2		ug/L		113	60 - 140	1	20
N-Propylbenzene	ND		25.0	26.3		ug/L		105	60 - 140	0	20
o-Xylene	ND		25.0	27.0		ug/L		108	60 - 140	1	20
sec-Butylbenzene	ND		25.0	27.1		ug/L		108	60 - 140	0	20
Styrene	ND		25.0	27.0		ug/L		108	60 - 140	0	20
tert-Butylbenzene	ND		25.0	27.0		ug/L		108	60 - 140	1	20
Tetrachloroethene	ND		25.0	29.9		ug/L		120	60 - 140	0	20
Toluene	ND		25.0	26.6		ug/L		106	60 - 140	1	20
trans-1,2-Dichloroethene	0.40	J	25.0	26.4		ug/L		104	60 - 140	0	20
trans-1,3-Dichloropropene	ND		25.0	28.4		ug/L		113	60 - 140	2	20
Trichloroethene	25		25.0	53.4		ug/L		115	60 - 140	0	20
Trichlorofluoromethane	ND		25.0	34.2		ug/L		137	60 - 140	2	20
Vinyl acetate	ND		25.0	29.5		ug/L		118	40 - 140	3	20
Vinyl chloride	5.3		25.0	39.7		ug/L		138	58 - 140	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*72 - 130*
4-Bromofluorobenzene	*98*		*67 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*

Lab Sample ID: MB 720-251099/4
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methylene Chloride	ND		5.0	1.5	ug/L			09/07/18 18:57	1
Vinyl chloride	ND		0.50	0.20	ug/L			09/07/18 18:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*72 - 130*		*09/07/18 18:57*	*1*
4-Bromofluorobenzene	*92*		*67 - 130*		*09/07/18 18:57*	*1*
Toluene-d8 (Surr)	*97*		*70 - 130*		*09/07/18 18:57*	*1*

Lab Sample ID: LCS 720-251099/5
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	25.0	27.3		ug/L		109	75 - 117
Vinyl chloride	25.0	21.7		ug/L		87	58 - 138

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-251099/5
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	98		72 - 130
4-Bromofluorobenzene	95		67 - 130
Toluene-d8 (Surr)	98		70 - 130

Lab Sample ID: LCS 720-251099/7
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline Range Organics (GRO) -C4-C12			500	576		ug/L		115	77 - 130		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	92		72 - 130
4-Bromofluorobenzene	100		67 - 130
Toluene-d8 (Surr)	99		70 - 130

Lab Sample ID: LCSD 720-251099/6
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Chloride			25.0	26.5		ug/L		106	75 - 117	3	20
Vinyl chloride			25.0	23.1		ug/L		92	58 - 138	6	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	97		72 - 130
4-Bromofluorobenzene	92		67 - 130
Toluene-d8 (Surr)	93		70 - 130

Lab Sample ID: LCSD 720-251099/8
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C4-C12			500	544		ug/L		109	77 - 130	6	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	91		72 - 130
4-Bromofluorobenzene	99		67 - 130
Toluene-d8 (Surr)	101		70 - 130

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88430-A-1 MS
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Methylene Chloride	ND		25.0	33.1		ug/L		133	40 - 140
Vinyl chloride	ND		25.0	21.2		ug/L		85	58 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*95*		*72 - 130*
4-Bromofluorobenzene	*99*		*67 - 130*
Toluene-d8 (Surr)	*94*		*70 - 130*

Lab Sample ID: 720-88430-A-1 MSD
Matrix: Water
Analysis Batch: 251099

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methylene Chloride	ND		25.0	30.6		ug/L		122	40 - 140	8	20
Vinyl chloride	ND		25.0	20.0		ug/L		80	58 - 140	5	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*88*		*72 - 130*
4-Bromofluorobenzene	*99*		*67 - 130*
Toluene-d8 (Surr)	*95*		*70 - 130*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-497407/3
Matrix: Water
Analysis Batch: 497407

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,3-Trichloropropane	ND		0.0050	0.0025	ug/L			09/05/18 18:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*09/05/18 18:24*	*1*

Lab Sample ID: LCS 440-497407/4
Matrix: Water
Analysis Batch: 497407

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane			0.0500	0.0484		ug/L		97	60 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*98*		*80 - 120*

Method: 8260B SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-88324-1 MS
Matrix: Water
Analysis Batch: 497407

Client Sample ID: GWE-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2,3-Trichloropropane	ND		0.0500	0.0470		ug/L		94	55 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*99*		*80 - 120*

Lab Sample ID: 720-88324-1 MSD
Matrix: Water
Analysis Batch: 497407

Client Sample ID: GWE-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2,3-Trichloropropane	ND		0.0500	0.0472		ug/L		94	55 - 135	0	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Dibromofluoromethane (Surr)	*95*		*80 - 120*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 720-250836/1-A
Matrix: Water
Analysis Batch: 250762

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 250836

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		50	30	ug/L		09/04/18 15:25	09/04/18 21:46	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
p-Terphenyl	*83*		*23 - 156*	*09/04/18 15:25*	*09/04/18 21:46*	*1*

Lab Sample ID: LCS 720-250836/2-A
Matrix: Water
Analysis Batch: 250762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 250836

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]			2500	2450		ug/L		98	34 - 115

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
p-Terphenyl	*78*		*23 - 156*

Lab Sample ID: LCSD 720-250836/3-A
Matrix: Water
Analysis Batch: 250762

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 250836

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]			2500	2490		ug/L		100	34 - 115	2	35

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 720-250836/3-A
Matrix: Water
Analysis Batch: 250762

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 250836

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
p-Terphenyl	*85*		*23 - 156*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 720-250771/1-A
Matrix: Water
Analysis Batch: 250919

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 250771

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		0.010	0.0027	mg/L		09/04/18 08:51	09/05/18 09:12	1
Arsenic	ND		0.010	0.0026	mg/L		09/04/18 08:51	09/05/18 09:12	1
Barium	ND		0.010	0.0014	mg/L		09/04/18 08:51	09/05/18 09:12	1
Beryllium	0.000556	J	0.0020	0.00033	mg/L		09/04/18 08:51	09/05/18 09:12	1
Cadmium	ND		0.0025	0.0013	mg/L		09/04/18 08:51	09/05/18 09:12	1
Chromium	ND		0.010	0.0015	mg/L		09/04/18 08:51	09/05/18 09:12	1
Cobalt	ND		0.0020	0.0012	mg/L		09/04/18 08:51	09/05/18 09:12	1
Copper	ND		0.020	0.0015	mg/L		09/04/18 08:51	09/05/18 09:12	1
Lead	ND		0.0050	0.0023	mg/L		09/04/18 08:51	09/05/18 09:12	1
Molybdenum	ND		0.010	0.0023	mg/L		09/04/18 08:51	09/05/18 09:12	1
Nickel	ND		0.010	0.00080	mg/L		09/04/18 08:51	09/05/18 09:12	1
Selenium	ND		0.020	0.0071	mg/L		09/04/18 08:51	09/05/18 09:12	1
Silver	ND		0.0050	0.0012	mg/L		09/04/18 08:51	09/05/18 09:12	1
Thallium	ND		0.010	0.0035	mg/L		09/04/18 08:51	09/05/18 09:12	1
Vanadium	ND		0.010	0.00070	mg/L		09/04/18 08:51	09/05/18 09:12	1
Zinc	ND		0.020	0.0096	mg/L		09/04/18 08:51	09/05/18 09:12	1

Lab Sample ID: LCS 720-250771/2-A
Matrix: Water
Analysis Batch: 250919

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 250771

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	1.00	0.937		mg/L		94	80 - 120
Arsenic	1.00	0.926		mg/L		93	80 - 120
Barium	1.00	0.980		mg/L		98	80 - 120
Beryllium	1.00	0.991		mg/L		99	80 - 120
Cadmium	1.00	0.948		mg/L		95	80 - 120
Chromium	1.00	0.963		mg/L		96	80 - 120
Cobalt	1.00	0.962		mg/L		96	80 - 120
Copper	1.00	0.964		mg/L		96	80 - 120
Lead	1.00	0.958		mg/L		96	80 - 120
Molybdenum	1.00	0.962		mg/L		96	80 - 120
Nickel	1.00	0.964		mg/L		96	80 - 120
Selenium	1.00	0.903		mg/L		90	80 - 120
Silver	0.500	0.469		mg/L		94	80 - 120
Thallium	1.00	0.962		mg/L		96	80 - 120
Vanadium	1.00	0.967		mg/L		97	80 - 120
Zinc	1.00	0.940		mg/L		94	80 - 120

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 720-88293-G-13-A MS
Matrix: Water
Analysis Batch: 250919

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 250771

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	ND		1.00	0.927		mg/L		93	75 - 125
Arsenic	ND		1.00	0.914		mg/L		91	75 - 125
Barium	ND		1.00	0.985		mg/L		99	75 - 125
Beryllium	ND		1.00	0.991		mg/L		99	75 - 125
Cadmium	ND		1.00	0.939		mg/L		94	75 - 125
Chromium	ND		1.00	0.949		mg/L		95	75 - 125
Cobalt	ND		1.00	0.949		mg/L		95	75 - 125
Copper	ND		1.00	0.962		mg/L		96	75 - 125
Lead	ND		1.00	0.946		mg/L		95	75 - 125
Molybdenum	ND		1.00	0.950		mg/L		95	75 - 125
Nickel	ND		1.00	0.956		mg/L		96	75 - 125
Selenium	ND		1.00	0.899		mg/L		90	75 - 125
Silver	ND		0.500	0.471		mg/L		94	75 - 125
Thallium	ND		1.00	0.953		mg/L		95	75 - 125
Vanadium	ND		1.00	0.964		mg/L		96	75 - 125
Zinc	ND		1.00	0.929		mg/L		93	75 - 125

Lab Sample ID: 720-88293-G-13-B MSD
Matrix: Water
Analysis Batch: 250919

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 250771

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Antimony	ND		1.00	0.924		mg/L		92	75 - 125	0	20
Arsenic	ND		1.00	0.911		mg/L		91	75 - 125	0	20
Barium	ND		1.00	0.958		mg/L		96	75 - 125	3	20
Beryllium	ND		1.00	0.975		mg/L		98	75 - 125	2	20
Cadmium	ND		1.00	0.936		mg/L		94	75 - 125	0	20
Chromium	ND		1.00	0.956		mg/L		96	75 - 125	1	20
Cobalt	ND		1.00	0.941		mg/L		94	75 - 125	1	20
Copper	ND		1.00	0.956		mg/L		96	75 - 125	1	20
Lead	ND		1.00	0.944		mg/L		94	75 - 125	0	20
Molybdenum	ND		1.00	0.948		mg/L		95	75 - 125	0	20
Nickel	ND		1.00	0.955		mg/L		95	75 - 125	0	20
Selenium	ND		1.00	0.887		mg/L		89	75 - 125	1	20
Silver	ND		0.500	0.459		mg/L		92	75 - 125	3	20
Thallium	ND		1.00	0.949		mg/L		95	75 - 125	0	20
Vanadium	ND		1.00	0.953		mg/L		95	75 - 125	1	20
Zinc	ND		1.00	0.922		mg/L		92	75 - 125	1	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 720-250951/1-A
Matrix: Water
Analysis Batch: 251033

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 250951

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.00020	0.00010	mg/L		09/05/18 17:47	09/06/18 16:02	1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 720-250951/2-A
Matrix: Water
Analysis Batch: 251033

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 250951

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.0100	0.0103		mg/L		103	85 - 115		

Lab Sample ID: 720-88324-1 MS
Matrix: Water
Analysis Batch: 251033

Client Sample ID: GWE-1
Prep Type: Dissolved
Prep Batch: 250951

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	ND		0.0100	0.00995		mg/L		99	75 - 125		

Lab Sample ID: 720-88324-1 MSD
Matrix: Water
Analysis Batch: 251033

Client Sample ID: GWE-1
Prep Type: Dissolved
Prep Batch: 250951

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	ND		0.0100	0.0100		mg/L		100	75 - 125	1	20

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 720-250616/9
Matrix: Water
Analysis Batch: 250616

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.010	0.0037	mg/L			08/30/18 15:01	1

Lab Sample ID: LCS 720-250616/10
Matrix: Water
Analysis Batch: 250616

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cr (VI)			0.250	0.269		mg/L		107	90 - 110		

Lab Sample ID: LCSD 720-250616/11
Matrix: Water
Analysis Batch: 250616

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)			0.250	0.269		mg/L		108	90 - 110	0	20

Lab Sample ID: 720-88324-1 MS
Matrix: Water
Analysis Batch: 250616

Client Sample ID: GWE-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cr (VI)	ND		0.250	0.272		mg/L		109	85 - 115		

Method: 7196A - Chromium, Hexavalent (Continued)

Lab Sample ID: 720-88324-1 MSD
Matrix: Water
Analysis Batch: 250616

Client Sample ID: GWE-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cr (VI)	ND		0.250	0.273		mg/L		109	85 - 115	0	20

GC/MS VOA

Analysis Batch: 250881

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Total/NA	Water	8260B	
720-88324-2	GWE-2	Total/NA	Water	8260B	
720-88324-4	TB-1	Total/NA	Water	8260B	
MB 720-250881/4	Method Blank	Total/NA	Water	8260B	
LCS 720-250881/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 720-250881/7	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-250881/6	Lab Control Sample Dup	Total/NA	Water	8260B	
LCSD 720-250881/8	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88389-A-4 MS	Matrix Spike	Total/NA	Water	8260B	
720-88389-A-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 251099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Total/NA	Water	8260B	
720-88324-2	GWE-2	Total/NA	Water	8260B	
MB 720-251099/4	Method Blank	Total/NA	Water	8260B	
LCS 720-251099/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 720-251099/7	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-251099/6	Lab Control Sample Dup	Total/NA	Water	8260B	
LCSD 720-251099/8	Lab Control Sample Dup	Total/NA	Water	8260B	
720-88430-A-1 MS	Matrix Spike	Total/NA	Water	8260B	
720-88430-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	

Analysis Batch: 497407

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Total/NA	Water	8260B SIM	
720-88324-2	GWE-2	Total/NA	Water	8260B SIM	
720-88324-3	GWE-3	Total/NA	Water	8260B SIM	
720-88324-4	TB-1	Total/NA	Water	8260B SIM	
MB 440-497407/3	Method Blank	Total/NA	Water	8260B SIM	
LCS 440-497407/4	Lab Control Sample	Total/NA	Water	8260B SIM	
720-88324-1 MS	GWE-1	Total/NA	Water	8260B SIM	
720-88324-1 MSD	GWE-1	Total/NA	Water	8260B SIM	

GC Semi VOA

Analysis Batch: 250762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 720-250836/1-A	Method Blank	Total/NA	Water	8015B	250836
LCS 720-250836/2-A	Lab Control Sample	Total/NA	Water	8015B	250836
LCSD 720-250836/3-A	Lab Control Sample Dup	Total/NA	Water	8015B	250836

Prep Batch: 250836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Total/NA	Water	3510C	
720-88324-2	GWE-2	Total/NA	Water	3510C	
MB 720-250836/1-A	Method Blank	Total/NA	Water	3510C	
LCS 720-250836/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 720-250836/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

GC Semi VOA (Continued)

Analysis Batch: 250884

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Total/NA	Water	8015B	250836
720-88324-2	GWE-2	Total/NA	Water	8015B	250836

Metals

Prep Batch: 250771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Dissolved	Water	3010A	
720-88324-2	GWE-2	Dissolved	Water	3010A	
MB 720-250771/1-A	Method Blank	Total/NA	Water	3010A	
LCS 720-250771/2-A	Lab Control Sample	Total/NA	Water	3010A	
720-88293-G-13-A MS	Matrix Spike	Total/NA	Water	3010A	
720-88293-G-13-B MSD	Matrix Spike Duplicate	Total/NA	Water	3010A	

Analysis Batch: 250919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Dissolved	Water	6010B	250771
720-88324-2	GWE-2	Dissolved	Water	6010B	250771
MB 720-250771/1-A	Method Blank	Total/NA	Water	6010B	250771
LCS 720-250771/2-A	Lab Control Sample	Total/NA	Water	6010B	250771
720-88293-G-13-A MS	Matrix Spike	Total/NA	Water	6010B	250771
720-88293-G-13-B MSD	Matrix Spike Duplicate	Total/NA	Water	6010B	250771

Prep Batch: 250951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Dissolved	Water	7470A	
720-88324-2	GWE-2	Dissolved	Water	7470A	
MB 720-250951/1-A	Method Blank	Total/NA	Water	7470A	
LCS 720-250951/2-A	Lab Control Sample	Total/NA	Water	7470A	
720-88324-1 MS	GWE-1	Dissolved	Water	7470A	
720-88324-1 MSD	GWE-1	Dissolved	Water	7470A	

Analysis Batch: 251033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Dissolved	Water	7470A	250951
720-88324-2	GWE-2	Dissolved	Water	7470A	250951
MB 720-250951/1-A	Method Blank	Total/NA	Water	7470A	250951
LCS 720-250951/2-A	Lab Control Sample	Total/NA	Water	7470A	250951
720-88324-1 MS	GWE-1	Dissolved	Water	7470A	250951
720-88324-1 MSD	GWE-1	Dissolved	Water	7470A	250951

General Chemistry

Analysis Batch: 250616

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1	GWE-1	Total/NA	Water	7196A	
720-88324-2	GWE-2	Total/NA	Water	7196A	
MB 720-250616/9	Method Blank	Total/NA	Water	7196A	
LCS 720-250616/10	Lab Control Sample	Total/NA	Water	7196A	
LCSD 720-250616/11	Lab Control Sample Dup	Total/NA	Water	7196A	

General Chemistry (Continued)

Analysis Batch: 250616 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-88324-1 MS	GWE-1	Total/NA	Water	7196A	
720-88324-1 MSD	GWE-1	Total/NA	Water	7196A	

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Client Sample ID: GWE-1

Lab Sample ID: 720-88324-1

Date Collected: 08/30/18 11:45

Matrix: Water

Date Received: 08/30/18 14:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	250881	09/05/18 12:58	A1C	TAL PLS
Total/NA	Analysis	8260B		10	251099	09/08/18 03:03	A1C	TAL PLS
Total/NA	Analysis	8260B SIM		1	497407	09/05/18 20:43	GK	TAL IRV
Total/NA	Prep	3510C			250836	09/04/18 21:23	BRR	TAL PLS
Total/NA	Analysis	8015B		1	250884	09/06/18 04:03	JXL	TAL PLS
Dissolved	Prep	3010A			250771	09/04/18 08:51	MAA	TAL PLS
Dissolved	Analysis	6010B		1	250919	09/05/18 10:36	BKR	TAL PLS
Dissolved	Prep	7470A			250951	09/05/18 18:15	MAG	TAL PLS
Dissolved	Analysis	7470A		1	251033	09/06/18 16:30	OBI	TAL PLS
Total/NA	Analysis	7196A		1	250616	08/30/18 15:01	TNL	TAL PLS

Client Sample ID: GWE-2

Lab Sample ID: 720-88324-2

Date Collected: 08/30/18 10:25

Matrix: Water

Date Received: 08/30/18 14:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	250881	09/05/18 13:28	A1C	TAL PLS
Total/NA	Analysis	8260B		1	251099	09/08/18 02:34	A1C	TAL PLS
Total/NA	Analysis	8260B SIM		1	497407	09/05/18 22:01	GK	TAL IRV
Total/NA	Prep	3510C			250836	09/04/18 21:23	BRR	TAL PLS
Total/NA	Analysis	8015B		1	250884	09/06/18 04:27	JXL	TAL PLS
Dissolved	Prep	3010A			250771	09/04/18 08:51	MAA	TAL PLS
Dissolved	Analysis	6010B		1	250919	09/05/18 10:41	BKR	TAL PLS
Dissolved	Prep	7470A			250951	09/05/18 18:15	MAG	TAL PLS
Dissolved	Analysis	7470A		1	251033	09/06/18 16:32	OBI	TAL PLS
Total/NA	Analysis	7196A		1	250616	08/30/18 15:01	TNL	TAL PLS

Client Sample ID: GWE-3

Lab Sample ID: 720-88324-3

Date Collected: 08/30/18 11:05

Matrix: Water

Date Received: 08/30/18 14:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B SIM		1	497407	09/05/18 22:27	GK	TAL IRV

Client Sample ID: TB-1

Lab Sample ID: 720-88324-4

Date Collected: 08/30/18 12:00

Matrix: Water

Date Received: 08/30/18 14:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	250881	09/05/18 13:58	A1C	TAL PLS
Total/NA	Analysis	8260B SIM		1	497407	09/05/18 23:13	GK	TAL IRV

Lab Chronicle

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Accreditation/Certification Summary

Client: Geosyntec Consultants, Inc. TestAmerica Job ID: 720-88324-1
Project/Site: Brisbane UPC OU-SM DGA WP

Laboratory: TestAmerica Pleasanton

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-20

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-19

Method Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PLS
8260B SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL PLS
6010B	Metals (ICP)	SW846	TAL PLS
7470A	Mercury (CVAA)	SW846	TAL PLS
7196A	Chromium, Hexavalent	SW846	TAL PLS
3010A	Preparation, Total Metals	SW846	TAL PLS
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL PLS
5030B	Purge and Trap	SW846	TAL IRV
5030B	Purge and Trap	SW846	TAL PLS
7470A	Preparation, Mercury	SW846	TAL PLS

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Sample Summary

Client: Geosyntec Consultants, Inc.
Project/Site: Brisbane UPC OU-SM DGA WP

TestAmerica Job ID: 720-88324-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-88324-1	GWE-1	Water	08/30/18 11:45	08/30/18 14:05
720-88324-2	GWE-2	Water	08/30/18 10:25	08/30/18 14:05
720-88324-3	GWE-3	Water	08/30/18 11:05	08/30/18 14:05
720-88324-4	TB-1	Water	08/30/18 12:00	08/30/18 14:05

BLAINE
TECH SERVICES, INC

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

18S205

720-88324

CHAIN OF CUSTODY BTS # 180830-WS1

CLIENT Geosyntec Consultants

SITE Brisbane UPC OU-SM DGA WP Implementation

Brisbane, CA

Client P.O.. WG2565-03 Client Project I.D. 3Q(Aug) 2018

LAB TA-SF DHS #

ALL ANALYSES MUST MEET SPECIFICATIONS AND DETECTION LIMITS SET BY CALIFORNIA DHS AND

☐ EPA ☐ RWQCB REGION _____
☐ LIA
☐ OTHER

SPECIAL INSTRUCTIONS

COC to Geosyntec Consultants Attn: Anthony Smith

after log in: asmith@geosyntec.com

Report to : Geosyntec Consultants
PDF, EDD & EDF Required
Report analytical results to the reporting limit (RL)

SAMPLE I.D.	DATE	TIME	MATRIX S= SOIL W=H_2O	CONTAINERS TOTAL	CRUT (7196)	VOCs (8260B)	CAM-17 (6010B, 7471)	Hexavalent Chromium (7196)	TPH-G (8015)	TPH-D (8015)	1,2,3 TCP (524.2 SIM)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
GWE-1	8/30/18	1145	W	13	X	X	X		X	X	X				
GWE-2	8/30/18	1025	W	13	X	X	X		X	X	X				
GWE-3	8/30/18	1105	W	3							X				
TB-1	8/30/18	1200	W	2											

720-88324 Chain of Custody

SAMPLING COMPLETED	DATE	TIME
	8/30/18	1145

SAMPLING PERFORMED BY Wesley Sherman-Shockley

RESULTS NEEDED NO LATER THAN Standard TAT

	DATE	TIME		DATE	TIME
RELEASED BY			RECEIVED BY		
	8/30/18	1405		8/31/18	1405
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME
RELEASED BY	DATE	TIME	RECEIVED BY	DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT	COOLER #

50°C

9/10/2018

TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone (925) 484-1919 Fax (925) 600-3002

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler	Lab PM: Smith, Micah	Carrier Tracking No(s): 447148526106	COC No: 720-39493.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: micah.smith@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): State Program - California		Job #: 720-88324-1
Address: 17461 Derian Ave, Suite 100,	Due Date Requested: 9/6/2018			
City: Irvine	TAT Requested (days):			
State, Zip: CA, 92614-5817				
Phone: 949-261-1022(Tel) 949-260-3297(Fax)	PO #			
Email:	WO #			
Project Name: Brisbane UPC OU-SM DGA WP	Project #: 72013717			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastetoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B_SIM/5030B (MOD) Custom 8260B SIM List	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GWE-1 (720-88324-1)	8/30/18	11:45 Pacific		Water			X	3	
GWE-2 (720-88324-2)	8/30/18	10:25 Pacific		Water			X	3	
GWE-3 (720-88324-3)	8/30/18	11:05 Pacific		Water			X	3	
TB-1 (720-88324-4)	8/30/18	12:00 Pacific		Water			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		8/31/18 12:47	TA PSO			
2	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
3	Relinquished by	Date/Time	Company	Received by	Date/Time 9/1/18 1030	Company TA IRV

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks.

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88324-1

Login Number: 88324
List Number: 1
Creator: Perry, Janae R

List Source: TestAmerica Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
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.	False	
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Geosyntec Consultants, Inc.

Job Number: 720-88324-1

Login Number: 88324
List Number: 2
Creator: Escalante, Maria I

List Source: TestAmerica Irvine
List Creation: 09/01/18 12:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
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?	N/A	Received project as a subcontract.
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX I

Data Validation Summaries

Geosyntec consultants

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Memorandum

Date:	12 October 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 320-42505-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of twelve soil samples and two field duplicate samples, collected 23 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Sacramento, California and sent to TA Nashville, Tennessee for analysis of the following test:

- Volatile Organic Compounds (VOCs) 1,2,3-Trichloropropane and 1,2-Dibromo-3-Chloropropane by United States Environmental Protection Agency (USEPA) Methods 5035/8260B

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
320-42505-1	DG-A7S-0.5-1
320-42505-3	DG-E7S-0.5-1
320-42505-4	DG-G7S-0.5-1
320-42505-5	DG-B10S-0.5-1
320-42505-6	DG-I7S-0.5-1
320-42505-7	DG-M7S-0.5-1
320-42505-8	DG-B9S-0.5-1

Laboratory ID	Client ID
320-42505-9	DG-DE89-0.5-1
320-42505-10	DUP-15
320-42505-11	DG-D9S-0.5-1
320-42505-12	DG-F9S-0.5-1
320-42505-13	DG-K7S-0.5-1
320-42505-14	DG-L135-0.5-1
320-42505-15	DUP-25

The samples were received by TA Sacramento, California at 2.3ºC and by TA Nashville, Tennessee at 1.2ºC and -15.7ºC, within the criteria of <6ºC. The temperature blank in the cooler received by TA Nashville, Tennessee at -15.7ºC was frozen. Since the samples in this cooler were soil and based on professional and technical judgement, no qualifications were applied to the data.

Incorrect error corrections were observed on the original chain of custody (COC) instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The narrative indicated that there were inconsistencies between the container labels and COC for samples DG-B10S-0.5-1 and DG-B9S-0.5-1. Sample DG-B10S-0.5-1 was mislabeled on the COC as DG-B95-0.5-1. The containers for sample DG-B95-0.5-1 were mislabeled as DG-B9S-3.5-4. The Geosyntec project manager (PM) confirmed the correct sample IDs for the sample containers DG-B10S-0.5-1 and DG-B9S-0.5-1.

The narrative indicated that the containers for sample DG-C7S-0.5-1 were not received at the laboratory. The analysis of sample DG-C7S-0.5-1 was cancelled.

The narrative indicated that the laboratory received sample containers for DUP-2; however, DUP-25 was not listed on the COC. The Geosyntec PM requested the analysis of DUP-25.

The collection times for field duplicates DUP-15 and DUP-25 were not documented on the COC. The laboratory assigned collection times of 0:00 for both samples.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 539562 and 539982). VOCs were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy. See section 1.5 below.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks were not submitted with the sample set.

1.8 Field Blank

Field blanks were not submitted with the sample set.

1.9 Field Duplicate

Two field duplicate sample, DUP-15 and DUP-25, were collected with the sample set. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicates and the original samples, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively.

1.10 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were reported due to the dilutions analyzed. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

Geosyntec consultants

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Memorandum

Date:	28 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88028-1, Revision 1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of two groundwater samples, one field duplicate sample, one field blank and one trip blank, collected 14 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5030B/8260B
- 1,2,3-Trichloropropane by California Department of Health Services Division of Drinking Water and Environmental Management Sanitation and Radiation Laboratories Branch (SRL) Method Modified 524.2
- Gasoline Range Organics (GRO) by USEPA Methods 5030B/8015B
- Diesel Range Organics (DRO) by USEPA Methods 3510C/8015B
- Metals by USEPA Methods 3010A/6010B
- Mercury by USEPA Method 7470A
- Hexavalent Chromium (Cr VI) by USEPA Method 7196A

Method SRL 524.2 was performed at TA Irvine, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exception.

Due to a holding time exceedance, the non-detect 1,2,3-trichloropropane result by method SRL 524.2 in field blank FB-1 was R qualified as rejected.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88028-1	MK-2A
720-88028-2	FB-1
720-88028-3	MK-5AR

Laboratory ID	Client ID
720-88028-4	DUP-1
720-88028-5	TB-1

The samples were received by TA Pleasanton, California at 2.6°C and by TA Irvine, California at 3.2°C, within the criteria of ≤6°C.

The VOC container used for the method SRL 524.2 analysis of field blank FB-1 was received at the laboratory with pH>2. See section 1.2 below for further information.

The laboratory report was revised on 6 November 2018 to correct the method reference for Method SRL 524.2. The revised report was identified as Job ID 720-88028-1, Revision 1.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5030B/8260B and SRL 524.2.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
⊗ Holding Times
✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ⊗ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives, with the following exception.

Due to a holding time exceedance, the non-detect 1,2,3-trichloropropane result in field blank FB-1 was R qualified as rejected. See section 1.2 below.

Therefore, the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for these analyses, for the data set is 99.7%.

The report narrative indicated that the dichlorodifluoromethane percent difference (%D) for the continuing calibration verification (CCV) associated with batch 249587 was high and outside the method specified acceptance criteria, with a high bias. Since dichlorodifluoromethane was not detected in the associated samples, no qualifications were applied to the data.

1.2 Holding Times

The holding time for the VOC analysis of a preserved water sample for methods SRL 524.2 and 8260B is 14 days from sample collection to analysis. The holding time for VOC analysis by method SRL 524.2 for a water sample with pH>2 is 24 hours from sample collection to analysis. The holding times were met for the sample analyses, with the following exception.

The VOC container used for the method SRL 524.2 analysis of field blank FB-1 had a pH of 4 and was analyzed three days after collection. Therefore, the non-detect 1,2,3-trichloropropane result in field blank FB-1 was R qualified as rejected.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier*	Reason code**
FB-1	1,2,3-Trichloropropane	0.0050	U	0.0050	R	2

µg/L - Microgram per liter
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the reporting limit (RL).
* Validation qualifiers are defined in Attachment 1 at the end of this report.
** Reason codes are defined in Attachment 2 at the end of this report.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 249587, 494008 and 496081). VOCs were not detected in the method blanks above the RLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A batch sample MS/MSD pair was reported for batch 249587. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batches 494008 and 496081. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Duplicate

Batch laboratory duplicates were reported in batches 494008 and 496081. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

1.6 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exception.

The recoveries of vinyl chloride in the LCS/LCSD in batch 249587 were high and outside the laboratory specified acceptance criteria. Since vinyl chloride was not detected in the associated samples, no qualifications were applied to the data.

1.7 Surrogate

Acceptable surrogate recoveries were reported for the USEPA Method 8260B sample analyses. Surrogates were not reported for the SRL method 524.2 analyses.

1.8 Trip Blank

One trip blank was submitted for USEPA Method 8260B analysis, TB-1. VOCs were not detected in the trip blank above the RLs. TB-1 was not analyzed for SRL 524.2.

1.9 Field Blank

One field blank was submitted for VOC analysis, FB-1. VOCs were not detected in the field blank above the RLs.

1.10 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, MK-5AR.

1.11 Sensitivity

The samples were reported to the RLs. No elevated non-detect results were reported. The RLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 7, with the following exceptions.

Compound	Laboratory RL (µg/L)	SSSL (µg/L)
Carbon tetrachloride	0.50	0.22
1,2-dibromo-3-chloropropane	1.0	0.20
Hexachlorobutadiene	1.0	0.14

1.12 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 GASOLINE RANGE ORGANICS

The samples were analyzed for GRO (C4-C12) per USEPA Methods 5030B/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies an area where issues were raised during the course of the validation review and should be considered to assess the impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The GRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for GRO analysis of a preserved water sample is 14 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 493993). GRO was not detected in the method blank above the RL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair (batch QC) was reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery was within the laboratory specified acceptance criteria.

2.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Sensitivity

The samples were reported to the RL. No elevated non-detect results were reported. The RL met the proposed SSSL in the Work Plan Table 7.

2.8 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for GRO. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, MK-5AR.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

3.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249591). DRO was not detected in the method blank above the RL.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. An LCS/LCSD pair was used to assess precision and accuracy.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Sensitivity

The samples were reported to the RL. No elevated non-detect results were reported. The RL met the proposed SSSL in the Work Plan Table 7.

3.8 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for DRO. Acceptable precision (RPD ≤30%) was demonstrated between the field duplicate and the original sample, MK-5AR.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 METALS

The samples were analyzed for metals per USEPA Methods 3010A/6010B (mercury evaluated separately in Section 5.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Deliverable Review

4.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

4.2 Holding Times

The holding time for the metals analyses of a water sample is 180 days from collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249671). Metals were not detected in the method blank above the RLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair (batch QC) was reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Sensitivity

The samples were reported to the RLs. No elevated non-detect results were reported. The RLs met the proposed SSSLs in the Work Plan Table 7, with the following exceptions.

Analyte	Laboratory RL (µg/L)	SSSL (µg/L)
Antimony	10	6.0
Nickel	10	8.2
Silver	5.0	0.19
Thallium	10	2.0

4.7 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, MK-5AR.

4.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Deliverable Review

5.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

5.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249773). Mercury was not detected in the method blank above the RL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One project specific MS/MSD pair was reported, using sample MK-2A. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery was within the laboratory specified acceptance criteria.

5.6 Sensitivity

The samples were reported to the RL. No elevated non-detect results were reported. The RL met the proposed SSSL in the Work Plan Table 7.

5.7 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, MK-5AR.

5.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 HEXAVALENT CHROMIUM

The samples were analyzed for Cr VI per USEPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The Cr VI data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

6.2 Holding Times

The holding times for the Cr VI analysis of a water sample is 24 hours from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249500). Cr VI was not detected in the method blank above the RL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair (batch QC) was reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

6.6 Sensitivity

The samples were reported to the RL. No elevated non-detect results were reported. The RL met the proposed SSSL in the Work Plan Table 7.

6.7 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for Cr VI. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, MK-5AR.

6.8 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	28 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88059-1, Revision 1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of eight groundwater samples, one field duplicate sample, one field blank and one trip blank, collected 15 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5030B/8260B
- 1,2,3-Trichloropropane by California Department of Health Services Division of Drinking Water and Environmental Management Sanitation and Radiation Laboratories Branch (SRL) Modified Method 524.2
- Gasoline Range Organics (GRO) by USEPA Methods 5030B/8015B
- Diesel Range Organics (DRO) by USEPA Methods 3510C/8015B
- Metals by USEPA Methods 3010A/6010B
- Mercury by USEPA Method 7470A
- Hexavalent Chromium (Cr VI) by USEPA Method 7196A

Method SRL 524.2 was performed at TA Irvine, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to holding time exceedances, the non-detect 1,2,3-trichloropropane results by method SRL 524.2 in samples MW-6AR and MW-7A were R qualified as rejected.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88059-1	GWE-3
720-88059-2	GWE-4
720-88059-3	MK-4A
720-88059-4	MK-6A
720-88059-5	MW-4A
720-88059-6	MW-6AR

Laboratory ID	Client ID
720-88059-7	MW-7A
720-88059-8	MW-8A
720-88059-9	DUP-2
720-88059-10	FB-2
720-88059-11	TB-2

The samples were received by TA Pleasanton, California at 0.7ºC, 1.2ºC, 1.3ºC and 3.6ºC and by TA Irvine, California at 4.9ºC and 2.7ºC, within the criteria of $\leq$6ºC.

Incorrect error corrections were observed on the chains of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The SRL 524.2 aliquot for field blank FB-2 was sent to TA Irvine twice, once on 8/16/2018 and again on 8/28/2018. In an email communication from the laboratory to the validator on 12 October 2018, the laboratory clarified that the original container sent for FB-2 had pH>2 and was analyzed more than 7 days after collection. The second container sent for FB-2 was properly preserved and analyzed within the method specified holding time of 14 days. However, since the first aliquot of this field blank was analyzed outside the holding time and the second aliquot of the field blank was not collected with the samples in this sample set, the field blank was not considered for the SRL 52.4 data validation.

The VOC container used for the USEPA Method 8260B analysis of sample MW-7A was received at the laboratory with pH>2. See section 1.2 below for further information.

The VOC containers used for the method SRL 524.2 analyses of samples MW-6AR and MW-7A were received at the laboratory with pHs>2. See section 1.2 below for further information.

The mercury container used for the USEPA Method 7470 analysis of sample MW-6AR was received at the laboratory with pH>2. The pH was adjusted using one milliliter (mL) of concentrated nitric acid upon receipt by the laboratory. The sample then sat for 3 days prior to digestion. Therefore, no qualifications were applied to the data.

The laboratory report was revised on 6 November 2018 to correct the method reference for Method SRL 524.2. The revised report was identified as Job ID 720-88059-1, Revision 1.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5030B/8260B and method SRL 524.2.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
⊗ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Blank
✓ Field Duplicate
⊗ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives, with the following exception.

Due to holding time exceedances, the non-detect 1,2,3-trichloropropane results in samples MW-6AR and MW-7A were R qualified as rejected. See section 1.2 below.

Therefore, the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for these analyses, for the data set is 99.7%.

The report narrative indicated that the hexachlorobutadiene percent differences (%Ds) for the continuing calibration verifications (CCVs) in batches 249695 and 249682 were high and outside the method specified acceptance criteria, with high biases. Since hexachlorobutadiene was not detected in the associated samples, no qualifications were applied to the data.

The narrative indicated that the VOC container used for the method SRL 524.2 analysis of sample GWE-3 had significant headspace, defined as bubble greater than 6 mm in diameter. Therefore, the non-detect 1,2,3-trichloropropane result in sample GWE-3 was UJ qualified as estimated less than the reporting limit (RL).

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier*	Reason code**
GWE-3	1,2,3-Trichloropropane	0.0050	U	0.0050	UJ	1

µg/L - Microgram per liter
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the RL
* Validation qualifiers are defined in Attachment 1 at the end of this report.
** Reason codes are defined in Attachment 2 at the end of this report

1.2 Holding Times

The holding time for the VOC analysis of preserved water samples for methods SRL 524.2 and 8260B are 14 days from sample collection to analysis. The holding time for the VOC analysis of a water sample with pH>2 by USEPA Method 8260B is 7 days from sample collection to analysis. The holding time for VOC analysis by method SRL 524.2 for a water sample with pH>2 is 24 hours from sample collection to analysis. The holding times were met for the sample analyses, with the following exception.

The VOC containers used for the method SRL 524.2 analyses of samples MW-6AR and MW-7A had pHs of 5 and were analyzed seven days after collection. Therefore, the non-detect 1,2,3-trichloropropane results in samples MW-6AR and MW-7A were R qualified as rejected.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason code
MW-6AR	1,2,3-Trichloropropane	0.0050	U	0.0050	R	2
MW-7A	1,2,3-Trichloropropane	0.0050	U	0.0050	R	2

µg/L - Microgram per liter
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the RL.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Ten method blanks were reported (batches 249682, 249684, 249691, 249695, 249863, 250217, 250344, 496081, 496218 and 496340). VOCs were not detected in the method blanks above the RLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Batch MS/MSD pairs were reported for batches 249682, 249684, 249691, 249695 and 250344. A batch MS was reported in batch 249863. Since these were batch quality control (QC), the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batches 250217, 496081, 496218 and 496340. Laboratory control sample (LCS)/LCS duplicate (LCSD) pair were used to assess precision and accuracy.

1.5 Laboratory Duplicate

One sample specific laboratory duplicate was reported for method SRL 524.2, using sample MK-4A. The relative percent difference (RPD) result was within the laboratory specified acceptance criteria.

Batch laboratory duplicates were also reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

1.6 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Seven LCS/LCSD pairs and three LCSs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the recoveries of 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, 2-chlorotoluene, 4-chlorotoluene, 4-isopropyltoluene, n-butylbenzene, n-propylbenzene, sec-butylbenzene, tert-butylbenzene and vinyl acetate in the LCS/LCSD in batch 249684 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualifications were applied to the data.

One or both of the recoveries of 1,1-dichloroethane, 1,1-dichloroethene, carbon disulfide, cis-1,2-dichloroethene, methylene chloride, n-butylbenzene, sec-butylbenzene, trans-1,2-dichloroethene, 1,1,2-trichloro-1,2,2-trifluoroethane and vinyl acetate in the LCS/LCSD in batch 249691 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualifications were applied to the data.

The recoveries of carbon disulfide in the LCS/LCSD pair in batch 250217 were high and outside the laboratory specified acceptance criteria. Since carbon disulfide was not detected in the associated samples, no qualifications were applied to the data.

The recoveries of 1,2,3-trichloropropane in the LCS in batch 496218 was high and outside the laboratory specified acceptance criteria. Since 1,2,3-trichloropropane was not detected in the associated samples, no qualifications were applied to the data.

1.7 Surrogate

Acceptable surrogate recoveries were reported for the USEPA Method 8260B sample analyses. Surrogates were not reported for the method SRL 524.2 analyses.

1.8 Trip Blank

One trip blank was submitted for USEPA Method 8260B analysis, TB-2. VOCs were not detected in the trip blank above the RLs. TB-2 was not analyzed for method SRL 524.2.

1.9 Field Blank

One field blank was submitted for VOC analyses, FB-2. As noted in the Executive Summary, since the aliquot of the field blank for SRL 524.2 was not collected with the samples in this sample set, it was not considered for validation. The method 8260B VOCs were not detected in FB-2 above the RLs.

1.10 Field Duplicate

One field duplicate sample, DUP-2, was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, GWE-4.

1.11 Sensitivity

The samples were reported to the RLs. No elevated non-detect results were reported. The RLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 7, with the following exceptions.

Compound	Laboratory RL (µg/L)	SSSL (µg/L)
Carbon tetrachloride	0.50	0.22
1,2-dibromo-3-chloropropane	1.0	0.20
Hexachlorobutadiene	1.0	0.14

1.12 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 GASOLINE RANGE ORGANICS

The samples were analyzed for GRO (C4-C12) per USEPA Methods 5030B/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies an area where issues were raised during the course of the validation review and should be considered to assess the impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The GRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total

number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for GRO analysis of a preserved water sample is 14 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 494773 and 495513). GRO was not detected in the method blanks above the RL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs (batch QC) were reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Sensitivity

The samples were reported to the RL. The RL met the proposed SSSL in the Work Plan Table 7. No elevated non-detect results were reported.

2.8 Field Duplicate

One field duplicate sample, DUP-2, was collected with the sample set and analyzed for GRO. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, GWE-4.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

3.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249750). DRO was not detected in the method blank above the RL.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. An LCS/LCSD pair was used to assess precision and accuracy.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Sensitivity

The samples were reported to the RL. No elevated non-detect results were reported. The RL met the proposed SSSL in the Work Plan Table 7.

3.8 Field Duplicate

One field duplicate sample, DUP-2, was collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, GWE-4.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 METALS

The samples were analyzed for metals per USEPA Methods 3010A/6010B (mercury evaluated separately in Section 5.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Sensitivity
✓ Field Duplicate
✓ Electronic Deliverable Review

4.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

4.2 Holding Times

The holding time for the metals analyses of a water sample is 180 days from collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249769). Metals were not detected in the method blank above the RLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair (batch QC) was reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Sensitivity

The samples were reported to the RLs. No elevated non-detect results were reported. The RLs met the proposed SSSLs in the Work Plan Table 7, with the following exceptions.

Analyte	Laboratory RL (µg/L)	SSSL (µg/L)
Antimony	10	6.0
Nickel	10	8.2
Silver	5.0	0.19
Thallium	10	2.0

4.7 Field Duplicate

One field duplicate sample, DUP-2, was collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, GWE-4.

4.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Deliverable Review

5.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

5.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249773). Mercury was not detected in the method blank above the RL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair (batch QC) was reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery was within the laboratory specified acceptance criteria.

5.6 Sensitivity

The samples were reported to the RL. No elevated non-detect results were reported. The RL met the proposed SSSL in the Work Plan Table 7.

5.7 Field Duplicate

One field duplicate sample, DUP-2, was collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, GWE-4.

5.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 HEXAVALENT CHROMIUM

The samples were analyzed for Cr VI per USEPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The Cr VI data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to

the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

6.2 Holding Times

The holding times for the Cr VI analysis of a water sample is 24 hours from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249590). Cr VI was not detected in the method blank above the RL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One project specific MS/MSD pair was reported, using sample MK-4A. The recovery and RPD results were within the laboratory specified acceptance criteria.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

6.6 Sensitivity

The samples were reported to the RL. No elevated non-detect results were reported. The RL met the proposed SSSL in the Work Plan Table 7.

6.7 Field Duplicate

One field duplicate sample, DUP-2, was collected with the sample set and analyzed for Cr VI. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, GWE-4.

6.8 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	12 October 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88125-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of three soil samples, collected 20 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and sent to TA Nashville, Tennessee for analysis of the following test:

- Volatile Organic Compounds (VOCs) 1,2,3-Trichloropropane and 1,2-Dibromo-3-Chloropropane by United States Environmental Protection Agency (USEPA) Methods 5035/8260B

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88125-2	DG-L1S-0.5-1
720-88125-3	DG-J1S-0.5-1

Laboratory ID	Client ID
720-88125-5	DG-H1S-0.5-1

The samples were received by TA Pleasanton, California at 1.7°C and by TA Nashville, Tennessee at 1.2°C, within the criteria of ≤6°C.

In an email communication on 21 August 2018, the Geosyntec project manager (PM) cancelled the analyses for samples DG-L1(3.5-4), DG-J1(3.5-4 and DG-H1(3.5-4). The PM also changed the sample IDs for the following samples: DG-L1(0.5-1) to DG-L1S-0.5-1, DG-J1(0.5-1) to DG-J1S-0.5-1 and DG-H1(0.5-1) to DG-H1S-0.5-1.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 537627). VOCs were not detected in the method blank above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy. See section 1.5 below.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks were not submitted with the sample set.

1.8 Field Blank

Field blanks were not submitted with the sample set.

1.9 Field Duplicate

Field duplicates were not submitted with the sample set.

1.10 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	12 October 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88148-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of five soil samples, collected 20 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and sent to TA Nashville, Tennessee for analysis of the following test:

- Volatile Organic Compounds (VOCs) 1,2,3-Trichloropropane and 1,2-Dibromo-3-Chloropropane by United States Environmental Protection Agency (USEPA) Methods 5035/8260B

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88148-1	DG-F1S-0.5-1
720-88148-2	DG-D1S-0.5-1
720-88148-3	DG-B1S-0.5-1

Laboratory ID	Client ID
720-88148-4	DG-A3S-0.5-1
720-88148-5	DG-C3S-0.5-1

The samples were received by TA Pleasanton, California at 2.9°C and by TA Nashville, Tennessee at 5.8°C, within the criteria of ≤6°C.

Incorrect error corrections were observed on the original chain of custody (COC) instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

In an email communication on 21 August 2018, the Geosyntec project manager (PM) changed the sample IDs for the following samples: DG-F1(0.5-1) to DG-F1S-0.5-1, DG-D1(0.5-1) to DG-D1S-0.5-1, DG-B1(0.5-1) to DG-B1S-0.5-1, DG-A3(0.5-1) to DG-A3S-0.5-1 and DG-C3(0.5-1) to DG-C3S-0.5-1.

A collection time was not documented on the COC for sample DG-C3S-0.5-1. The laboratory used the collection time documented on the sample containers, 12:05.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity

✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 537877 and 537950). VOCs were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy. See section 1.5 below.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks were not submitted with the sample set.

1.8 Field Blank

Field blanks were not submitted with the sample set.

1.9 Field Duplicate

Field duplicates were not submitted with the sample set.

1.10 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were reported due to the dilutions analyzed. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	10 December 2018
To:	Anthony Smith
From:	Mary Tyler
CC:	J. Caprio
Subject:	**Stage 4 Data Validation - Level IV Data Deliverable, TestAmerica Work Order Number 720-88162-1, Revision 1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 4 data validation of twenty solid samples, collected August 20, 2018, as part of the UPC OU-SM sampling event. The following analyses were performed at TestAmerica (TA) Laboratories, Inc., Pleasanton, California (TA-PLS), with the exceptions of the polychlorinated biphenyls (PCBs) analyses, which were performed at TA North Canton, Ohio (TA-NC) and the asbestos analyses, by Asbestos TEM Laboratories, Inc., Berkeley, California.

- Volatile Organic Compounds (VOCs) by EPA Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by EPA Methods 3546/8081A
- PCBs by EPA Methods 3540C/8082A
- Diesel Range Organics (DRO) by EPA Methods 3546/8015B
- Metals by EPA Methods 3050B/6010B
- Mercury by EPA Method 7471A
- Asbestos by California Air Resources Board (ARB) Method 435

EXECUTIVE SUMMARY

Overall, based on this Stage 4 data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to internal standard recovery less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4 in sample DG-F1S-9.5-10 were R qualified as rejected.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 4 level in the data set:

Laboratory ID	Client ID
720-88162-1	DG-M1S-0.5-1
720-88162-2	DG-M1S-3.5-4
720-88162-3	DG-L1S-0.5-1
720-88162-4	DG-L1S-3.5-4
720-88162-5	DG-L1S-10-10.5
720-88162-6	DG-K1S-0.5-1
720-88162-7	DG-K1S-3.5-4
720-88162-8	DG-J1S-0.5-1
720-88162-9	DG-J1S-3.5-4
720-88162-10	DG-I1S-0.5-1

Laboratory ID	Client ID
720-88162-11	DG-I1S-3.5-4
720-88162-12	DG-H1S-0.5-1
720-88162-13	DG-H1S-3.5-4
720-88162-14	DG-G1S-0.5-1
720-88162-15	DG-G1S-3.5-4
720-88162-16	DG-F1S-0.5-1
720-88162-17	DG-F1S-3.5-4
720-88162-18	DG-F1S-9.5-10
720-88162-19	DG-E1S-0.5-1
720-88162-20	DG-E1S-3.5-4

The samples were received at the laboratory at 1.7°C, 1.9°C, 3.1°C and 3.4°C, within the QAPP criteria of ≤6°C. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory:

- The pre-tared weight label was not legible for one of the VOC vials for sample DG-F1S-3.5-4. The vial was not used for the VOC analysis.
- The container label for the following samples did not match the information listed on the chain of custody (COC) form:
  - Sample DG-L1S-0.5-1: The label on one of the two VOC vials listed DG-L1 (0.5-3), but the COC listed DG-L1 (0.5-1). The client confirmed the correct ID was DG-L1S-0.5-1.
  - Sample DG-L1S-10-10.5 (720-88162-5): The label on one of the two VOC vials listed DG-L1 (9.5-10), while the COC listed DG-L1 (10-10.5). The client confirmed the correct ID was DG-L1S-10-10.5.

  - Sample DG-H1S-0.5-1 (720-88162-12): The label on the 8-ounce (oz.) jar listed a collection time of 14:05 while the COC listed a collection time of 12:10. The client confirmed that 14:05 was the correct time.

  - Sample DG-H1S-3.5-4 (720-88162-13): The label on the 8-oz. jar listed a collection time of 14:05 while the COC listed a collection time of 12:10. The client confirmed that 14:05 was the correct time.

- The narrative noted that some of the containers for the CARB 435 asbestos and PCB analyses noted on the COC were not received. There were sufficient sample volumes for the requested analyses from other sample specific containers.

The following issues were noted during data validation:

- Incorrect error corrections were observed on the COC, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

- The sample IDs in the laboratory report were different from the sample IDs on the COC. The sample IDs in the laboratory report contained the letter S, e.g., the ID on the COC was DG-M1 (0.5-1) and the ID in the laboratory report was DG-M1S (0.5-1). The client sent additional information to the laboratory (not included in the laboratory report) requesting changes to the IDs.

The report was revised on 10/15/18 to correct the metals MDLs, continuing calibration verification (CCV) and low calibration check standard forms. The revised report was identified as 720-88162-1, Revision 1.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per EPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Instrument Performance
✓ Initial Calibration
✓ Continuing Calibration Verification
✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Trip Blank
- ⊗ Internal Standard
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives, with the following exceptions. Due to internal standard recovery less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4 in sample DG-F1S-9.5-10 were R qualified as rejected. Therefore, the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 96.7%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for bromofluorobenzene (BFB).

1.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated percent relative standard deviation (%RSD) of the relative response factors (RRFs) or used curve fits.

The average RRFs for the system performance check standards (SPCCs) met the method specified acceptance criteria. The %RSDs of the calibration check compounds (CCCs) were within the method specified acceptance criteria.

The average RRFs and the %RSDs of the target analytes were within the method and validation specified acceptance criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations was less than 0.99. The average RRFs for target analytes met the method and validation specified acceptance criteria.

1.5 Initial and Continuing Calibration Verification (ICV and CCV)

The ICVs and CCVs were performed at the required frequency. The ICV and CCV RRFs met the method and validation criteria. The percent differences (%Ds) between the RRFs in the initial calibration and the CCVs were within the method and validation criteria, with the following exceptions.

The ICV standard in analytical batch 249571 on instrument HP7 had percent differences (%Ds) that were high and outside the method specified acceptance criteria of 20%D for 1,1,2-trichloroethane, chlorodibromomethane and bromoform; the %Ds were 21.7%, 24.5%D and 26.8%D, respectively, with high biases. Since 1,1,2-trichloroethane, chlorodibromomethane and bromoform were not detected in the associated samples, no qualifications were applied to the data.

1.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250088 and 250216). VOCs were not detected in the method blanks above the method detection limits (MDLs).

1.7 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported.

1.8 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCS duplicate (LCSD) pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.9 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses, with the following exceptions.

The recovery of 4-bromofluorobenzene was low and outside the laboratory specified acceptance criteria in sample DG-F1S-9.5-10. Since the other two surrogate recoveries in sample DG-F1S-9.5-10 were acceptable and based on professional and technical judgment, no qualifications were applied to the data.

1.10 Trip Blank

Trip blanks were not submitted with the sample set.

1.11 Field Duplicate

Field duplicate samples were not collected with the sample set.

1.12 Internal Standards

The internal standard areas and retention times were within method specified acceptance criteria, with the following exceptions.

The recovery of 1,4-dichlorobenzene-d4 in sample DG-J1S-3.5-4 (36%) and the recoveries of chlorobenzene-d5 (41%) and 1,4-dichlorobenzene-d4 (19%) in sample DG-F1S-9.5-10 were low, outside the method specified acceptance criteria. Therefore, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4 in sample DG-J1S-3.5-4 were UJ qualified as estimated less than the MDL; the nondetect results of the compounds associated with chlorobenzene-d5 in sample DG-F1S-9.5-10 were UJ qualified as estimated less than the MDL. Due to internal standard recovery less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4 in sample DG-F1S-9.5-10 were R qualified as rejected.

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier**	Reason Code***
DG-F1S-9.5-10	1,1,1,2-Tetrachloroethane	0.59	U*	0.59	UJ	11
DG-F1S-9.5-10	1,1,2,2-Tetrachloroethane	0.58	U*	0.58	R	11
DG-F1S-9.5-10	1,2,3-Trichlorobenzene	0.57	U*	0.57	R	11

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier**	Reason Code***
DG-F1S-9.5-10	1,2,3-Trichloropropane	0.59	U*	0.59	R	11
DG-F1S-9.5-10	1,2,4-Trichlorobenzene	0.55	U*	0.55	R	11
DG-F1S-9.5-10	1,2,4-Trimethylbenzene	1.3	U*	1.3	R	11
DG-F1S-9.5-10	1,2-Dibromo-3-Chloropropane	1.3	U*	1.3	R	11
DG-F1S-9.5-10	1,2-Dichlorobenzene	0.53	U*	0.53	R	11
DG-F1S-9.5-10	1,3,5-Trimethylbenzene	0.50	U*	0.50	R	11
DG-F1S-9.5-10	1,3-Dichlorobenzene	0.56	U*	0.56	R	11
DG-F1S-9.5-10	1,4-Dichlorobenzene	0.55	U*	0.55	R	11
DG-F1S-9.5-10	2-Chlorotoluene	0.50	U*	0.50	R	11
DG-F1S-9.5-10	4-Chlorotoluene	0.53	U*	0.53	R	11
DG-F1S-9.5-10	4-Isopropyltoluene	1.9	U*	1.9	R	11
DG-F1S-9.5-10	Bromobenzene	0.61	U*	0.61	R	11
DG-F1S-9.5-10	Bromoform	1.5	U*	1.5	UJ	11
DG-F1S-9.5-10	Chlorobenzene	0.53	U*	0.53	UJ	11
DG-F1S-9.5-10	Ethylbenzene	0.58	U*	0.58	UJ	11
DG-F1S-9.5-10	Hexachlorobutadiene	0.70	U*	0.70	R	11
DG-F1S-9.5-10	Isopropylbenzene	0.53	U*	0.53	UJ	11
DG-F1S-9.5-10	Naphthalene	1.2	U*	1.2	R	11
DG-F1S-9.5-10	n-Butylbenzene	0.77	U*	0.77	R	11
DG-F1S-9.5-10	N-Propylbenzene	0.51	U*	0.51	R	11
DG-F1S-9.5-10	sec-Butylbenzene	0.56	U*	0.56	R	11
DG-F1S-9.5-10	Styrene	0.49	U*	0.49	UJ	11
DG-F1S-9.5-10	tert-Butylbenzene	0.56	U*	0.56	R	11

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier**	Reason Code***
DG-F1S-9.5-10	Toluene	0.55	U*	0.55	UJ	11
DG-J1S-3.5-4	1,1,2,2-Tetrachloroethane	0.65	U*	0.65	UJ	11
DG-J1S-3.5-4	1,2,3-Trichlorobenzene	0.64	U*	0.64	UJ	11
DG-J1S-3.5-4	1,2,3-Trichloropropane	0.67	U*	0.67	UJ	11
DG-J1S-3.5-4	1,2,4-Trichlorobenzene	0.61	U*	0.61	UJ	11
DG-J1S-3.5-4	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-J1S-3.5-4	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	11
DG-J1S-3.5-4	1,2-Dichlorobenzene	0.59	U*	0.59	UJ	11
DG-J1S-3.5-4	1,3,5-Trimethylbenzene	0.56	U*	0.56	UJ	11
DG-J1S-3.5-4	1,3-Dichlorobenzene	0.62	U*	0.62	UJ	11
DG-J1S-3.5-4	1,4-Dichlorobenzene	0.61	U*	0.61	UJ	11
DG-J1S-3.5-4	2-Chlorotoluene	0.56	U*	0.56	UJ	11
DG-J1S-3.5-4	4-Chlorotoluene	0.59	U*	0.59	UJ	11
DG-J1S-3.5-4	4-Isopropyltoluene	2.2	U*	2.2	UJ	11
DG-J1S-3.5-4	Bromobenzene	0.68	U*	0.68	UJ	11
DG-J1S-3.5-4	Hexachlorobutadiene	0.78	U*	0.78	UJ	11
DG-J1S-3.5-4	Naphthalene	1.3	U*	1.3	UJ	11
DG-J1S-3.5-4	n-Butylbenzene	0.86	U*	0.86	UJ	11
DG-J1S-3.5-4	N-Propylbenzene	0.57	U*	0.57	UJ	11
DG-J1S-3.5-4	sec-Butylbenzene	0.62	U*	0.62	UJ	11
DG-J1S-3.5-4	tert-Butylbenzene	0.63	U*	0.63	UJ	11

µg/kg-microgram per kilogram
U-not detected at the stated MDL
*- laboratory flag indicating the internal standard response or retention time outside the acceptable limits
**-Validation qualifiers are defined in Attachment 1 at the end of this report

***-Reason codes are defined in Attachment 2 at the end of this report

1.13 Target Compound Identification

The target compound identifications were within the validation criteria.

1.14 Compound Quantitation

The compound quantitations were within the validation criteria.

1.15 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

1.16 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per EPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Instrument Performance
- ✓ Initial Calibration
- ✓ Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Internal Standard
- ✓ Target Compound Identification

- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for decafluorotriphenylphosphine (DFTPP).

2.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated %RSD of the RRFs or used curve fits.

The average RRFs for the SPCCs met the method specified acceptance criteria. The %RSDs of the CCCs were within the method specified acceptance criteria.

The average RRFs and the %RSDs of the target analytes were within the method and validation specified acceptance criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations was less than 0.99. The average RRFs for target analytes were above the method and validation specified acceptance criteria.

2.5 Initial and Continuing Calibration Verification

The ICVs and CCVs were performed at the required frequency. The ICV and CCV RRFs met the method and validation specified acceptance criteria.

The RRFs for the SPCCs met the method specified acceptance criteria. The %RSDs of the CCCs were within the method specified acceptance criteria. The %Ds between the RRFs in the ICVs and CCVs for the target analytes were within the method and validation specified acceptance criteria.

2.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method was reported (batch 249979). PAHs were not detected in the method blank above the MDLs.

2.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.9 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses, with the following exceptions.

No surrogate recoveries (0%) were reported for samples DG-J1S-0.5-1 and DG-F1S-3.5-4. Due to the dilutions analyzed (1:40 and 1:20, respectively) and professional and technical judgment, no qualifications were applied to the data.

2.10 Field Duplicate

Field duplicate samples were not collected.

2.11 Internal Standards

The internal standard areas and retention times were within method criteria.

2.12 Target Compound Identification

The target compound identifications were within the validation criteria.

2.13 Compound Quantitation

The compound quantitations were within the validation criteria.

2.14 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed.

2.15 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per EPA Methods 3540C/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Initial Calibration
- ✓ Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate

✓ Target Compound Identification
⊗ Compound Quantitation
✓ Sensitivity
✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the %RSDs of the calibration factors (CFs) or used curve fits. The %RSDs were within the method and validation criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations was less than 0.99.

3.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs in the CCVs were within the method and validation specified acceptance criteria.

The results from the analyses of the breakdown standards containing 4,4'-DDT and endrin were within the method specified acceptance criteria.

3.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 25005). The organochlorine pesticides were not detected in the method blank above the MDLs.

3.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-F1S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the recoveries of 4,4'-DDD, endosulfan II, endosulfan sulfate, endrin aldehyde, endrin ketone and, methoxychlor were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-F1S-0.5-1, no qualifications were applied to the data.

3.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of decachlorobiphenyl were high and outside the laboratory specified acceptance criteria in samples DG-J1S-0.5-1, DG-J1S-3.5-4 and DG-F1S-0.5-1. Since the other surrogate, tetrachloro-m-xylene, had acceptable recoveries, no qualifications were applied to the data based on professional and technical judgment.

3.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

3.10 Target Compound Identification

The target compound identifications were within the validation criteria.

3.11 Compound Quantitation

The compound quantitations were within the validation criteria, with the following exception.

The estimated concentration of cis-chlordane in sample DG-L1S-0.5-1 was flagged by the laboratory with p, to indicate the %RPD between the primary and confirmation gas chromatography (GC) column was >40%; the lower concentration was reported. Therefore, based on professional and technical judgment, the estimated concentration of cis-chlordane in sample DG-L1S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier	Reason Code
DG-L1S-0.5-1	cis-Chlordane	0.57	J p	0.57	J	13

µg/kg-microgram per kilogram
J- the result is less than the reporting limit (RL) but greater than or equal to the MDL and the concentration is an approximate value
p- laboratory flag indicating the %RPD between the primary and confirmation GC column was >40%; the lower concentration was reported

3.12 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were reported due to the dilutions analyzed.

3.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per EPA Methods 3546/8082.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Initial Calibration
- ✓ Continuing Calibration Verification
- ✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of a solid sample are one year from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the %RSDs of the RRFs; the %RSDs were within the method and validation criteria.

4.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs in the CCVs were within the method and validation specified acceptance criteria.

4.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 342387). PCBs were not detected in the method blank above the MDLs.

4.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-F1S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

4.10 Target Compound Identification

The target compound identifications were within the validation criteria.

4.11 Compound Quantitation

The compound quantitations were within the validation criteria.

4.12 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were reported due to the dilutions analyzed.

4.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per EPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Initial Calibration
- ✓ Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Initial Calibration

Appropriate initial calibrations were performed. The laboratory calculated the %RSD of the CFs; the %RSD was within the method criteria.

5.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs were within the method specified acceptance criteria.

5.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 249949 and 249957). DRO was not detected in the method blanks above the MDL, with the following exception.

DRO was detected in the method blank in batch 249949 at an estimated concentration greater than the MDL and less than the RL. Since the DRO concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

5.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-F1S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

One batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

5.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There was no surrogate recovery (0%) in sample DG-J1S-0.5-1. Due to the dilution analyzed (1:5) and professional and technical judgment, no qualifications were applied to the data.

5.9 Field Duplicate

A field duplicate sample was not collected with the sample set.

5.10 Target Compound Identification

The target compound identifications were within the validation criteria.

5.11 Compound Quantitation

The compound quantitations were within the validation criteria.

5.12 Sensitivity

The samples were reported to the MDL. No elevated nondetect results were reported.

5.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

6.0 METALS

The samples were analyzed for metals per EPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Initial Calibration
✓ Initial and Continuing Calibration Verification
✓ Initial and Continuing Calibration Blank
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilution
✓ Field Duplicate
✓ Target Compound Quantitation
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Initial Calibration

The initial calibration requirements were met.

The interference check standards (ICSA and ICSAB) met the method specified acceptance criteria.

6.4 Initial and Continuing Calibration Verifications

The percent recoveries in the ICVs and CCVs were within the method specified acceptance limits.

6.5 Initial and Continuing Calibration Blanks (ICB and CCB)

The ICBs and CCBs met the method specified acceptance criteria.

6.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 249951 and 249965). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Barium and chromium were detected in the method blank in batch 249965 at estimated concentrations greater than the MDLs and less than the RLs. Since the concentrations of barium, chromium and arsenic in the associated samples were greater than the RLs, no qualifications were applied to the data.

6.7 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs and two post digestion spikes (PDSs) were reported, using samples DG-K1S-0.5-1 and DG-G1S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the recoveries of arsenic, barium, beryllium, chromium, cobalt, copper, lead, nickel, vanadium and zinc were high and outside the laboratory specified acceptance criteria in the MS/MSD pair using sample DG-K1S-0.5-1; the RPD for barium was also high and outside the laboratory specified acceptance criteria. The PDS arsenic, barium, beryllium, chromium, copper, lead, vanadium and zinc recoveries using sample DG-K1S-0.5-1 were high and outside the laboratory specified acceptance criteria. Since the concentrations of arsenic, lead and zinc in sample DG-K1S-0.5-1 were greater than four times the MS/MSD spike concentrations, no qualifications were applied to the arsenic, lead and zinc data. However, the concentration of barium, chromium, copper and vanadium in sample DG-K1S-0.5-1 were J qualified as estimated, the estimated concentration of beryllium was J qualified as estimated and the concentrations of cobalt and nickel in sample DG-K1S-0.5-1 were J+ qualified as estimated with high biases. In addition, the recovery of antimony was low, outside the laboratory specified acceptance criteria. Therefore, the concentration of antimony in sample DG-K1S-0.5-1 was J- qualified as estimated with a low bias.

One or both of the recoveries of barium, beryllium, chromium, copper and vanadium were high and outside the laboratory specified acceptance criteria in the MS/MSD pair using sample DG-G1S-0.5-1. The PDS barium and copper recoveries using sample DG- G1S-0.5-1 were high and outside the laboratory specified acceptance criteria. Since beryllium was not detected in sample, no qualifications were applied to the beryllium data. However, the concentrations of barium and copper in sample DG-G1S-0.5-1 were J+ qualified as estimated with high biases and the concentrations of chromium and vanadium were J qualified as estimated. In addition, the recoveries of antimony and lead were low, outside the laboratory specified acceptance criteria. Since the concentration of lead in sample DG-G1S-0.5-1 was greater than four times the spike concentration, no qualifications were applied to the data. However, the concentration of antimony in sample DG-G1S-0.5-1 was J qualified as estimated with a low bias.

Sample ID	Analyte	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier	Reason Code
DG-G1S-0.5-1	Antimony	3200	F1	3200	J	4
DG-G1S-0.5-1	Barium	120000	F1 B	120000	J+	4
DG-G1S-0.5-1	Chromium	19000	F1 B	19000	J+	4
DG-G1S-0.5-1	Copper	110000	F1	110000	J+	4
DG-G1S-0.5-1	Vanadium	52000	F1	52000	J+	4
DG-K1S-0.5-1	Antimony	1600	F1	1600	J-	4
DG-K1S-0.5-1	Barium	130000	F1 F2	130000	J+	4
DG-K1S-0.5-1	Beryllium	150	J F1	150	J	4
DG-K1S-0.5-1	Chromium	25000	F1	25000	J+	4
DG-K1S-0.5-1	Cobalt	9300	F1	9300	J	4
DG-K1S-0.5-1	Copper	71000	F1	71000	J+	4
DG-K1S-0.5-1	Nickel	26000	F1	26000	J	4
DG-K1S-0.5-1	Vanadium	40000	F1	40000	J+	4

µg/kg-microgram per kilogram
J-estimated concentration greater than the MDL and less than the RL
B- laboratory flag indicating the compound was found in the blank and sample
F1- laboratory flag indicating the MS and/or MSD was outside acceptance criteria
F2- laboratory flag indicating the MS/MSD RPD exceeds control limits

6.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.9 Serial Dilution

Two serial dilutions were reported, using samples DG-K1S-0.5-1 and DG-G1S-0.5-1. The %D results were within the method specified acceptance criteria, with the following exceptions.

The %Ds for arsenic, barium, chromium, cobalt, lead, nickel, vanadium and zinc were high and outside the method specified acceptance criteria in the serial dilution using sample DG-G1S-0.5-1. Therefore, the concentrations of these metals in sample DG-G1S-0.5-1 were J qualified as estimated.

Sample ID	Analyte	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier	Reason Code
DG-G1S-0.5-1	Arsenic	270000	NA	270000	J	8
DG-G1S-0.5-1	Barium	120000	F1 B	120000	J	8
DG-G1S-0.5-1	Chromium	19000	F1 B	19000	J	8
DG-G1S-0.5-1	Cobalt	8000	NA	8000	J	8
DG-G1S-0.5-1	Lead	250000	NA	250000	J	8
DG-G1S-0.5-1	Nickel	16000	NA	16000	J	8
DG-G1S-0.5-1	Vanadium	52000	F1	52000	J	8
DG-G1S-0.5-1	Zinc	150000	NA	150000	J	8

µg/kg-microgram per kilogram
NA-not applicable
B- laboratory flag indicating the compound was found in the blank and sample
F1- laboratory flag indicating the MS and/or MSD was outside acceptance criteria

6.10 Field Duplicate

A field duplicate sample was not collected with the sample set.

6.11 Target Compound Quantitation

The compound quantitations were within the validation criteria.

6.12 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed.

6.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per EPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Initial Calibration
✓ Initial and Continuing Calibration Verifications
✓ Initial and Continuing Calibration Blanks
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Field Duplicate
✓ Target Compound Quantitation
✓ Sensitivity
⊗ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Initial Calibration

Appropriate initial calibrations were performed for mercury. Based on the method of calibration, the laboratory used a linear curve fit. The coefficient of determination (r^2) was greater than or equal to 0.990.

7.4 Initial and Continuing Calibration Verifications

The percent recoveries in the associated ICVs and CCVs were within the method specified acceptance criteria.

7.5 Initial and Continuing Calibration Blanks

The ICBs and CCBs met the method specified acceptance criteria.

7.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 249955, 249973 and 250192). Mercury was not detected in the method blanks above the MDL.

7.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-K1S-0.5-1 and DG-F1S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exception.

The MSD recovery was high, outside the laboratory specified acceptance criteria in the MS/MSD using sample DG-K1S-0.5-1. Since the concentrations of mercury in sample DG-K1S-0.5-1 was greater than four times the spike concentration, no qualifications were applied to the data.

A batch MS/MSD was also reported. Since this is batch QC, the results did not impact the data and did not result in qualification of the data.

7.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.9 Field Duplicate

A field duplicate sample was not collected with the sample set.

7.10 Target Compound Quantitation

The compound quantitations were within the validation criteria.

7.11 Sensitivity

The samples were reported to the MDL. No elevated nondetect results were reported.

7.12 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗□ □□□□□Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however,

the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher that the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower that the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	9 November 2018
To:	Krzysztof Jesionek
From:	Mary Tyler
	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 4 Data Validation - Level IV Data Deliverable, TestAmerica Work Order Number 720-88163-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 4 data validation of thirteen solid samples, collected August 20, 2018, as part of the UPC OU-SM sampling event. The following analyses were performed at TestAmerica (TA) Laboratories, Inc., Pleasanton, California (TA-PLS), with the exception of the polychlorinated biphenyls (PCBs) analyses, which were performed at TA North Canton, Ohio (TA-NC) and the asbestos analyses, by Asbestos TEM Laboratories, Inc., Berkeley, California:

- Volatile Organic Compounds (VOCs) by EPA Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by EPA Methods 3546/8081A
- PCBs by EPA Methods 3540C/8082
- Diesel Range Organics (DRO) by EPA Methods 3546/8015B
- Metals by EPA Methods 3050B/6010B
- Mercury by EPA Method 7471A
- Asbestos by California Air Resources Board (ARB) Method 435

EXECUTIVE SUMMARY

Overall, based on this Stage 4 data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 4 level in the data set:

Laboratory ID	Client ID
720-88163-1	DG-D1S-0.5-1
720-88163-2	DG-D1S-3.5-4
720-88163-3	DG-D1S-9.5-10
720-88163-4	DG-D2S-0.5-1
720-88163-5	DG-D2S-3.5-4
720-88163-6	DG-E2S-0.5-1
720-88163-7	DG-E2S-3.5-4

Laboratory ID	Client ID
720-88163-8	DG-F2S-0.5-1
720-88163-9	DG-F2S-3.5-4
720-88163-10	DG-G2S-0.5-1
720-88163-11	DG-G2S-3.5-4
720-88163-12	DG-H2S-0.5-1
720-88163-13	DG-H2S-3.5-4

The samples were received at the laboratory at 1.7°C, 2.9°C, 3.1°C and 3.4°C, within the QAPP criteria of <6°C. No sample preservation issues were noted by the laboratory.

The following issues were noted:

- Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections
- There was no year listed in the first relinquishing documentation on the COC.
- The narrative indicated that the ID on the container label for sample DG-D2-3.5-4 did not match the ID listed on the COC. The client was contacted and confirmed the ID was DG-D2S-3.5-4.
- The sample IDs in the laboratory report were different from the sample IDs on the COC. The sample IDs in the laboratory report contained the letter S, e.g., the ID on the COC was DG-D1 (0.5-1) and the ID in the laboratory report was DG-D1S (0.5-1). The client sent additional information to the laboratory (not included in the laboratory report) requesting changes to the IDs.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per EPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Instrument Performance Check
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Trip Blank
- ✓ Internal Standard
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for bromofluorobenzene (BFB).

1.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated percent relative standard deviation (%RSD) of the relative response factors (RRFs) or used curve fits.

The average RRFs for the system performance check standards (SPCCs) met the method specified acceptance criteria. The %RSDs of the calibration check compounds (CCCs) were within the method specified acceptance criteria.

The average RRFs and the %RSDs of the target analytes were within the method and validation specified acceptance criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations were less than 0.99. The average RRFs for target analytes met the method and validation specified acceptance criteria.

1.5 Initial and Continuing Calibration Verification (ICV and CCV)

The ICVs and CCVs were performed at the required frequency. The ICV and CCV RRFs met the method and validation criteria. The percent differences (%Ds) between the RRFs in the initial calibration and the CCVs were within the method and validation criteria, with the following exceptions.

The ICV standard in analytical batch 249571 on instrument HP7 had %Ds that were high and outside the method specified acceptance criteria of 20%D for 1,1,2-trichloroethane, chlorodibromomethane and bromoform; the %Ds were 21.7%, 24.5%D and 26.8%D, respectively, with high biases. Since 1,1,2-trichloroethane, chlorodibromomethane and bromoform were not detected in the associated samples, no qualifications were applied to the data.

1.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250216). VOCs were not detected in the method blank above the method detection limits (MDLs).

1.7 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported.

1.8 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.9 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.10 Trip Blank

Trip blanks were not submitted with the sample set.

1.11 Field Duplicate

Field duplicate samples were not collected with the sample set.

1.12 Internal Standards

The internal standard areas and retention times were within method specified acceptance criteria.

1.13 Target Compound Identification

The target compound identifications were within the validation criteria.

1.14 Compound Quantitation

The compound quantitations were within the validation criteria.

1.15 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

1.16 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per EPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Instrument Performance Check
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Internal Standard
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for decafluorotriphenylphosphine (DFTPP).

2.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated %RSD of the RRFs or used curve fits.

The average RRFs for the SPCCs met the method specified acceptance criteria. The %RSDs of the CCCs were within the method specified acceptance criteria.

The average RRFs and the %RSDs of the target analytes were within the method and validation specified acceptance criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations were less than 0.99. The average RRFs for target analytes were above the method and validation specified acceptance criteria.

2.5 Initial and Continuing Calibration Verification

The ICVs and CCVs were performed at the required frequency. The ICV and CCV RRFs met the method and validation specified acceptance criteria.

The RRFs for the SPCCs met the method specified acceptance criteria. The %RSDs of the CCCs were within the method specified acceptance criteria. The %Ds between the RRFs in the ICVs and CCVs for the target analytes were within the method and validation specified acceptance criteria.

2.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249979). PAHs were not detected in the method blank above the MDLs.

2.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.9 Surrogate

Acceptable surrogate recoveries were reported.

2.10 Field Duplicate

Field duplicate samples were not collected.

2.11 Internal Standards

The internal standard areas and retention times were within method criteria.

2.12 Target Compound Identification

The target compound identifications were within the validation criteria.

2.13 Compound Quantitation

The compound quantitations were within the validation criteria.

2.14 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

2.15 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per EPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the %RSDs of the calibration factors (CFs) or used curve fits. The %RSDs were within the method and validation criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations were less than 0.99.

3.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs in the CCVs were within the method and validation specified acceptance criteria, with the following exception.

The ICV %D for toxaphene on gas chromatography (GC) column ZB-MR-1 in batch 249932 was high and outside the method specified acceptance criteria, with a high bias. Since toxaphene was not detected in the associated samples, no qualifications were applied to the data.

The results from the analyses of the breakdown standards containing 4,4'-DDT and endrin were within the method specified acceptance criteria.

3.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250005). The organochlorine pesticides were not detected in the method blank above the MDLs.

3.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

3.10 Target Compound Identification

The target compound identifications were within the validation criteria.

3.11 Compound Quantitation

The compound quantitations were within the validation criteria.

3.12 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

3.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per EPA Methods 3540C/8082.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio

of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of a solid sample are 1 year from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the %RSDs of the RRFs. The %RSDs were within the method and validation criteria.

4.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs in the CCVs were within the method and validation specified acceptance criteria, with the following exceptions.

The ICV %D for PCB 1221 on GC column CLP-1 was high and outside the method specified acceptance criteria, with a high bias. Since PCB 1221 was not detected in the associated samples, no qualifications were applied to the data.

4.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 342371). PCBs were not detected in the method blank above the MDLs.

4.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

4.10 Target Compound Identification

The target compound identifications were within the validation criteria.

4.11 Compound Quantitation

The compound quantitations were within the validation criteria.

4.12 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

4.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per EPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate

- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Initial Calibration

Appropriate initial calibrations were performed. The laboratory calculated the %RSD of the CFs. The %RSD was within the method and validation criteria.

5.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs were within the method specified acceptance criteria.

5.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249957). DRO was not detected in the method blank above the MDL.

5.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There was no surrogate recovery (0%) in sample DG-D1S-0.5-1. Due to the dilution analyzed (1:10) and professional and technical judgment, no qualifications were applied to the data.

5.9 Field Duplicate

A field duplicate sample was not collected with the sample set.

5.10 Target Compound Identification

The target compound identifications were within the validation criteria.

5.11 Compound Quantitation

The compound quantitations were within the validation criteria.

5.12 Sensitivity

The samples were reported to the MDL. No elevated nondetect results were reported.

5.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

6.0 METALS

The samples were analyzed for metals per EPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Initial Calibration
✓ Initial and Continuing Calibration Verifications
✓ Initial and Continuing Calibration Blanks
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Serial Dilution
✓ Field Duplicate
✓ Target Compound Quantitation
⊗ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Initial Calibration

The initial calibration requirements were met.

The interference check standards (ICSA and ICSAB) met the method specified acceptance criteria.

6.4 Initial and Continuing Calibration Verifications

The percent recoveries in the ICVs and CCVs were within the method specified acceptance limits.

6.5 Initial and Continuing Calibration Blanks (ICB and CCB)

The ICBs and CCBs met the method specified acceptance criteria.

6.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (One per batch of 20 samples). Three method blanks were reported (batches 249990, 250071 and 249965). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Barium and chromium were detected in the method blank in batch 249965 at estimated concentrations greater than the MDLs and less than the RLs. Since the barium and chromium concentrations in the associated samples were greater than the RLs, no qualifications were applied to the data.

Antimony was detected in the method blank in batch 250071 at an estimated concentration greater than the MDL and less than the RL. Therefore, the estimated antimony concentrations in the associated sample was U qualified as not detected at the RL.

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier*	Reason Code**
DG-H2S-0.5-1	Antimony	1300	J B	1600	U	3

µg/kg-microgram per kilogram
U-not detected at the stated MDL
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

6.7 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.9 Serial Dilution

Three batch serial dilutions were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data %D results were within the method specified acceptance criteria.

6.10 Field Duplicate

A field duplicate sample was not collected with the sample set.

6.11 Target Compound Quantitation

The compound quantitations were within the validation criteria.

6.12 Sensitivity

Samples were reported to the MDLs. Elevated nondetect results were reported due to the dilutions analyzed.

6.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per EPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment

- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verifications
- ✓ Initial and Continuing Calibration Blanks
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Target Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Initial Calibration

Appropriate initial calibrations were performed for mercury. Based on the method of calibration, the laboratory used a linear curve fit. The coefficient of determination (r^2) was greater than or equal to 0.990.

7.4 Initial and Continuing Calibration Verifications

The percent recoveries in the associated ICVs and CCVs were within the method specified acceptance criteria.

7.5 Initial and Continuing Calibration Blanks

The ICBs and CCBs met the method specified acceptance criteria.

7.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 249973 and 250050). Mercury was not detected in the method blanks above the MDL.

7.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.9 Field Duplicate

A field duplicate sample was not collected with the sample set.

7.10 Target Compound Quantitation

The compound quantitations were within the validation criteria.

7.11 Sensitivity

The sample was reported to the MDL. No elevated nondetect results were reported.

7.12 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

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

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher that the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower that the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	9 November 2018
To:	Krzysztof Jesionek
From:	Mary Tyler
	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 4 Data Validation - Level IV Data Deliverable, TestAmerica Work Order Number 720-88164-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 4 data validation of fourteen solid samples, collected August 21, 2018, as part of the UPC OU-SM sampling event. The following analyses were performed at TestAmerica (TA) Laboratories, Inc., Pleasanton, California (TA-PLS), with the exception of the polychlorinated biphenyls (PCBs) analyses, which were performed at TA North Canton, Ohio (TA-NC) and the asbestos analyses, by Asbestos TEM Laboratories, Inc., Berkeley, California:

- Volatile Organic Compounds (VOCs) by EPA Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by EPA Methods 3546/8081A
- PCBs by EPA Methods 3540C/8082
- Diesel Range Organics (DRO) by EPA Methods 3546/8015B
- Metals by EPA Methods 3050B/6010B
- Mercury by EPA Method 7471A
- Asbestos by California Air Resources Board (ARB) Method 435

EXECUTIVE SUMMARY

Overall, based on this Stage 4 data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to internal standard recoveries less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4, chlorobenzene-d5, and fluorobenzene in sample DG-C3S-0.5-1 were R qualified as rejected. Due to internal standard recovery less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4 in sample DG-C3S-3.5-4 were R qualified as rejected

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 4 level in the data set:

Laboratory ID	Client ID
720-88164-1	DG-B1S-0.5-1
720-88164-2	DG-B1S-3.5-4
720-88164-3	DG-C1S-0.5-1
720-88164-4	DG-C1S-3.5-4
720-88164-5	DG-A1S-0.5-1
720-88164-6	DG-A1S-3.5-4
720-88164-7	DG-A3S-0.5-1

Laboratory ID	Client ID
720-88164-8	DG-A3S-3.5-4
720-88164-9	DG-A3S-9.5-10
720-88164-10	DG-B3S-0.5-1
720-88164-11	DG-B3S-3.5-4
720-88164-12	DG-C3S-0.5-1
720-88164-13	DG-C3S-3.5-4
720-88164-14	DG-C3S-9.5-10

The samples were received at the laboratory at 1.7°C, 2.9°C, 3.1°C and 3.4°C, within the criteria of $\leq$6°C. No sample preservation issues were noted by the laboratory.

The following issues were noted*:*

- Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections

- The VOC aliquots of samples DG-A3S-0.5-1, DG-A3S-3.5-4, DG-A3S-9.5-10, DGC3S-0.5-1, DG-C3S-3.5-4, and DG-C3S-9.5-10 were received in pre-weighed containers with labels that were added in the field and therefore, not included in the containers' tare weight. The report narrative indicated that the label weight was approximately 0.15 grams (gr). No qualifications were applied to the data, based on professional and technical judgement.

- The label on one of the two VOC vials for sample DG-A3S-0.5-1 did not match the information listed on the COC; the label read DG-A3S-3.5-4 and the COC listed DG-A3S-0.5-1. The VOC vial labeled as DG-A3S-3.5-4 was not used for analysis.

- The collection time on the container for sample DG-B3S-0.5-1 was documented as 11:43, while the COC listed 11:45. The client confirmed the collection time as 11:45.

- The year was not included in the collection dates documented on the COC sent from the field to TA Pleasanton.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per EPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Instrument Performance Check
✓ Initial Calibration
✓ Initial and Continuing Calibration Verification
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogate
✓ Field Duplicate
⊗ Internal Standards
✓ Target Compound Identification
✓ Compound Quantitation
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives, with the following exceptions. Due to internal standard recoveries less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4, chlorobenzene-d5 and fluorobenzene in sample DG-C3S-0.5-1 and the nondetect results of the compounds associated

with 1,4-dichlorobenzene-d4 in sample DG-C3S-3.5-4 were R qualified as rejected. Therefore, the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 84.5%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for bromofluorobenzene (BFB).

1.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated percent relative standard deviation (%RSD) of the relative response factors (RRFs) or used curve fits.

The average RRFs for the system performance check standards (SPCCs) met the method specified acceptance criteria. The %RSDs of the calibration check compounds (CCCs) were within the method specified acceptance criteria.

The average RRFs and the %RSDs of the target analytes were within the method (15%) and validation specified acceptance criteria or the coefficients of determination (r^2) were greater than or equal to 0.990 for the curve fit calibrations. The average RRFs for target analytes met the method and validation specified acceptance criteria, with the following exception.

1.5 Initial and Continuing Calibration Verification (ICV and CCV)

The ICVs and CCVs were performed at the required frequency. The CCV RRFs met the method and validation criteria. The percent differences (%Ds) between the RRFs in the initial calibration and the ICVs and CCVs were within the method and validation criteria, with the following exception.

The ICV standard in analytical batch 250213 had a %D that was high and outside the method specified acceptance criteria (20%D) for carbon disulfide; the %D was 28%, with a high bias. Since carbon disulfide was not detected in the associated samples, no qualifications were applied to the data.

1.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four method blanks were reported (batches 250267, 250350, 250352, and 250407). VOCs were not detected in the method blanks above the method detection limits (MDLs).

1.7 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported.

1.8 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four LCS/LCS duplicate (LCSD) pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria with the following exceptions*:*

The recoveries of vinyl chloride in the LCS/LCSD pair in batch 250352 were high and outside the laboratory specified acceptance criteria. Since vinyl chloride was not detected in the associated samples, no qualifications were applied to the data.

The recoveries of 1,1-dichloroethane and carbon disulfide in the LCS/LCSD pair in batch 250407 were high and outside the laboratory specified acceptance criteria. Since 1,1-dichloroethane and carbon disulfide were not detected in the associated samples, no qualifications were applied to the data.

1.9 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses, with the following exceptions.

The recovery of 4-bromofluorobenzene was low and the recovery of 1,2-dichloroethane-d4 was high, both outside the laboratory specified acceptance criteria in sample DG-C3S-0.5-1. Based on professional and technical judgment, no additional qualifications were applied to the data in

sample DG-C3S-0.5-1, since the nondetect results were rejected and the concentrations were qualified as estimated due to the internal standard recoveries.

1.10 Trip Blank

Trip blanks were not submitted with the sample set.

1.11 Field Duplicate

Field duplicate samples were not collected with the sample set.

1.12 Internal Standards

The internal standard areas and retention times were within method specified acceptance criteria, with the following exception.

The recoveries of 1,4-dichlorobenzene-d4 (2.3%), fluorobenzene (11%), and chlorobenzene-d5 (19.6%) in sample DG-C3S-0.5-1 were low and outside the method specified acceptance criteria. Due to internal standard recovery less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4, fluorobenzene, and chlorobenzene-d5 in sample DG-C3S-0.5-1 were R qualified as rejected, the estimated concentrations were J qualified as estimated and the concentrations greater than the reporting limits (RLs) were J+ qualified as estimated with high bias.

The recoveries of chlorobenzene-d5 (43%), fluorobenzene (24%) and 1,4-dichlorobenzene-d4 (9.5%) in sample DG-C3S-3.5-4 were low, outside the method specified acceptance criteria in sample DG-C3S-3.5-4. Therefore, the nondetect results of the compounds associated with fluorobenzene and chlorobenzene-d5 in sample DG-C3S-3.5-4 were UJ qualified estimated less than the MDLs. Due to internal standard recoveries less than 20%, the nondetect results of the compounds associated with 1,4-dichlorobenzene-d4 in sample DG-C3S-3.5-4 were R qualified as rejected, the estimated concentrations were J qualified as estimated.

The recoveries of chlorobenzene-d5 (48%) and 1,4-dichlorobenzene-d4 (35%) in sample DG-C3S-9.5-10 were low, outside the method specified acceptance criteria. No qualifications were applied to the data, since the associated compounds were reported from a reanalysis with internal standards responses within the method specified acceptance criteria.

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier**	Reason Code***
DG-C3S-0.5-1	1,1,1,2-Tetrachloroethane	0.81	U*	0.81	R	11
DG-C3S-0.5-1	1,1,1-Trichloroethane	0.65	U*	0.65	R	11
DG-C3S-0.5-1	1,1,2,2-Tetrachloroethane	0.80	U*	0.80	R	11
DG-C3S-0.5-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.2	U*	2.2	R	11
DG-C3S-0.5-1	1,1,2-Trichloroethane	0.74	U*	0.74	R	11
DG-C3S-0.5-1	1,1-Dichloroethane	0.72	U*	0.72	R	11
DG-C3S-0.5-1	1,1-Dichloroethene	0.66	U*	0.66	R	11
DG-C3S-0.5-1	1,1-Dichloropropene	0.73	U*	0.73	R	11
DG-C3S-0.5-1	1,2,3-Trichlorobenzene	0.79	U*	0.79	R	11
DG-C3S-0.5-1	1,2,3-Trichloropropane	0.82	U*	0.82	R	11
DG-C3S-0.5-1	1,2,4-Trichlorobenzene	0.75	U*	0.75	R	11
DG-C3S-0.5-1	1,2,4-Trimethylbenzene	1.7	U*	1.7	R	11
DG-C3S-0.5-1	1,2-Dibromo-3-Chloropropane	1.8	U*	1.8	R	11
DG-C3S-0.5-1	1,2-Dichlorobenzene	0.72	U*	0.72	R	11
DG-C3S-0.5-1	1,2-Dichloroethane	0.81	U*	0.81	R	11
DG-C3S-0.5-1	1,2-Dichloropropane	0.67	U*	0.67	R	11
DG-C3S-0.5-1	1,3,5-Trimethylbenzene	0.69	U*	0.69	R	11
DG-C3S-0.5-1	1,3-Dichlorobenzene	0.77	U*	0.77	R	11
DG-C3S-0.5-1	1,3-Dichloropropane	0.78	U*	0.78	R	11
DG-C3S-0.5-1	1,4-Dichlorobenzene	0.75	U*	0.75	R	11
DG-C3S-0.5-1	2,2-Dichloropropane	2.1	U*	2.1	R	11
DG-C3S-0.5-1	2-Butanone (MEK)	22	U*	22	R	11
DG-C3S-0.5-1	2-Chlorotoluene	0.69	U*	0.69	R	11
DG-C3S-0.5-1	2-Hexanone	11	U*	11	R	11
DG-C3S-0.5-1	4-Chlorotoluene	0.72	U*	0.72	R	11
DG-C3S-0.5-1	4-Isopropyltoluene	2.7	U*	2.7	R	11
DG-C3S-0.5-1	4-Methyl-2-pentanone (MIBK)	11	U*	11	R	11
DG-C3S-0.5-1	Acetone	76	U*	76	J+	11
DG-C3S-0.5-1	Benzene	0.86	J *	0.86	J	11
DG-C3S-0.5-1	Bromobenzene	0.84	U*	0.84	R	11
DG-C3S-0.5-1	Bromoform	2.1	U*	2.1	R	11
DG-C3S-0.5-1	Bromomethane	0.84	U*	0.84	R	11

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier**	Reason Code***
DG-C3S-0.5-1	Carbon disulfide	2.1	U*	2.1	R	11
DG-C3S-0.5-1	Carbon tetrachloride	0.66	U*	0.66	R	11
DG-C3S-0.5-1	Chlorobenzene	0.73	U*	0.73	R	11
DG-C3S-0.5-1	Chlorobromomethane	0.77	U*	0.77	R	11
DG-C3S-0.5-1	Chlorodibromomethane	0.75	U*	0.75	R	11
DG-C3S-0.5-1	Chloroethane	0.60	U*	0.60	R	11
DG-C3S-0.5-1	Chloroform	0.70	U*	0.70	R	11
DG-C3S-0.5-1	Chloromethane	0.84	U*	0.84	R	11
DG-C3S-0.5-1	cis-1,2-Dichloroethene	0.72	U*	0.72	R	11
DG-C3S-0.5-1	cis-1,3-Dichloropropene	0.73	U*	0.73	R	11
DG-C3S-0.5-1	Dibromomethane	0.91	U*	0.91	R	11
DG-C3S-0.5-1	Dichlorobromomethane	0.77	U*	0.77	R	11
DG-C3S-0.5-1	Dichlorodifluoromethane	0.84	U*	0.84	R	11
DG-C3S-0.5-1	Ethylbenzene	0.8	U*	0.8	R	11
DG-C3S-0.5-1	Ethylene Dibromide	1.5	U*	1.5	R	11
DG-C3S-0.5-1	Gasoline Range Organics (GRO)-C4-C12	110	U*	110	R	11
DG-C3S-0.5-1	Hexachlorobutadiene	0.96	U*	0.96	R	11
DG-C3S-0.5-1	Isopropylbenzene	0.72	U*	0.72	R	11
DG-C3S-0.5-1	Methyl tert-butyl ether	1.3	U*	1.3	R	11
DG-C3S-0.5-1	Methylene Chloride	6	U*	6	R	11
DG-C3S-0.5-1	Naphthalene	1.6	U*	1.6	R	11
DG-C3S-0.5-1	n-Butylbenzene	1.1	U*	1.1	R	11
DG-C3S-0.5-1	N-Propylbenzene	0.70	U*	0.70	R	11
DG-C3S-0.5-1	sec-Butylbenzene	0.77	U*	0.77	R	11
DG-C3S-0.5-1	Styrene	0.67	U*	0.67	R	11
DG-C3S-0.5-1	tert-Butylbenzene	0.78	U*	0.78	R	11
DG-C3S-0.5-1	Tetrachloroethene	0.71	U*	0.71	R	11
DG-C3S-0.5-1	Toluene	1.7	J *	1.7	J	11
DG-C3S-0.5-1	trans-1,2-Dichloroethene	0.80	U*	0.80	R	11
DG-C3S-0.5-1	trans-1,3-Dichloropropene	0.71	U*	0.71	R	11
DG-C3S-0.5-1	Trichloroethene	18	*	18	J+	11
DG-C3S-0.5-1	Trichlorofluoromethane	0.60	U*	0.60	R	11
DG-C3S-0.5-1	Vinyl acetate	5.3	U*	5.3	R	11
DG-C3S-0.5-1	Vinyl chloride	0.78	U*	0.78	R	11
DG-C3S-0.5-1	Xylenes, Total	1.3	U*	1.3	R	11

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier**	Reason Code***
DG-C3S-3.5-4	1,1,1,2-Tetrachloroethane	0.83	U*	0.83	UJ	11
DG-C3S-3.5-4	1,1,1-Trichloroethane	0.66	U*	0.66	UJ	11
DG-C3S-3.5-4	1,1,2,2-Tetrachloroethane	0.82	U*	0.82	R	11
DG-C3S-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	2.3	U*	2.3	UJ	11
DG-C3S-3.5-4	1,1,2-Trichloroethane	0.76	U*	0.76	UJ	11
DG-C3S-3.5-4	1,1-Dichloroethane	0.74	U*	0.74	UJ	11
DG-C3S-3.5-4	1,1-Dichloroethene	0.67	U*	0.67	UJ	11
DG-C3S-3.5-4	1,1-Dichloropropene	0.75	U*	0.75	UJ	11
DG-C3S-3.5-4	1,2,3-Trichlorobenzene	0.80	U*	0.80	R	11
DG-C3S-3.5-4	1,2,3-Trichloropropane	0.84	U*	0.84	R	11
DG-C3S-3.5-4	1,2,4-Trichlorobenzene	0.77	U*	0.77	R	11
DG-C3S-3.5-4	1,2,4-Trimethylbenzene	1.8	U*	1.8	R	11
DG-C3S-3.5-4	1,2-Dibromo-3-Chloropropane	1.8	U*	1.8	R	11
DG-C3S-3.5-4	1,2-Dichlorobenzene	0.74	U*	0.74	R	11
DG-C3S-3.5-4	1,2-Dichloroethane	0.83	U*	0.83	UJ	11
DG-C3S-3.5-4	1,2-Dichloropropane	0.68	U*	0.68	UJ	11
DG-C3S-3.5-4	1,3,5-Trimethylbenzene	0.71	U*	0.71	R	11
DG-C3S-3.5-4	1,3-Dichlorobenzene	0.78	U*	0.78	R	11
DG-C3S-3.5-4	1,3-Dichloropropane	0.79	U*	0.79	UJ	11
DG-C3S-3.5-4	1,4-Dichlorobenzene	0.77	U*	0.77	R	11
DG-C3S-3.5-4	2,2-Dichloropropane	2.2	U*	2.2	UJ	11
DG-C3S-3.5-4	2-Butanone (MEK)	23	U*	23	UJ	11
DG-C3S-3.5-4	2-Chlorotoluene	0.71	U*	0.71	R	11
DG-C3S-3.5-4	2-Hexanone	11	U*	11	UJ	11
DG-C3S-3.5-4	4-Chlorotoluene	0.74	U*	0.74	R	11
DG-C3S-3.5-4	4-Isopropyltoluene	2.7	U*	2.7	R	11
DG-C3S-3.5-4	4-Methyl-2-pentanone (MIBK)	11	U*	11	UJ	11
DG-C3S-3.5-4	Acetone	44	J *	44	J+	11
DG-C3S-3.5-4	Benzene	1.6	J *	1.6	J	11
DG-C3S-3.5-4	Bromobenzene	0.86	U*	0.86	R	11
DG-C3S-3.5-4	Bromoform	2.2	U*	2.2	UJ	11
DG-C3S-3.5-4	Bromomethane	0.86	U*	0.86	UJ	11
DG-C3S-3.5-4	Carbon disulfide	2.2	U*	2.2	UJ	11
DG-C3S-3.5-4	Carbon tetrachloride	0.67	U*	0.67	UJ	11

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier**	Reason Code***
DG-C3S-3.5-4	Chlorobenzene	0.75	U*	0.75	UJ	11
DG-C3S-3.5-4	Chlorobromomethane	0.78	U*	0.78	UJ	11
DG-C3S-3.5-4	Chlorodibromomethane	0.77	U*	0.77	UJ	11
DG-C3S-3.5-4	Chloroethane	0.61	U*	0.61	UJ	11
DG-C3S-3.5-4	Chloroform	0.72	U*	0.72	UJ	11
DG-C3S-3.5-4	Chloromethane	0.86	U*	0.86	UJ	11
DG-C3S-3.5-4	cis-1,2-Dichloroethene	1.4	J *	1.4	J	11
DG-C3S-3.5-4	cis-1,3-Dichloropropene	0.75	U*	0.75	UJ	11
DG-C3S-3.5-4	Dibromomethane	0.93	U*	0.93	UJ	11
DG-C3S-3.5-4	Dichlorobromomethane	0.78	U*	0.78	UJ	11
DG-C3S-3.5-4	Dichlorodifluoromethane	0.86	U*	0.86	UJ	11
DG-C3S-3.5-4	Ethylbenzene	0.82	U*	0.82	UJ	11
DG-C3S-3.5-4	Ethylene Dibromide	1.6	U*	1.6	UJ	11
DG-C3S-3.5-4	Gasoline Range Organics (GRO)-C4-C12	110	U*	110	UJ	11
DG-C3S-3.5-4	Hexachlorobutadiene	0.98	U*	0.98	R	11
DG-C3S-3.5-4	Isopropylbenzene	0.74	U*	0.74	UJ	11
DG-C3S-3.5-4	Methyl tert-butyl ether	1.3	U*	1.3	UJ	11
DG-C3S-3.5-4	Methylene Chloride	6.1	U*	6.1	UJ	11
DG-C3S-3.5-4	Naphthalene	1.6	U*	1.6	R	11
DG-C3S-3.5-4	n-Butylbenzene	1.1	U*	1.1	R	11
DG-C3S-3.5-4	N-Propylbenzene	0.72	U*	0.72	R	11
DG-C3S-3.5-4	sec-Butylbenzene	0.78	U*	0.78	R	11
DG-C3S-3.5-4	Styrene	0.68	U*	0.68	UJ	11
DG-C3S-3.5-4	tert-Butylbenzene	0.79	U*	0.79	R	11
DG-C3S-3.5-4	Tetrachloroethene	0.73	U*	0.73	UJ	11
DG-C3S-3.5-4	Toluene	1.6	J *	1.6	J	11
DG-C3S-3.5-4	trans-1,2-Dichloroethene	0.82	U*	0.82	UJ	11
DG-C3S-3.5-4	trans-1,3-Dichloropropene	0.73	U*	0.73	UJ	11
DG-C3S-3.5-4	Trichloroethene	22	*	22	UJ	11
DG-C3S-3.5-4	Trichlorofluoromethane	0.61	U*	0.61	UJ	11
DG-C3S-3.5-4	Vinyl acetate	5.4	U*	5.4	UJ	11
DG-C3S-3.5-4	Vinyl chloride	0.79	U*	0.79	UJ	11
DG-C3S-3.5-4	Xylenes, Total	1.3	U	1.3	UJ	11

µg/kg-microgram per kilogram
J-estimated concentration greater than the MDL and less than the RL

U-not detected at the stated MDL
*-laboratory flag indicating the internal standard response or retention time is outside the acceptable limits
**- Validation qualifiers are defined in Attachment 1 at the end of this report
***- Reason codes are defined in Attachment 2 at the end of this report

1.13 Target Compound Identification

The target compound identifications were within the validation criteria.

1.14 Compound Quantitation

The compound quantitations were within the validation criteria.

1.15 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

1.16 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per EPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Instrument Performance Check
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate

- ✓ Internal Standards
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for decafluorotriphenylphosphine (DFTPP).

2.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated %RSD of the RRFs or used curve fits.

The average RRFs for the SPCCs met the method specified acceptance criteria. The %RSDs of the CCCs were within the method specified acceptance criteria.

The average RRFs and the %RSDs of the target analytes were within the method and validation specified acceptance criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations was less than 0.99. The average RRFs for target analytes were above the method and validation specified acceptance criteria.

2.5 Initial and Continuing Calibration Verification

The ICVs and CCVs were performed at the required frequency. The ICV and CCV RRFs met the method and validation specified acceptance criteria.

The RRFs for the SPCCs met the method specified acceptance criteria. The %RSDs of the CCCs were within the method specified acceptance criteria. The %Ds between the RRFs in the ICVs and CCVs for the target analytes were within the method and validation specified acceptance criteria.

2.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 249979 and 250048). PAHs were not detected in the method blanks above the MDLs with the following exception.

Naphthalene was detected in the method blank in batch 250048 at an estimated concentration greater than the MDL and less than the RL. Since naphthalene was not detected in the associated samples, no qualifications were applied to the data.

2.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.9 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

2.10 Field Duplicate

Field duplicate samples were not collected.

2.11 Internal Standards

The internal standard areas and retention times were within method criteria.

2.12 Target Compound Identification

The target compound identifications were within the validation criteria.

2.13 Compound Quantitation

The compound quantitations were within the validation criteria.

2.14 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were reported for the samples due to the dilutions analyzed.

2.15 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per EPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate

- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the %RSDs of the calibration factors (CFs) or used curve fits. The %RSDs were within the method and validation criteria or the coefficient of determination or the correlation coefficient for the curve fit calibrations was less than 0.99.

3.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs in the CCVs were within the method and validation specified acceptance criteria, with the following exception.

The ICV %D for toxaphene on gas chromatography (GC) column ZB-MR-1 in batch 249932 was high and outside the method specified acceptance criteria, with a high bias. Since toxaphene was not detected in the associated samples, no qualifications were applied to the data.

The results from the analyses of the breakdown standards containing 4,4'-DDT and endrin were within the method specified acceptance criteria.

3.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250005 and 250053). The organochlorine pesticides were not detected in the method blanks above the MDLs.

3.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

3.10 Target Compound Identification

The target compound identifications were within the validation criteria.

3.11 Compound Quantitation

The compound quantitations were within the validation criteria.

3.12 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

3.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per EPA Methods 3540C/8082.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Initial Calibration
✓ Initial and Continuing Calibration Verification
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogate
✓ Field Duplicate
✓ Target Compound Identification
⊗ Compound Quantitation
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of a solid sample are 1 year from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the %RSDs of the RRFs. The %RSDs were within the method and validation criteria.

4.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs in the CCVs were within the method and validation specified acceptance criteria.

4.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 342371). PCBs were not detected in the method blank above the MDLs.

4.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

The recovery of decachlorobiphenyl on gas chromatography (GC) column CLP-1 was high and outside the laboratory specified acceptance criteria in sample DG-A3S-0.5-1. Since the other surrogate, tetrachloro-m-xylene, had acceptable recoveries, no qualifications were applied to the data based on professional and technical judgment.

4.9 Field Duplicate

Field duplicates were not collected with the sample set.

4.10 Target Compound Identification

The target compound identifications were within the validation criteria.

4.11 Compound Quantitation

The compound quantitations were within the validation criteria, with the following exception.

The RPD between the PCB 1260 concentrations from the two GC columns was 63%, outside the laboratory specified acceptance criteria. Therefore, based on professional and technical judgment, the concentration of PCB 1260 in sample DG-A3S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Concentration (µg/kg)	Laboratory Flag	Validation Concentration (µg/kg)	Validation Qualifier	Reason Code
DG-A3S-0.5-1	Aroclor-1260	87	p	87	J	13

µg/kg-microgram per kilogram
p-laboratory flag indicating the %RPD between the primary and confirmation column/detector is >40%; the lower value was reported

4.12 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

4.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per EPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample

- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Initial Calibration

Appropriate initial calibrations were performed. The laboratory calculated the %RSD of the CFs. The %RSD was within the method and validation criteria.

5.4 Initial and Continuing Calibration Verification

ICVs and CCVs were performed at the required frequency. The %Ds of the CFs were within the method and validation specified acceptance criteria.

5.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249957). DRO was not detected in the method blank above the MDL.

5.6 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample

DG-B1S0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There was no surrogate recovery (0%) in sample DG-A3S-0.5-1. Due to the dilution analyzed (1:10) and professional and technical judgment, no qualifications were applied to the data.

5.9 Field Duplicate

A field duplicate sample was not collected with the sample set.

5.10 Target Compound Identification

The target compound identifications were within the validation criteria.

5.11 Compound Quantitation

The compound quantitations were within the validation criteria.

5.12 Sensitivity

The samples were reported to the MDL. No elevated nondetect results were reported with the data.

5.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD

6.0 METALS

The samples were analyzed for metals per EPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Initial Calibration
✓ Initial and Continuing Calibration Verifications
✓ Initial and Continuing Calibration Blanks
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Serial Dilution
✓ Field Duplicate
✓ Target Compound Quantitation
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Initial Calibration

The initial calibration requirements were met.

The interference check standards (ICSA and ICSAB) met the method specified acceptance criteria.

6.4 Initial and Continuing Calibration Verifications

The percent recoveries in the ICVs and CCVs were within the method specified acceptance limits.

6.5 Initial and Continuing Calibration Blanks (ICB and CCB)

The ICBs and CCBs met the method specified acceptance criteria.

6.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 249990, 250046, and 250071). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Chromium was detected in the method blank in batch 250046 at an estimated concentration greater than the MDL and less than the RL. Since the concentrations of chromium in the associated samples were greater than the RL, no qualifications were applied to the data.

Antimony was detected in the method blank in batch 250071 at an estimated concentration greater than the MDL and less than the RL. Since antimony was not detected in the associated samples, no qualifications were applied to the data.

6.7 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-B1S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exception.

The recoveries of antimony were low and outside the laboratory specified acceptance criteria. Therefore, the concentration of antimony in sample DG-B1S-0.5-1 was J- qualified as estimated with a low bias.

Two batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

Sample ID	Compound	Laboratory Concentration (ug/kg)	Laboratory Flag	Validation Concentration (ug/kg)	Validation Qualifier	Reason Code
DG-B1S-0.5-1	Antimony	890	J F1	890	J-	4

µg/kg-microgram per kilogram
F1- laboratory flag indicating the MS and/or MSD was outside acceptance criteria
J-estimated concentration greater than the MDL and less than the RL

6.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.9 Serial Dilution

A serial dilution was reported using sample DG-B1S-0.5-1. The %D results were within the method specified acceptance criteria.

Two batch serial dilutions were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.10 Field Duplicate

A field duplicate sample was not collected with the sample set.

6.11 Target Compound Quantitation

The compound quantitations were within the validation criteria.

6.12 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were reported due to the dilutions analyzed.

6.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per EPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verifications
- ✓ Initial and Continuing Calibration Blanks
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Target Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Initial Calibration

Appropriate initial calibrations were performed for mercury. Based on the method of calibration, the laboratory used a linear curve fit. The coefficient of determination (r^2) was greater than or equal to 0.990.

7.4 Initial and Continuing Calibration Verifications

The percent recoveries in the associated ICVs and CCVs were within the method specified acceptance criteria.

7.5 Initial and Continuing Calibration Blanks

The ICBs and CCBs met the method specified acceptance criteria.

7.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250050). Mercury was not detected in the method blank above the MDL.

7.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pairs were reported, using sample DG-B1S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

7.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

7.9 Field Duplicate

A field duplicate sample was not collected with the sample set.

7.10 Target Compound Quantitation

The compound quantitations were within the validation criteria.

7.11 Sensitivity

The sample was reported to the MDL. No elevated nondetect results were reported.

7.12 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

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

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher that the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower that the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	28 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88165-1, Revision 1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of four groundwater samples and one trip blank, collected 21 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5030B/8260B
- 1,2,3-Trichloropropane by California Department of Health Services Division of Drinking Water and Environmental Management Sanitation and Radiation Laboratories Branch (SRL) Method Modified 524.2
- Diesel Range Organics (DRO) by USEPA Methods 3510C/8015B
- Metals by USEPA Methods 3010A/6010B
- Mercury by USEPA Method 7470A
- Hexavalent Chromium (Cr VI) by USEPA Method 7196A

Method SRL 524.2 was performed at TA Irvine, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88165-1	DG-H1W
720-88165-2	DG-L1W
720-88165-3	DG-F1W

Laboratory ID	Client ID
720-88165-4	DG-D1W
720-88165-5	TRIP BLANK-1

The samples were received by TA Pleasanton, California at 1.7°C, 2.9°C, 3.1°C and 3.4°C and by TA Irvine, California at 2.7°C, within the criteria of ≤6°C.

Incorrect error corrections were observed on the original chain of custody (COC) instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

Trip blank TRIP BLANK-1 was sent in a separate cooler from the other project samples from TA Pleasanton, California to TA Irvine, California. Therefore, the trip blank was not considered for method SRL 524.2 validation.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

The laboratory report was revised on 6 November 2018 to correct the method reference for Method SRL 524.2. The revised report was identified as Job ID 720-88165-1, Revision 1.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5030B/8260B and method SRL 524.2.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for these analyses, for the data set is 100%.

1.2 Holding Times

The holding time for the VOC analysis of a preserved water sample for method SRL 524.2 or USEPA method 8260B is 14 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four method blanks were reported (batches 250404, 250451, 496340 and 496647). VOCs were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Batch MS/MSD pairs were reported for batches 250404 and 250451. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batches 496340 and 496647. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Duplicate

Batch laboratory duplicates were reported in batches 496340 and 496647. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

1.6 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four LCS/LCSD pairs and two LCSs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, carbon disulfide and trans-1,2-dichloroethene in the LCS/LCSD pair in batch 250404 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualifications were applied to the data.

1.7 Surrogate

Acceptable surrogate recoveries were reported for the USEPA Method 8260B sample analyses. Surrogates were not reported for the method SRL 524.2 analyses.

1.8 Trip Blank

One trip blank was submitted for USEPA Method 8260B analysis, TRIP BLANK-1. VOCs were not detected in the trip blank above the MDLs. As noted in the Executive Summary, TRIP BLANK-1 was not in the same sample cooler as the other project samples when sent to TA Irvine, California. Therefore, the trip blank was not considered for method SRL 524.2 validation.

1.9 Field Duplicate

Field duplicates were not collected with the sample set.

1.10 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 7.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

2.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250079). DRO was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. An LCS/LCSD pair was used to assess precision and accuracy.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

2.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 METALS

The samples were analyzed for metals per USEPA Methods 3010A/6010B (mercury evaluated separately in Section 4.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Sensitivity
✓ Serial Dilution
✓ Field Duplicate
✓ Electronic Deliverable Review

3.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

3.2 Holding Times

The holding time for the metals analyses of a water sample is 180 days from collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249997). Metals were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One project specific MS/MSD pair was reported, using sample DG-H1W. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 7, with the following exceptions.

Compound	Laboratory MDL (µg/L)	SSSL (µg/L)
Silver	1.2	0.19
Thallium	3.5	2.0

3.7 Serial Dilution

The narrative indicated that a batch serial dilution was analyzed for metals. Since this was batch QC, the results did not impact the data and did not result in qualification of the data.

3.8 Field Duplicate

Field duplicates were not collected with the sample set.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times

- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Deliverable Review

4.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

4.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249995). Mercury was not detected in the method blank above the MDL.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair (batch QC) was reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

4.6 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

4.7 Field Duplicate

Field duplicates were not collected with the sample set.

4.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 HEXAVALENT CHROMIUM

The samples were analyzed for Cr VI per USEPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Sensitivity
- ✓ Field Duplicate
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The Cr VI data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

5.2 Holding Times

The holding times for the Cr VI analysis of a water sample is 24 hours from sample collection to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 249929). Cr VI was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample specific MS/MSD pair was reported, using sample DG-H1W. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.6 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

5.7 Field Duplicate

Field duplicates were not collected with the sample set.

5.8 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	9 November 2018
To:	Anthony Smith
From:	Mary Tyler
	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 4 Data Validation - Level IV Data Deliverable, TestAmerica Work Order Number 720-88174-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 4 data validation of six solid samples and one field duplicate sample, collected August 21-22, 2018, as part of the UPC OU-SM sampling event. The following analysis was performed at TestAmerica Laboratories, Inc., Pleasanton, California:

- 1,2,3-Trichloropropane and 1,2-Dibromo-3-Chloropropane by EPA Methods 5035/8260B Using Selected Ion Monitoring (SIM)

EXECUTIVE SUMMARY

Overall, based on this Stage 4 data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 4 level in the data set*:*

Laboratory ID	Client ID
720-88174-1	DG-F3S-0.5-1
720-88174-2	DG-H3S-0.5-1
720-88174-3	DG-K3S-0.5-1
720-88174-4	DG-M3S-0.5-1
720-88174-5	DG-I3S-0.5-1
720-88174-6	DG-L5S-0.5-1
720-88174-7	DUP-2

The samples were received at the laboratory at 3.6°C, within the QAPP criteria of ≤6°C. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory:

- The samples, except for DUP-2, were received in pre-weighed containers with a label that was added in the field. The label weight was approximately 0.15grams, which the laboratory indicated did not significantly bias the final results. No qualifications were applied based on professional and technical judgement.

The following issues were noted during data validation:

- Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections

- The year was not documented on the COC for the sample collection dates or the is date for the first relinquishing.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane per EPA Methods 5035/8260B using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Instrument Performance Check
✓ Initial Calibration

- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Trip Blank
- ✓ Field Duplicate
- ✓ Internal Standards
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding times for the 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for bromofluorobenzene (BFB).

1.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the percent relative standard deviation (%RSD) of the relative response factors (RRFs). The average RRFs and the %RSDs of the target analytes were within the method (15%) and validation specified acceptance criteria. The average RRFs for target analytes met the method and validation specified acceptance criteria.

1.5 Initial and Continuing Calibration Verification (ICV and CCV)

The ICV and CCV were performed at the required frequency. The ICV and CCV RRFs met the method and validation criteria. The percent differences (%Ds) between the RRFs in the initial calibration and the ICV and CCV were within the method and validation criteria.

1.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 538820). 1,2,3-Trichloropropane and 1,2-dibromo-3-chloropropane were not detected in the method blank above the method detection limits (MDLs).

1.7 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported.

1.8 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCS duplicate (LCSD) pair was reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.9 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.10 Trip Blank

Trip blanks were not submitted with the sample set.

1.11 Field Duplicate

One field duplicate was collected with the sample set, DUP-2. Acceptable precision, RPD <30%, was demonstrated between the field duplicate and the parent sample, DG-L5S-0.5-1. The RPDs were 0%.

1.12 Internal Standards

The internal standard areas and retention times were within method specified acceptance criteria.

1.13 Target Compound Identification

The target compound identifications were within the validation criteria.

1.14 Compound Quantitation

The compound quantitations were within the validation criteria.

1.15 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

1.16 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

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

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher that the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower that the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	7 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88189-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of fourteen soil samples and one field duplicate sample, collected 21 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories, Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88189-1	DG-K4S-0.5-1
720-88189-2	DG-K4S-3.5-4
720-88189-3	DG-A2S-19.5-20
720-88189-4	DG-B2S-19.5-20
720-88189-5	DG-C2S-0.5-1
720-88189-6	DG-C2S-3.5-4
720-88189-7	DG-G4S-0.5-1
720-88189-8	DG-G4S-3.5-4

Laboratory ID	Client ID
720-88189-9	DG-F4S-0.5-1
720-88189-10	DG-F4S-3.5-4
720-88189-11	DG-E4S-0.5-1
720-88189-12	DG-E4S-3.5-4
720-88189-13	DG-D4S-0.5-1
720-88189-14	DG-D4S-3.5-4
720-88189-15	DUP-1

The samples were received at TA Pleasanton, California at 0.7ºC, 1.9ºC and 2.6ºC and at TA Canton, Ohio at 2.4ºC, within the criteria of <6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory*:*

- The container labels for the following samples did not match the information listed on the chain of custody (COC) form:
  - Sample DG-F4S-0.5-1: The sample ID on the container labels was DG-F4S-0.1-1, while the sample ID documented on the COC was DG-F4S-0.5-1. The laboratory assigned the sample ID documented on the COC, DG-F4S-0.5-1.
  - The laboratory received a container labeled DG-CS2-(no depth) with collection date and time of 21 August 2018, 15:30. The sample was not listed on the COC and was not analyzed.

There was a time lapse between the first relinquishing time, 12:25, and the first receiving time, 12:30, documented on the original COC sent to TA Pleasanton.

On the COC sent to Asbestos TEM Laboratories, the receiving date and time were illegible. The receiving date and time were not documented in the laboratory report.

The sample collection time was not listed on the COC for field duplicate sample. The laboratory assigned a collection time of 0:00.

The year was not included in the collection dates on the COC.

Incorrect error corrections were observed on the COCs, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and the Internal Standard Recovery Report indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DG-B2S-19.5-20 was low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results of the associated compounds in sample DG-B2S-19.5-20 were UJ qualified as estimated less than the method detection limits (MDLs).

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B2S-19.5-20	1,1,2,2-Tetrachloroethane	0.58	U*	0.58	UJ	11
DG-B2S-19.5-20	1,2,3-Trichlorobenzene	0.57	U*	0.57	UJ	11
DG-B2S-19.5-20	1,2,3-Trichloropropane	0.59	U*	0.59	UJ	11
DG-B2S-19.5-20	1,2,4-Trichlorobenzene	0.55	U*	0.55	UJ	11
DG-B2S-19.5-20	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DG-B2S-19.5-20	1,2-Dibromo-3-Chloropropane	1.3	U*	1.3	UJ	11
DG-B2S-19.5-20	1,2-Dichlorobenzene	0.52	U*	0.52	UJ	11
DG-B2S-19.5-20	1,3,5-Trimethylbenzene	0.50	U*	0.50	UJ	11
DG-B2S-19.5-20	1,3-Dichlorobenzene	0.55	U*	0.55	UJ	11
DG-B2S-19.5-20	1,4-Dichlorobenzene	0.55	U*	0.55	UJ	11
DG-B2S-19.5-20	2-Chlorotoluene	0.50	U*	0.50	UJ	11
DG-B2S-19.5-20	4-Chlorotoluene	0.52	U*	0.52	UJ	11
DG-B2S-19.5-20	4-Isopropyltoluene	1.9	U*	1.9	UJ	11
DG-B2S-19.5-20	Bromobenzene	0.61	U*	0.61	UJ	11
DG-B2S-19.5-20	Hexachlorobutadiene	0.69	U*	0.69	UJ	11
DG-B2S-19.5-20	Naphthalene	1.2	U*	1.2	UJ	11
DG-B2S-19.5-20	n-Butylbenzene	0.77	U*	0.77	UJ	11
DG-B2S-19.5-20	N-Propylbenzene	0.51	U*	0.51	UJ	11
DG-B2S-19.5-20	sec-Butylbenzene	0.55	U*	0.55	UJ	11
DG-B2S-19.5-20	tert-Butylbenzene	0.56	U*	0.56	UJ	11

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250407 and 250350). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of carbon disulfide and 1,1-dichloroethene in the LCS/LCSD in batch 250407 were high and outside the laboratory specified acceptance criteria. Since carbon disulfide and 1,1-dichloroethene were not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Field duplicate sample DUP-1 was collected with the sample set, but not analyzed for VOCs.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250048). PAHs were not detected in the method blank above the MDLs, with the following exception.

Naphthalene was detected in the method blank at an estimated concentration greater than the MDL and less than the reporting limit (RL). Since naphthalene was not detected in the associated samples, no qualifications were applied to the data.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

Field duplicate sample DUP-1 was collected with the sample set, but not analyzed for PAHs.

2.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250053). The organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Field duplicate sample DUP-1 was collected with the sample set, but not analyzed for organochlorine pesticides.

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of solid samples are 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 342522). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

Field duplicate sample DUP-1 was collected with the sample set, but not analyzed for PCBs.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250044). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

5.7 Field Duplicate

Field duplicate sample DUP-1 was collected with the sample set, but not analyzed for DRO.

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250071 and 250096). Metals were not detected in the method blanks above the MDLs, with the following exception.

Antimony was detected in the method blank in batch 250071 at an estimated concentration greater than the MDL and less than the RL. Therefore, the estimated antimony concentrations in samples DG-K4S-0.5-1, DG-A2S-19.5-20 and DG-B2S-19.5-20 were U qualified as not detected at the RL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K4S-0.5-1	Antimony	1400	J B F1	1700	U	3
DG-A2S-19.5-20	Antimony	270	J B	1300	U	3
DG-B2S-19.5-20	Antimony	310	J B	1700	U	3

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the compound was detected in the sample and the method blank.
F1 - Laboratory flag indicating the MS/MSD recoveries were outside laboratory specified acceptance criteria.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-E4S-0.5-1 and DG-K4S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the silver and beryllium recoveries in the MS/MSD pair using sample DG-E4S-0.5-1 were high and outside the laboratory specified acceptance criteria. Since silver and beryllium were not detected in sample DG-E4S-0.5-1, no qualifications were applied to the data.

The antimony recoveries in the MS/MSD pair using sample DG-E4S-0.5-1 were low and outside the laboratory specified acceptance criteria. Therefore, the estimated antimony concentration in sample DG-E4S-0.5-1 was J qualified as estimated.

One or both of the barium, chromium, copper, lead, vanadium and zinc recoveries in the MS/MSD pair using sample DG-E4S-0.5-1 were high and outside the laboratory specified acceptance criteria. Therefore, the barium, chromium, copper, lead, vanadium and zinc concentrations in sample DG-E4S-0.5-1 were J+ qualified as estimated with high biases.

The antimony recoveries in the MS/MSD pair using sample DG-K4S-0.5-1 were low and outside the laboratory specified acceptance criteria. Since the antimony result for sample DG-K4S-0.5-1 was U qualified as not detected at the RL due to method blank contamination, no additional qualifications were applied to the data, based on professional and technical judgment.

The barium, lead and zinc recoveries in the MS were low and the RPDs for the MS/MSD pair using sample DG-K4S-0.5-1 were high, outside the laboratory specified acceptance criteria. Therefore, the barium, lead and zinc concentrations in sample DG-K4S-0.5-1 were J qualified as estimated.

The copper recovery in the MS and the arsenic recoveries in the MS/MSD pair using sample DG-K4S-0.5-1 were low and outside the laboratory specified acceptance criteria. Therefore, the arsenic and copper concentrations in sample DG-K4S-0.5-1 were J- qualified as estimated with low biases.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-K4S-0.5-1	Arsenic	120000	F1	120000	J-	4
DG-K4S-0.5-1	Barium	140000	F1 F2	140000	J	4
DG-K4S-0.5-1	Copper	92000	F1	92000	J-	4
DG-K4S-0.5-1	Lead	160000	F1 F2	160000	J	4
DG-K4S-0.5-1	Zinc	170000	F1 F2	170000	J	4
DG-E4S-0.5-1	Antimony	600	J F1	600	J	4
DG-E4S-0.5-1	Barium	36000	F1	36000	J+	4
DG-E4S-0.5-1	Chromium	8200	F1	8200	J+	4
DG-E4S-0.5-1	Copper	110000	F1	110000	J+	4
DG-E4S-0.5-1	Lead	45000	F1	45000	J+	4
DG-E4S-0.5-1	Vanadium	98000	F1	98000	J+	4
DG-E4S-0.5-1	Zinc	63000	F1	63000	J+	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS/MSD recoveries were outside laboratory specified acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD RPD were outside laboratory specified acceptance criteria.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated that two serial dilutions were analyzed, using samples DG-K4S-0.5-1 and DG-E4S-0.5-1. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The arsenic, barium, cobalt, chromium, nickel, lead, vanadium and zinc RPDs for the serial dilution using sample DG-K4S-0.5-1 were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-K4S-0.5-1 were J qualified as estimated.

The barium, cobalt, lead and vanadium RPDs for the serial dilution using sample DG-E4S-0.5-1 were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-E4S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-K4S-0.5-1	Arsenic	120000	F1	120000	J	8
DG-K4S-0.5-1	Barium	140000	F1 F2	140000	J	8
DG-K4S-0.5-1	Chromium	15000	NA	15000	J	8
DG-K4S-0.5-1	Cobalt	8500	NA	8500	J	8
DG-K4S-0.5-1	Lead	160000	F1 F2	160000	J	8
DG-K4S-0.5-1	Nickel	13000	NA	13000	J	8
DG-K4S-0.5-1	Vanadium	59000	NA	59000	J	8
DG-K4S-0.5-1	Zinc	170000	F1 F2	170000	J	8
DG-E4S-0.5-1	Barium	36000	F1	36000	J	8
DG-E4S-0.5-1	Cobalt	13000	NA	13000	J	8
DG-E4S-0.5-1	Lead	45000	F1	45000	J	8
DG-E4S-0.5-1	Vanadium	98000	F1	98000	J	8

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS/MSD recoveries were outside laboratory specified acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD RPD were outside laboratory specified acceptance criteria.
NA - Not applicable

6.7 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for metals. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-D4S-0.5-1, with the following exceptions.

The antimony, arsenic and lead RPD results were greater than 50%. Therefore, the concentrations of these compounds in field duplicate pair DG-D4S-0.5-1/DUP-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-D4S-0.5-1	Antimony	6800	NA	132	6800	J	7
DUP-1	Antimony	1400	NA		1400	J	7
DG-D4S-0.5-1	Arsenic	6200	NA	64	6200	J	7
DUP-1	Arsenic	3200	NA		3200	J	7
DG-D4S-0.5-1	Lead	890000	NA	66	890000	J	7
DUP-1	Lead	450000	NA		450000	J	7

µg/kg - Microgram per kilogram
NA - Not applicable

6.8 Sensitivity

The samples were reported to the MDLs. The MDLs met the proposed SSSLs in the Work Plan Table 6. Elevated non-detect results were reported due to dilutions analyzed.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment

- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four method blanks were reported (batches 250050, 250103, 250192 and 250231). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-E4S-0.5-1 and DG-K4S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria.

Two batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.6 Field Duplicate

One field duplicate sample, DUP-1, was collected with the sample set and analyzed for mercury. Acceptable precision (RPD ≤50%) was not demonstrated between the field duplicate and the original sample, DG-D4S-0.5-1. Therefore, the mercury concentrations in field duplicate pair DG-D4S-0.5-1/ DUP-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-D4S-0.5-1	Mercury	220	NA	67	220	J	7
DUP-1	Mercury	110	NA		110	J	7

µg/kg - Microgram per kilogram
NA - Not applicable

7.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment

⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	7 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88190-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of fifteen soil samples, collected 21 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B and 5030B/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (ARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88190-1	DG-E3S-0.5-1
720-88190-2	DG-E3S-3.5-4
720-88190-3	DG-E3S-9.5-10
720-88190-4	DG-F3S-0.5-1
720-88190-5	DG-F3S-3.5-4
720-88190-6	DG-F3S-9.5-10
720-88190-7	DG-G3S-0.5-1
720-88190-8	DG-G3S-3.5-4

Laboratory ID	Client ID
720-88190-9	DG-G3S-9.5-10
720-88190-10	DG-H3S-0.5-1
720-88190-11	DG-H3S-3.5-4
720-88190-12	DG-H3S-9.5-10
720-88190-13	DG-D3S-0.5-1
720-88190-14	DG-D3S-3.5-4
720-88190-15	DG-D3S-9.5-10

The samples were received at TA Pleasanton, California at 0.7ºC, 1.9ºC and 2.6ºC and at TA Canton, Ohio at 2.4ºC, within the criteria of $\leq$6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory*:*

- The VOC aliquots for samples DG-F3S-0.5-1, DG-F3S-3.5-4, DG-F3S-9.5-10, DG-H3S-0.5-1, DG-H3S-3.5-4 and DG-H3S-9.5-10 were received in pre-weighed containers with labels that were added in the field and therefore, not included in the containers' tare weight. The laboratory indicated that the label weight was approximately 0.15 grams (g). No qualifications were applied to the data, based on professional and technical judgement.

- The container labels for the following sample did not match the information listed on the chain of custody (COC) form:

    - Sample DG-H3S-9.5-10: One of the 8-ounce (oz.) jars was labeled DG-H3S (no depth) with a collection time of 16:45; the COC indicated this was sample DG-H3S-9.5-10. One of the 4-oz jar labels was illegible, except for the depth of 9.5-10, and the collection time of 16:45. The sample IDs were determined by the laboratory based on the sample collection time.

Incorrect error corrections were observed on the COCs, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B and 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and the Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recoveries for samples DG-G3S-9.5-10 and DG-H3S-0.5-1 were low and outside the laboratory specified acceptance criteria. The chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for sample DG-H3S-9.5-10 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results of the associated compounds in these samples were UJ qualified as estimated less than the method detection limits (MDLs).

The narrative indicated that the sample aliquots were taken from 8- oz. jars were used for the VOC analyses of samples DG-F3S-9.5-10 and DG-D3S-9.5-10 instead of the Terra Core collected samples provided; this is inconsistent with the QAPP specified method for extraction, USEPA method 5035. Therefore, based on professional and technical judgment, the non-detect VOC results in samples DG-F3S-9.5-10 and DG-D3S-9.5-10 were UJ qualified as estimated less than the MDLs. The results are considered screening level results and should not be used to make project decisions based on the non-detect results.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-H3S-0.5-1	1,1,2,2-Tetrachloroethane	0.64	U*	0.64	UJ	11
DG-H3S-0.5-1	1,2,3-Trichlorobenzene	0.64	U*	0.64	UJ	11
DG-H3S-0.5-1	1,2,3-Trichloropropane	0.66	U*	0.66	UJ	11
DG-H3S-0.5-1	1,2,4-Trichlorobenzene	0.61	U*	0.61	UJ	11
DG-H3S-0.5-1	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-H3S-0.5-1	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	11
DG-H3S-0.5-1	1,2-Dichlorobenzene	0.58	U*	0.58	UJ	11
DG-H3S-0.5-1	1,3,5-Trimethylbenzene	0.56	U*	0.56	UJ	11
DG-H3S-0.5-1	1,3-Dichlorobenzene	0.62	U*	0.62	UJ	11
DG-H3S-0.5-1	1,4-Dichlorobenzene	0.61	U*	0.61	UJ	11
DG-H3S-0.5-1	2-Chlorotoluene	0.56	U*	0.56	UJ	11
DG-H3S-0.5-1	4-Chlorotoluene	0.58	U*	0.58	UJ	11
DG-H3S-0.5-1	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-H3S-0.5-1	Bromobenzene	0.68	U*	0.68	UJ	11
DG-H3S-0.5-1	Hexachlorobutadiene	0.77	U*	0.77	UJ	11
DG-H3S-0.5-1	Naphthalene	1.3	U*	1.3	UJ	11
DG-H3S-0.5-1	n-Butylbenzene	0.86	U*	0.86	UJ	11
DG-H3S-0.5-1	N-Propylbenzene	0.57	U*	0.57	UJ	11
DG-H3S-0.5-1	sec-Butylbenzene	0.62	U*	0.62	UJ	11
DG-H3S-0.5-1	tert-Butylbenzene	0.63	U*	0.63	UJ	11
DG-H3S-9.5-10	1,1,1,2-Tetrachloroethane	0.54	U*	0.54	UJ	11
DG-H3S-9.5-10	1,1,2,2-Tetrachloroethane	0.53	U*	0.53	UJ	11
DG-H3S-9.5-10	1,2,3-Trichlorobenzene	0.52	U*	0.52	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-H3S-9.5-10	1,2,3-Trichloropropane	0.54	U*	0.54	UJ	11
DG-H3S-9.5-10	1,2,4-Trichlorobenzene	0.50	U*	0.50	UJ	11
DG-H3S-9.5-10	1,2,4-Trimethylbenzene	1.2	U*	1.2	UJ	11
DG-H3S-9.5-10	1,2-Dibromo-3-Chloropropane	1.2	U*	1.2	UJ	11
DG-H3S-9.5-10	1,2-Dichlorobenzene	0.48	U*	0.48	UJ	11
DG-H3S-9.5-10	1,3,5-Trimethylbenzene	0.46	U*	0.46	UJ	11
DG-H3S-9.5-10	1,3-Dichlorobenzene	0.51	U*	0.51	UJ	11
DG-H3S-9.5-10	1,4-Dichlorobenzene	0.50	U*	0.50	UJ	11
DG-H3S-9.5-10	2-Chlorotoluene	0.46	U*	0.46	UJ	11
DG-H3S-9.5-10	4-Chlorotoluene	0.48	U*	0.48	UJ	11
DG-H3S-9.5-10	4-Isopropyltoluene	1.8	U*	1.8	UJ	11
DG-H3S-9.5-10	Bromobenzene	0.56	U*	0.56	UJ	11
DG-H3S-9.5-10	Bromoform	1.4	U*	1.4	UJ	11
DG-H3S-9.5-10	Chlorobenzene	0.49	U*	0.49	UJ	11
DG-H3S-9.5-10	Ethylbenzene	0.53	U*	0.53	UJ	11
DG-H3S-9.5-10	Hexachlorobutadiene	0.63	U*	0.63	UJ	11
DG-H3S-9.5-10	Isopropylbenzene	0.48	U*	0.48	UJ	11
DG-H3S-9.5-10	Naphthalene	1.1	U*	1.1	UJ	11
DG-H3S-9.5-10	n-Butylbenzene	0.71	U*	0.71	UJ	11
DG-H3S-9.5-10	N-Propylbenzene	0.47	U*	0.47	UJ	11
DG-H3S-9.5-10	sec-Butylbenzene	0.51	U*	0.51	UJ	11
DG-H3S-9.5-10	Styrene	0.44	U*	0.44	UJ	11
DG-H3S-9.5-10	tert-Butylbenzene	0.51	U*	0.51	UJ	11
DG-H3S-9.5-10	Toluene	0.50	U*	0.50	UJ	11
DG-G3S-9.5-10	1,1,2,2-Tetrachloroethane	0.67	U*	0.67	UJ	11
DG-G3S-9.5-10	1,2,3-Trichlorobenzene	0.66	U*	0.66	UJ	11
DG-G3S-9.5-10	1,2,3-Trichloropropane	0.68	U*	0.68	UJ	11
DG-G3S-9.5-10	1,2,4-Trichlorobenzene	0.63	U*	0.63	UJ	11
DG-G3S-9.5-10	1,2,4-Trimethylbenzene	1.5	U*	1.5	UJ	11
DG-G3S-9.5-10	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-G3S-9.5-10	1,2-Dichlorobenzene	0.60	U*	0.60	UJ	11
DG-G3S-9.5-10	1,3,5-Trimethylbenzene	0.58	U*	0.58	UJ	11
DG-G3S-9.5-10	1,3-Dichlorobenzene	0.64	U*	0.64	UJ	11
DG-G3S-9.5-10	1,4-Dichlorobenzene	0.63	U*	0.63	UJ	11
DG-G3S-9.5-10	2-Chlorotoluene	0.58	U*	0.58	UJ	11
DG-G3S-9.5-10	4-Chlorotoluene	0.60	U*	0.60	UJ	11
DG-G3S-9.5-10	4-Isopropyltoluene	2.2	U*	2.2	UJ	11
DG-G3S-9.5-10	Bromobenzene	0.70	U*	0.70	UJ	11
DG-G3S-9.5-10	Hexachlorobutadiene	0.80	U*	0.80	UJ	11
DG-G3S-9.5-10	Naphthalene	1.3	U*	1.3	UJ	11
DG-G3S-9.5-10	n-Butylbenzene	0.89	U*	0.89	UJ	11
DG-G3S-9.5-10	N-Propylbenzene	0.59	U*	0.59	UJ	11
DG-G3S-9.5-10	sec-Butylbenzene	0.64	U*	0.64	UJ	11
DG-G3S-9.5-10	tert-Butylbenzene	0.65	U*	0.65	UJ	11
DG-D3S-9.5-10	1,1,1,2-Tetrachloroethane	0.73	U	0.73	UJ	1
DG-D3S-9.5-10	1,1,1-Trichloroethane	0.58	U	0.58	UJ	1
DG-D3S-9.5-10	1,1,2,2-Tetrachloroethane	0.72	U	0.72	UJ	1
DG-D3S-9.5-10	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U	2.0	UJ	1
DG-D3S-9.5-10	1,1,2-Trichloroethane	0.67	U	0.67	UJ	1
DG-D3S-9.5-10	1,1-Dichloroethane	0.65	U	0.65	UJ	1
DG-D3S-9.5-10	1,1-Dichloroethene	0.59	U	0.59	UJ	1
DG-D3S-9.5-10	1,1-Dichloropropene	0.66	U	0.66	UJ	1
DG-D3S-9.5-10	1,2,3-Trichlorobenzene	0.71	U	0.71	UJ	1
DG-D3S-9.5-10	1,2,3-Trichloropropane	0.73	U	0.73	UJ	1
DG-D3S-9.5-10	1,2,4-Trichlorobenzene	0.68	U	0.68	UJ	1
DG-D3S-9.5-10	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-D3S-9.5-10	1,2-Dibromo-3-Chloropropane	1.6	U	1.6	UJ	1
DG-D3S-9.5-10	1,2-Dichlorobenzene	0.65	U	0.65	UJ	1
DG-D3S-9.5-10	1,2-Dichloroethane	0.73	U	0.73	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-D3S-9.5-10	1,2-Dichloropropane	0.60	U	0.60	UJ	1
DG-D3S-9.5-10	1,3,5-Trimethylbenzene	0.62	U	0.62	UJ	1
DG-D3S-9.5-10	1,3-Dichlorobenzene	0.69	U	0.69	UJ	1
DG-D3S-9.5-10	1,3-Dichloropropane	0.70	U	0.70	UJ	1
DG-D3S-9.5-10	1,4-Dichlorobenzene	0.68	U	0.68	UJ	1
DG-D3S-9.5-10	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-D3S-9.5-10	2-Butanone (MEK)	20	U	20	UJ	1
DG-D3S-9.5-10	2-Chlorotoluene	0.62	U	0.62	UJ	1
DG-D3S-9.5-10	2-Hexanone	9.5	U	9.5	UJ	1
DG-D3S-9.5-10	4-Chlorotoluene	0.65	U	0.65	UJ	1
DG-D3S-9.5-10	4-Isopropyltoluene	2.4	U	2.4	UJ	1
DG-D3S-9.5-10	4-Methyl-2-pentanone (MIBK)	9.5	U	9.5	UJ	1
DG-D3S-9.5-10	Acetone	36	U	36	UJ	1
DG-D3S-9.5-10	Benzene	0.62	U	0.62	UJ	1
DG-D3S-9.5-10	Bromobenzene	0.75	U	0.75	UJ	1
DG-D3S-9.5-10	Bromoform	1.9	U	1.9	UJ	1
DG-D3S-9.5-10	Bromomethane	0.75	U	0.75	UJ	1
DG-D3S-9.5-10	Carbon disulfide	1.9	U	1.9	UJ	1
DG-D3S-9.5-10	Carbon tetrachloride	0.59	U	0.59	UJ	1
DG-D3S-9.5-10	Chlorobenzene	0.66	U	0.66	UJ	1
DG-D3S-9.5-10	Chlorobromomethane	0.69	U	0.69	UJ	1
DG-D3S-9.5-10	Chlorodibromomethane	0.68	U	0.68	UJ	1
DG-D3S-9.5-10	Chloroethane	0.53	U	0.53	UJ	1
DG-D3S-9.5-10	Chloroform	0.63	U	0.63	UJ	1
DG-D3S-9.5-10	Chloromethane	0.75	U	0.75	UJ	1
DG-D3S-9.5-10	cis-1,2-Dichloroethene	0.65	U	0.65	UJ	1
DG-D3S-9.5-10	cis-1,3-Dichloropropene	0.66	U	0.66	UJ	1
DG-D3S-9.5-10	Dibromomethane	0.82	U	0.82	UJ	1
DG-D3S-9.5-10	Dichlorobromomethane	0.69	U	0.69	UJ	1
DG-D3S-9.5-10	Dichlorodifluoromethane	0.75	U	0.75	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-D3S-9.5-10	Ethylbenzene	0.72	U	0.72	UJ	1
DG-D3S-9.5-10	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-D3S-9.5-10	GRO C4-C12	95	U	95	UJ	1
DG-D3S-9.5-10	Hexachlorobutadiene	0.86	U	0.86	UJ	1
DG-D3S-9.5-10	Isopropylbenzene	0.65	U	0.65	UJ	1
DG-D3S-9.5-10	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DG-D3S-9.5-10	Methylene Chloride	5.3	U	5.3	UJ	1
DG-D3S-9.5-10	Naphthalene	1.4	U	1.4	UJ	1
DG-D3S-9.5-10	n-Butylbenzene	0.95	U	0.95	UJ	1
DG-D3S-9.5-10	N-Propylbenzene	0.63	U	0.63	UJ	1
DG-D3S-9.5-10	sec-Butylbenzene	0.69	U	0.69	UJ	1
DG-D3S-9.5-10	Styrene	0.60	U	0.60	UJ	1
DG-D3S-9.5-10	tert-Butylbenzene	0.70	U	0.70	UJ	1
DG-D3S-9.5-10	Tetrachloroethene	0.64	U	0.64	UJ	1
DG-D3S-9.5-10	Toluene	0.68	U	0.68	UJ	1
DG-D3S-9.5-10	trans-1,2-Dichloroethene	0.72	U	0.72	UJ	1
DG-D3S-9.5-10	trans-1,3-Dichloropropene	0.64	U	0.64	UJ	1
DG-D3S-9.5-10	Trichloroethene	0.60	U	0.60	UJ	1
DG-D3S-9.5-10	Trichlorofluoromethane	0.53	U	0.53	UJ	1
DG-D3S-9.5-10	Vinyl acetate	4.8	U	4.8	UJ	1
DG-D3S-9.5-10	Vinyl chloride	0.70	U	0.70	UJ	1
DG-D3S-9.5-10	Xylenes, Total	1.2	U	1.2	UJ	1
DG-F3S-9.5-10	1,1,1,2-Tetrachloroethane	0.76	U	0.76	UJ	1
DG-F3S-9.5-10	1,1,1-Trichloroethane	0.61	U	0.61	UJ	1
DG-F3S-9.5-10	1,1,2,2-Tetrachloroethane	0.75	U	0.75	UJ	1
DG-F3S-9.5-10	1,1,2-Trichloro-1,2,2-trifluoroethane	2.1	U	2.1	UJ	1
DG-F3S-9.5-10	1,1,2-Trichloroethane	0.70	U	0.70	UJ	1
DG-F3S-9.5-10	1,1-Dichloroethane	0.68	U	0.68	UJ	1
DG-F3S-9.5-10	1,1-Dichloroethene	0.62	U	0.62	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-F3S-9.5-10	1,1-Dichloropropene	0.69	U	0.69	UJ	1
DG-F3S-9.5-10	1,2,3-Trichlorobenzene	0.74	U	0.74	UJ	1
DG-F3S-9.5-10	1,2,3-Trichloropropane	0.77	U	0.77	UJ	1
DG-F3S-9.5-10	1,2,4-Trichlorobenzene	0.71	U	0.71	UJ	1
DG-F3S-9.5-10	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-F3S-9.5-10	1,2-Dibromo-3-Chloropropane	1.7	U	1.7	UJ	1
DG-F3S-9.5-10	1,2-Dichlorobenzene	0.68	U	0.68	UJ	1
DG-F3S-9.5-10	1,2-Dichloroethane	0.76	U	0.76	UJ	1
DG-F3S-9.5-10	1,2-Dichloropropane	0.63	U	0.63	UJ	1
DG-F3S-9.5-10	1,3,5-Trimethylbenzene	0.65	U	0.65	UJ	1
DG-F3S-9.5-10	1,3-Dichlorobenzene	0.72	U	0.72	UJ	1
DG-F3S-9.5-10	1,3-Dichloropropane	0.73	U	0.73	UJ	1
DG-F3S-9.5-10	1,4-Dichlorobenzene	0.71	U	0.71	UJ	1
DG-F3S-9.5-10	2,2-Dichloropropane	2.0	U	2.0	UJ	1
DG-F3S-9.5-10	2-Butanone (MEK)	21	U	21	UJ	1
DG-F3S-9.5-10	2-Chlorotoluene	0.65	U	0.65	UJ	1
DG-F3S-9.5-10	2-Hexanone	10	U	10	UJ	1
DG-F3S-9.5-10	4-Chlorotoluene	0.68	U	0.68	UJ	1
DG-F3S-9.5-10	4-Isopropyltoluene	2.5	U	2.5	UJ	1
DG-F3S-9.5-10	4-Methyl-2-pentanone (MIBK)	10	U	10	UJ	1
DG-F3S-9.5-10	Acetone	38	U	38	UJ	1
DG-F3S-9.5-10	Benzene	0.65	U	0.65	UJ	1
DG-F3S-9.5-10	Bromobenzene	0.79	U	0.79	UJ	1
DG-F3S-9.5-10	Bromoform	2.0	U	2.0	UJ	1
DG-F3S-9.5-10	Bromomethane	0.79	U	0.79	UJ	1
DG-F3S-9.5-10	Carbon disulfide	2.0	U	2.0	UJ	1
DG-F3S-9.5-10	Carbon tetrachloride	0.62	U	0.62	UJ	1
DG-F3S-9.5-10	Chlorobenzene	0.69	U	0.69	UJ	1
DG-F3S-9.5-10	Chlorobromomethane	0.72	U	0.72	UJ	1
DG-F3S-9.5-10	Chlorodibromomethane	0.71	U	0.71	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-F3S-9.5-10	Chloroethane	0.56	U	0.56	UJ	1
DG-F3S-9.5-10	Chloroform	0.66	U	0.66	UJ	1
DG-F3S-9.5-10	Chloromethane	0.79	U	0.79	UJ	1
DG-F3S-9.5-10	cis-1,2-Dichloroethene	0.68	U	0.68	UJ	1
DG-F3S-9.5-10	cis-1,3-Dichloropropene	0.69	U	0.69	UJ	1
DG-F3S-9.5-10	Dibromomethane	0.86	U	0.86	UJ	1
DG-F3S-9.5-10	Dichlorobromomethane	0.72	U	0.72	UJ	1
DG-F3S-9.5-10	Dichlorodifluoromethane	0.79	U	0.79	UJ	1
DG-F3S-9.5-10	Ethylbenzene	0.75	U	0.75	UJ	1
DG-F3S-9.5-10	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-F3S-9.5-10	GRO C4-C12	100	U	100	UJ	1
DG-F3S-9.5-10	Hexachlorobutadiene	0.90	U	0.90	UJ	1
DG-F3S-9.5-10	Isopropylbenzene	0.68	U	0.68	UJ	1
DG-F3S-9.5-10	Methyl tert-butyl ether	1.2	U	1.2	UJ	1
DG-F3S-9.5-10	Methylene Chloride	5.6	U	5.6	UJ	1
DG-F3S-9.5-10	Naphthalene	1.5	U	1.5	UJ	1
DG-F3S-9.5-10	n-Butylbenzene	1.0	U	1.0	UJ	1
DG-F3S-9.5-10	N-Propylbenzene	0.66	U	0.66	UJ	1
DG-F3S-9.5-10	sec-Butylbenzene	0.72	U	0.72	UJ	1
DG-F3S-9.5-10	Styrene	0.63	U	0.63	UJ	1
DG-F3S-9.5-10	tert-Butylbenzene	0.73	U	0.73	UJ	1
DG-F3S-9.5-10	Tetrachloroethene	0.67	U	0.67	UJ	1
DG-F3S-9.5-10	Toluene	0.71	U	0.71	UJ	1
DG-F3S-9.5-10	trans-1,2-Dichloroethene	0.75	U	0.75	UJ	1
DG-F3S-9.5-10	trans-1,3-Dichloropropene	0.67	U	0.67	UJ	1
DG-F3S-9.5-10	Trichloroethene	0.63	U	0.63	UJ	1
DG-F3S-9.5-10	Trichlorofluoromethane	0.56	U	0.56	UJ	1
DG-F3S-9.5-10	Vinyl acetate	5.0	U	5.0	UJ	1
DG-F3S-9.5-10	Vinyl chloride	0.73	U	0.73	UJ	1
DG-F3S-9.5-10	Xylenes, Total	1.2	U	1.2	UJ	1

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample collected in a Terra Core sampler are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses, with the following exceptions.

As noted above, samples DG-F3S-9.5-10 and DG-D3S-9.5-10 were analyzed from 8-oz. jars instead of the QAPP-specified Terra Core samplers; the samples were prepared seven days after collection. Since the VOC results for these two samples were UJ qualified due to analyses from the 8-oz. jars, no additional qualifications were applied to the data.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six method blanks were reported (batches 250279, 250345, 250350, 250407, 250408 and 250450). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

One sample set specific MS/MSD pair was reported in batch 250450, using sample DG-D3S-9.5-10. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 2-chlorotoluene, n-propylbenzene, 1,1,2-trichloro-1,2,2-trifluoroethane and 1,3,5-trimethylbenzene recoveries were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-D3S-9.5-10, no qualifications were applied to the data.

The acetone, 2-butanone, sec-butylbenzene, tert-butylbenzene, 2-chlorotoluene, 2-hexanone, 4-methyl-2-pentanone, naphthalene, n-propylbenzene, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and vinyl acetate RPD results were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-D3S-9.5-10, no qualifications were applied to the data.

The vinyl acetate recoveries were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect vinyl acetate result in sample DG-D3S-9.5-10 was UJ qualified as estimated less than the MDL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-D3S-9.5-10	Vinyl acetate	4.8	U	4.8	UJ	4

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

A batch MS/MSD pair was reported in batch 250408. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batches 250279, 250345, 250350 and 250407. Laboratory control sample (LCS)/LCS duplicate (LCSD) pair were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six LCS/LCSD pairs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The carbon disulfide and 1,1-dichloroethene recoveries in the LCS/LCSD pairs in batches 250407, 250408 and 250450 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Field duplicates were not collected with the sample set.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250048). PAHs were not detected in the method blank above the MDLs, with the following exception.

Naphthalene was detected in the method blank at an estimated concentration greater than the MDL and less than the reporting limit (RL). Therefore, the estimated naphthalene concentration in sample DG-F3S-9.5-10 was U qualified as not detected at the RL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-F3S-9.5-10	Naphthalene	4.4	J B	4.8	U	3

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the compound was detected in the sample and the method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-H3S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

Field duplicates were not collected with the sample set.

2.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250053). The organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-H3S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Field duplicates were not collected with the sample set.

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of solid samples are 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 342522). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-D3S-9.5-10. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

Field duplicates were not collected with the sample set.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250044). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-H3S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

5.7 Field Duplicate

Field duplicates were not collected with the sample set.

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Serial Dilation
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to

the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250096 and 250108). Metals were not detected in the method blanks above the MDLs.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

Serial dilutions were not reported with the samples set.

6.7 Field Duplicate

Field duplicates were not collected with the sample set.

6.8 Sensitivity

The samples were reported to the MDLs. The MDLs met the proposed SSSLs in the Work Plan Table 6. Elevated non-detect results were reported due to dilutions analyzed.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250103 and 250231). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Field duplicates were not collected with the sample set.

7.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	12 November 2018
To:	Anthony Smith
From:	Mary Tyler
	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 4 Data Validation - Level IV Data Deliverable, TestAmerica Work Order Number 720-88191-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 4 data validation of twenty solid samples, collected August 21, 2018, as part of the UPC OU-SM sampling event. The following analyses were performed at TestAmerica Laboratories, Inc., Pleasanton, California:

- Metals by EPA Methods 3050B/6010B
- Mercury by EPA Method 7471A

EXECUTIVE SUMMARY

Overall, based on this Stage 4 data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 4 level in the data set:

Laboratory ID	Client ID
720-88191-1	DG-I2S-0.5-1
720-88191-2	DG-I2S-3.5-4
720-88191-3	DG-J2S-0.5-1

Laboratory ID	Client ID
720-88191-4	DG-J2S-3.5-4
720-88191-5	DG-K2S-0.5-1
720-88191-6	DG-K2S-3.5-4

Laboratory ID	Client ID
720-88191-7	DG-L2S-0.5-1
720-88191-8	DG-L2S-3.5-4
720-88191-9	DG-M2S-0.5-1
720-88191-10	DG-M2S-3.5-4
720-88191-11	DG-L4S-0.5-1
720-88191-12	DG-L4S-3.5-4
720-88191-13	DG-M4S-0.5-1

Laboratory ID	Client ID
720-88191-14	DG-M4S-3.5-4
720-88191-15	DG-J4S-0.5-1
720-88191-16	DG-J4S-3.5-4
720-88191-17	DG-H4S-0.5-1
720-88191-18	DG-H4S-3.5-4
720-88191-19	DG-I4S-0.5-1
720-88191-20	DG-I4S-3.5-4

The samples were received at the laboratory at 0.7ºC, 1.9ºC and 2.6ºC, within the QAPP criteria of ≤6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted during data validation:

- Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.
- The sample IDs in the laboratory report were different from the sample IDs on the COC. The client sent additional information to the laboratory in an email (included in the laboratory report) requesting changes to the IDs.
- The collection dates on the COC did not include the year.
- There were time lapses for the first sample transfers documented on both pages of the COC. The samples were relinquished on 8/22/18, 1228 and received on 8/22/18, 1236 and 8/22/18, 1230.

1.0 METALS

The samples were analyzed for metals per EPA Methods 3050B/6010B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Initial Calibration

- ✓ Initial and Continuing Calibration Verification
- ✓ Initial and Continuing Calibration Blank
- ⊗ Method Blank
- ⊗ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ⊗ Serial Dilution
- ✓ Field Duplicate
- ✓ Target Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Initial Calibration

The initial calibration requirements were met.

The interference check standards (ICSA and ICSAB) met the method specified acceptance criteria.

1.4 Initial and Continuing Calibration Verifications (ICV and CCV)

The percent recoveries in the ICVs and CCVs were within the method specified acceptance limits.

1.5 Initial and Continuing Calibration Blank (ICB and CCB)

The ICBs and CCBs met the method specified acceptance criteria.

1.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250108, 250194 and 250197). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

Silver was detected in the method blank in batch 250194 at an estimated concentration greater than the MDL and less than the reporting limit (RL). Therefore, the estimated concentration of silver in sample DG-I4S-3.5-4 was U qualified as not detected at the RL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier*	Reason Code**
DG-I4S-3.5-4	Silver	250	J B	610	U	3

µg/kg-microgram per kilogram
J-estimated concentration greater than the MDL and less than the RL
B-compound was found in the blank and sample
* Validation qualifiers are defined in Attachment 1 at the end of this report
**Reason codes are defined in Attachment 2 at the end of this report

1.7 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-I2S-0.5-1. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the recoveries of arsenic, barium, lead and zinc were outside the laboratory specified acceptance criteria, Since the concentrations of arsenic, barium, lead and zinc in sample DG-I2S-0.5-1 were greater than four times the spike concentrations, no qualifications were applied to the data.

One or both of the recoveries of antimony and copper were low, and the MS recovery of vanadium was high, outside the laboratory specified acceptance criteria. In addition, a post digestion spike (PDS) was reported using sample DG-I2S-0.5-1 and the recoveries were acceptable. Therefore, the concentrations of antimony, copper and vanadium in sample DG-I2S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-I2S-0.5-1	Antimony	2600	F1	2600	J	4
DG-I2S-0.5-1	Copper	120000	F1	120000	J	4
DG-I2S-0.5-1	Vanadium	46000	F1	46000	J	4

µg/kg-microgram per kilogram
F1- laboratory flag indicating the MS and/or MSD was outside acceptance criteria

Two batch MS/MSD pairs were also reported Since these are batch QC, no qualifications were applied to the data.

1.8 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.9 Serial Dilution

A sample set specific serial dilution was reported, using sample DG-I2S-0.5-1. The percent difference (%D) results were within the method specified acceptance criteria, with the following exceptions.

The %Ds for arsenic, barium, chromium, cobalt, lead, nickel, vanadium and zinc were high and outside the method specified acceptance criteria. Therefore, the concentrations of arsenic, barium, chromium, cobalt, lead, nickel, vanadium and zinc in sample DG-I2S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-I2S-0.5-1	Arsenic	230000	NA	230000	J	11
DG-I2S-0.5-1	Barium	210000	NA	210000	J	11
DG-I2S-0.5-1	Chromium	20000	NA	20000	J	11
DG-I2S-0.5-1	Cobalt	9500	NA	9500	J	11
DG-I2S-0.5-1	Lead	2300000	NA	2300000	J	11
DG-I2S-0.5-1	Nickel	19000	NA	19000	J	11
DG-I2S-0.5-1	Vanadium	46000	F1	46000	J	11
DG-I2S-0.5-1	Zinc	490000	F2	490000	J	11

µg/kg-microgram per kilogram

F1- laboratory flag indicating the MS and/or MSD was outside acceptance criteria
F2-laboratory flag indicating the MS/MSD RPD exceeds control limits

Two batch serial dilutions were also reported. Since these are batch QC, no qualifications were applied to the data.

1.10 Field Duplicate

A field duplicate sample was not collected with the sample set.

1.11 Target Compound Quantitation

The compound quantitations were within the validation criteria.

1.12 Sensitivity

The samples were reported to the MDLs. Elevated nondetect results were reported due to the dilutions analyzed.

1.13 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per EPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verifications
- ✓ Initial and Continuing Calibration Blanks
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample

- ✓ Field Duplicate
- ✓ Target Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Initial Calibration

Appropriate initial calibrations were performed for mercury. Based on the method of calibration, the laboratory used a linear curve fit. The coefficient of determination (r^2) was greater than or equal to 0.990.

2.4 Initial and Continuing Calibration Verifications

The percent recoveries in the associated ICVs and CCVs were within the method specified acceptance criteria.

2.5 Initial and Continuing Calibration Blanks

The ICBs and CCBs met the method specified acceptance criteria.

2.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250231 and 250236). Mercury was not detected in the method blanks above the MDL.

2.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-L4S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

One batch MS/MSD pair was also reported. Since these are batch QC, no qualifications were applied to the data.

2.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.9 Field Duplicate

A field duplicate sample was not collected with the sample set.

2.10 Target Compound Quantitation

The compound quantitations were within the validation criteria.

2.11 Sensitivity

The sample was reported to the MDL. No elevated nondetect results were reported.

2.12 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

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

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher that the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower that the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

Geosyntec consultants

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Memorandum

Date:	12 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88192-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of seventeen soil samples, two field duplicate samples and one trip blank, collected 22 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B and 5030B/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (ARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88192-1	DG-I3S-0.5-1
720-88192-2	DG-I3S-3.5-4
720-88192-3	DG-J3S-0.5-1
720-88192-4	DG-J3S-3.5-4
720-88192-5	DG-K3S-0.5-1
720-88192-6	DG-K3S-3.5-4
720-88192-7	DG-L3S-0.5-1
720-88192-8	DG-L3S-3.5-4
720-88192-9	DG-M3S-0.5-1
720-88192-10	DG-M3S-3.5-4

Laboratory ID	Client ID
720-88192-11	DG-M3S-7.5-8
720-88192-12	DG-M5S-0.5-1
720-88192-13	DG-M5S-3.5-4
720-88192-14	DG-L5S-0.5-1
720-88192-15	DG-L5S-3.5-4
720-88192-16	DG-K5S-0.5-1
720-88192-17	DG-K5S-3.5-4
720-88192-18	DUP-02
720-88192-19	DUP-12
720-88192-20	TB-2

The samples were received at TA Pleasanton, California at 0.7ºC, 1.9ºC and 2.6ºC and at TA Canton, Ohio at 2.4ºC, within the criteria of <6ºC. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory*:*

- The VOC aliquots for samples DG-I3S-0.5-1, DG-I3S-3.5-4, DG-M3S-0.5-1, DG-M3S-3.5-4, DG-M3S-7.5-8, DG-L5S-0.5-1 and DG-L5S-3.5-4 were received in pre-weighed containers with labels that were added in the field and therefore, not included in the containers' tare weight. The laboratory indicated that the label weight was approximately

0.15 grams (g). No qualifications were applied to the data, based on professional and technical judgement.

- The container label for the following samples did not match the information listed on the chain of custody (COC) form:

    - Sample DG-M3S-7.5-8: The VOC methanol preserved container was labeled DG-M3S-3.5-4 with a collection time of 10:40. This container was not used for analysis.
    - Sample DG-L5S-0.5-1: One of the two 4-ounce (oz.) jars did not have a container label or sample ID. The laboratory used the process of elimination, sample matrix and color to identify the appropriate sample ID for the unlabeled container.
    - Trip blanks containers were received for TB-2 that were not documented on the COC. The client requested the analysis of the trip blank.

The collection times were not listed on the COC for field duplicate samples. The laboratory assigned collection times of 0:00.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

Incorrect error corrections were observed on the COCs, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B and 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates

✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and the Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recoveries for samples DG-I3S-3.5-4, DG-M3S-7.5-8, DG-L5S-0.5-1 and DUP-02 were low and outside the laboratory specified acceptance criteria. The chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for sample DG-M3S-3.5-4 were low and outside the laboratory specified acceptance criteria. The fluorobenzene, chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for sample DG-K3S-3.5-4 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated compounds in these samples were UJ qualified as estimated less than the method detection limits (MDLs) and the acetone concentration in sample DG-K3S-3.5-4 was J+ qualified as estimated with a high bias.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-I3S-3.5-4	1,1,2,2-Tetrachloroethane	0.62	U*	0.62	UJ	11
DG-I3S-3.5-4	1,2,3-Trichlorobenzene	0.61	U*	0.61	UJ	11
DG-I3S-3.5-4	1,2,3-Trichloropropane	0.64	U*	0.64	UJ	11
DG-I3S-3.5-4	1,2,4-Trichlorobenzene	0.59	U*	0.59	UJ	11
DG-I3S-3.5-4	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-I3S-3.5-4	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-I3S-3.5-4	1,2-Dichlorobenzene	0.56	U*	0.56	UJ	11
DG-I3S-3.5-4	1,3,5-Trimethylbenzene	0.54	U*	0.54	UJ	11
DG-I3S-3.5-4	1,3-Dichlorobenzene	0.60	U*	0.60	UJ	11
DG-I3S-3.5-4	1,4-Dichlorobenzene	0.59	U*	0.59	UJ	11
DG-I3S-3.5-4	2-Chlorotoluene	0.54	U*	0.54	UJ	11
DG-I3S-3.5-4	4-Chlorotoluene	0.56	U*	0.56	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-I3S-3.5-4	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-I3S-3.5-4	Bromobenzene	0.66	U*	0.66	UJ	11
DG-I3S-3.5-4	Hexachlorobutadiene	0.75	U*	0.75	UJ	11
DG-I3S-3.5-4	Naphthalene	1.2	U*	1.2	UJ	11
DG-I3S-3.5-4	n-Butylbenzene	0.83	U*	0.83	UJ	11
DG-I3S-3.5-4	N-Propylbenzene	0.55	U*	0.55	UJ	11
DG-I3S-3.5-4	sec-Butylbenzene	0.60	U*	0.60	UJ	11
DG-I3S-3.5-4	tert-Butylbenzene	0.61	U*	0.61	UJ	11
DG-K3S-3.5-4	1,1,1,2-Tetrachloroethane	0.58	U*	0.58	UJ	11
DG-K3S-3.5-4	1,1,1-Trichloroethane	0.46	U*	0.46	UJ	11
DG-K3S-3.5-4	1,1,2,2-Tetrachloroethane	0.57	U*	0.57	UJ	11
DG-K3S-3.5-4	1,1,2-Trichloroethane	0.53	U*	0.53	UJ	11
DG-K3S-3.5-4	1,1-Dichloroethane	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	1,1-Dichloropropene	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	1,2,3-Trichlorobenzene	0.56	U*	0.56	UJ	11
DG-K3S-3.5-4	1,2,3-Trichloropropane	0.58	U*	0.58	UJ	11
DG-K3S-3.5-4	1,2,4-Trichlorobenzene	0.54	U*	0.54	UJ	11
DG-K3S-3.5-4	1,2,4-Trimethylbenzene	1.2	U*	1.2	UJ	11
DG-K3S-3.5-4	1,2-Dibromo-3-Chloropropane	1.3	U*	1.3	UJ	11
DG-K3S-3.5-4	1,2-Dichlorobenzene	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	1,2-Dichloroethane	0.58	U*	0.58	UJ	11
DG-K3S-3.5-4	1,2-Dichloropropane	0.48	U*	0.48	UJ	11
DG-K3S-3.5-4	1,3,5-Trimethylbenzene	0.49	U*	0.49	UJ	11
DG-K3S-3.5-4	1,3-Dichlorobenzene	0.55	U*	0.55	UJ	11
DG-K3S-3.5-4	1,3-Dichloropropane	0.55	U*	0.55	UJ	11
DG-K3S-3.5-4	1,4-Dichlorobenzene	0.54	U*	0.54	UJ	11
DG-K3S-3.5-4	2,2-Dichloropropane	1.5	U*	1.5	UJ	11
DG-K3S-3.5-4	2-Butanone	16	U*	16	UJ	11
DG-K3S-3.5-4	2-Chlorotoluene	0.49	U*	0.49	UJ	11
DG-K3S-3.5-4	2-Hexanone	7.6	U*	7.6	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K3S-3.5-4	4-Chlorotoluene	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	4-Isopropyltoluene	1.9	U*	1.9	UJ	11
DG-K3S-3.5-4	4-Methyl-2-pentanone	7.6	U*	7.6	UJ	11
DG-K3S-3.5-4	Acetone	42	*	42	J+	11
DG-K3S-3.5-4	Benzene	0.49	U*	0.49	UJ	11
DG-K3S-3.5-4	Bromobenzene	0.60	U*	0.60	UJ	11
DG-K3S-3.5-4	Bromoform	1.5	U*	1.5	UJ	11
DG-K3S-3.5-4	Bromomethane	0.60	U*	0.60	UJ	11
DG-K3S-3.5-4	Carbon tetrachloride	0.47	U*	0.47	UJ	11
DG-K3S-3.5-4	Chlorobenzene	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	Chlorobromomethane	0.55	U*	0.55	UJ	11
DG-K3S-3.5-4	Chlorodibromomethane	0.54	U*	0.54	UJ	11
DG-K3S-3.5-4	Chloroethane	0.43	U*	0.43	UJ	11
DG-K3S-3.5-4	Chloroform	0.50	U*	0.50	UJ	11
DG-K3S-3.5-4	Chloromethane	0.60	U*	0.60	UJ	11
DG-K3S-3.5-4	cis-1,2-Dichloroethene	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	cis-1,3-Dichloropropene	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	Dibromomethane	0.65	U*	0.65	UJ	11
DG-K3S-3.5-4	Dichlorobromomethane	0.55	U*	0.55	UJ	11
DG-K3S-3.5-4	Dichlorodifluoromethane	0.60	U*	0.60	UJ	11
DG-K3S-3.5-4	Ethylbenzene	0.57	U*	0.57	UJ	11
DG-K3S-3.5-4	Ethylene Dibromide	1.1	U*	1.1	UJ	11
DG-K3S-3.5-4	GRO C4-C12	76	U*	76	UJ	11
DG-K3S-3.5-4	Hexachlorobutadiene	0.68	U*	0.68	UJ	11
DG-K3S-3.5-4	Isopropylbenzene	0.52	U*	0.52	UJ	11
DG-K3S-3.5-4	Methyl tert-butyl ether	0.91	U*	0.91	UJ	11
DG-K3S-3.5-4	Methylene Chloride	4.3	U*	4.3	UJ	11
DG-K3S-3.5-4	Naphthalene	1.1	U*	1.1	UJ	11
DG-K3S-3.5-4	n-Butylbenzene	0.76	U*	0.76	UJ	11
DG-K3S-3.5-4	N-Propylbenzene	0.50	U*	0.50	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K3S-3.5-4	sec-Butylbenzene	0.55	U*	0.55	UJ	11
DG-K3S-3.5-4	Styrene	0.48	U*	0.48	UJ	11
DG-K3S-3.5-4	tert-Butylbenzene	0.55	U*	0.55	UJ	11
DG-K3S-3.5-4	Tetrachloroethene	0.51	U*	0.51	UJ	11
DG-K3S-3.5-4	Toluene	0.54	U*	0.54	UJ	11
DG-K3S-3.5-4	trans-1,2-Dichloroethene	0.57	U*	0.57	UJ	11
DG-K3S-3.5-4	trans-1,3-Dichloropropene	0.51	U*	0.51	UJ	11
DG-K3S-3.5-4	Trichloroethene	0.48	U*	0.48	UJ	11
DG-K3S-3.5-4	Trichlorofluoromethane	0.43	U*	0.43	UJ	11
DG-K3S-3.5-4	Vinyl acetate	3.8	U*	3.8	UJ	11
DG-K3S-3.5-4	Vinyl chloride	0.55	U*	0.55	UJ	11
DG-L5S-0.5-1	1,1,2,2-Tetrachloroethane	0.62	U*	0.62	UJ	11
DG-L5S-0.5-1	1,2,3-Trichlorobenzene	0.61	U*	0.61	UJ	11
DG-L5S-0.5-1	1,2,3-Trichloropropane	0.63	U*	0.63	UJ	11
DG-L5S-0.5-1	1,2,4-Trichlorobenzene	0.58	U*	0.58	UJ	11
DG-L5S-0.5-1	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DG-L5S-0.5-1	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-L5S-0.5-1	1,2-Dichlorobenzene	0.56	U*	0.56	UJ	11
DG-L5S-0.5-1	1,3,5-Trimethylbenzene	0.53	U*	0.53	UJ	11
DG-L5S-0.5-1	1,3-Dichlorobenzene	0.59	U*	0.59	UJ	11
DG-L5S-0.5-1	1,4-Dichlorobenzene	0.58	U*	0.58	UJ	11
DG-L5S-0.5-1	2-Chlorotoluene	0.53	U*	0.53	UJ	11
DG-L5S-0.5-1	4-Chlorotoluene	0.56	U*	0.56	UJ	11
DG-L5S-0.5-1	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-L5S-0.5-1	Bromobenzene	0.65	U*	0.65	UJ	11
DG-L5S-0.5-1	Hexachlorobutadiene	0.74	U*	0.74	UJ	11
DG-L5S-0.5-1	Naphthalene	1.2	U*	1.2	UJ	11
DG-L5S-0.5-1	n-Butylbenzene	0.82	U*	0.82	UJ	11
DG-L5S-0.5-1	N-Propylbenzene	0.54	U*	0.54	UJ	11
DG-L5S-0.5-1	sec-Butylbenzene	0.59	U*	0.59	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-L5S-0.5-1	tert-Butylbenzene	0.60	U*	0.60	UJ	11
DG-M3S-3.5-4	1,1,1,2-Tetrachloroethane	0.89	U*	0.89	UJ	11
DG-M3S-3.5-4	1,1,2,2-Tetrachloroethane	0.88	U*	0.88	UJ	11
DG-M3S-3.5-4	1,2,3-Trichlorobenzene	0.87	U*	0.87	UJ	11
DG-M3S-3.5-4	1,2,3-Trichloropropane	0.90	U*	0.90	UJ	11
DG-M3S-3.5-4	1,2,4-Trichlorobenzene	0.83	U*	0.83	UJ	11
DG-M3S-3.5-4	1,2,4-Trimethylbenzene	1.9	U*	1.9	UJ	11
DG-M3S-3.5-4	1,2-Dibromo-3-Chloropropane	2.0	U*	2.0	UJ	11
DG-M3S-3.5-4	1,2-Dichlorobenzene	0.80	U*	0.80	UJ	11
DG-M3S-3.5-4	1,3,5-Trimethylbenzene	0.76	U*	0.76	UJ	11
DG-M3S-3.5-4	1,3-Dichlorobenzene	0.84	U*	0.84	UJ	11
DG-M3S-3.5-4	1,4-Dichlorobenzene	0.83	U*	0.83	UJ	11
DG-M3S-3.5-4	2-Chlorotoluene	0.76	U*	0.76	UJ	11
DG-M3S-3.5-4	4-Chlorotoluene	0.80	U*	0.80	UJ	11
DG-M3S-3.5-4	4-Isopropyltoluene	2.9	U*	2.9	UJ	11
DG-M3S-3.5-4	Bromobenzene	0.93	U*	0.93	UJ	11
DG-M3S-3.5-4	Bromoform	2.3	U*	2.3	UJ	11
DG-M3S-3.5-4	Chlorobenzene	0.81	U*	0.81	UJ	11
DG-M3S-3.5-4	Ethylbenzene	0.88	U*	0.88	UJ	11
DG-M3S-3.5-4	Hexachlorobutadiene	1.1	U*	1.1	UJ	11
DG-M3S-3.5-4	Isopropylbenzene	0.80	U*	0.80	UJ	11
DG-M3S-3.5-4	Naphthalene	1.8	U*	1.8	UJ	11
DG-M3S-3.5-4	n-Butylbenzene	1.2	U*	1.2	UJ	11
DG-M3S-3.5-4	N-Propylbenzene	0.77	U*	0.77	UJ	11
DG-M3S-3.5-4	sec-Butylbenzene	0.84	U*	0.84	UJ	11
DG-M3S-3.5-4	Styrene	0.74	U*	0.74	UJ	11
DG-M3S-3.5-4	tert-Butylbenzene	0.86	U*	0.86	UJ	11
DG-M3S-3.5-4	Toluene	0.83	U*	0.83	UJ	11
DG-M3S-7.5-8	1,1,2,2-Tetrachloroethane	0.67	U*	0.67	UJ	11
DG-M3S-7.5-8	1,2,3-Trichlorobenzene	0.66	U*	0.66	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-M3S-7.5-8	1,2,3-Trichloropropane	0.69	U*	0.69	UJ	11
DG-M3S-7.5-8	1,2,4-Trichlorobenzene	0.63	U*	0.63	UJ	11
DG-M3S-7.5-8	1,2,4-Trimethylbenzene	1.5	U*	1.5	UJ	11
DG-M3S-7.5-8	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	11
DG-M3S-7.5-8	1,2-Dichlorobenzene	0.61	U*	0.61	UJ	11
DG-M3S-7.5-8	1,3,5-Trimethylbenzene	0.58	U*	0.58	UJ	11
DG-M3S-7.5-8	1,3-Dichlorobenzene	0.64	U*	0.64	UJ	11
DG-M3S-7.5-8	1,4-Dichlorobenzene	0.63	U*	0.63	UJ	11
DG-M3S-7.5-8	2-Chlorotoluene	0.58	U*	0.58	UJ	11
DG-M3S-7.5-8	4-Chlorotoluene	0.61	U*	0.61	UJ	11
DG-M3S-7.5-8	4-Isopropyltoluene	2.2	U*	2.2	UJ	11
DG-M3S-7.5-8	Bromobenzene	0.70	U*	0.70	UJ	11
DG-M3S-7.5-8	Hexachlorobutadiene	0.80	U*	0.80	UJ	11
DG-M3S-7.5-8	Naphthalene	1.3	U*	1.3	UJ	11
DG-M3S-7.5-8	n-Butylbenzene	0.89	U*	0.89	UJ	11
DG-M3S-7.5-8	N-Propylbenzene	0.59	U*	0.59	UJ	11
DG-M3S-7.5-8	sec-Butylbenzene	0.64	U*	0.64	UJ	11
DG-M3S-7.5-8	tert-Butylbenzene	0.65	U*	0.65	UJ	11
DUP-02	1,1,2,2-Tetrachloroethane	0.59	U*	0.59	UJ	11
DUP-02	1,2,3-Trichlorobenzene	0.58	U*	0.58	UJ	11
DUP-02	1,2,3-Trichloropropane	0.61	U*	0.61	UJ	11
DUP-02	1,2,4-Trichlorobenzene	0.56	U*	0.56	UJ	11
DUP-02	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DUP-02	1,2-Dibromo-3-Chloropropane	1.3	U*	1.3	UJ	11
DUP-02	1,2-Dichlorobenzene	0.53	U*	0.53	UJ	11
DUP-02	1,3,5-Trimethylbenzene	0.51	U*	0.51	UJ	11
DUP-02	1,3-Dichlorobenzene	0.57	U*	0.57	UJ	11
DUP-02	1,4-Dichlorobenzene	0.56	U*	0.56	UJ	11
DUP-02	2-Chlorotoluene	0.51	U*	0.51	UJ	11
DUP-02	4-Chlorotoluene	0.53	U*	0.53	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-02	4-Isopropyltoluene	2.0	U*	2.0	UJ	11
DUP-02	Bromobenzene	0.62	U*	0.62	UJ	11
DUP-02	Hexachlorobutadiene	0.71	U*	0.71	UJ	11
DUP-02	Naphthalene	1.2	U*	1.2	UJ	11
DUP-02	n-Butylbenzene	0.79	U*	0.79	UJ	11
DUP-02	N-Propylbenzene	0.52	U*	0.52	UJ	11
DUP-02	sec-Butylbenzene	0.57	U*	0.57	UJ	11
DUP-02	tert-Butylbenzene	0.57	U*	0.57	UJ	11

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Seven method blanks were reported (batches 250345, 250350, 250352, 250405, 250407, 250453 and 250529). VOCs were not detected in the method blanks above the MDLs, with the following exception.

Naphthalene was detected at an estimated concentration greater than the MDL and less than the reporting limit (RL) in the method blank in batch 250529. Since naphthalene was not detected in the associated samples, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A batch MS/MSD pair was reported in batch 250529. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batches 250345, 250350, 250352, 250405, 250407 and 250453. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Seven LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The vinyl chloride recovery in the LCSD in batch 250352 was high and outside the laboratory specified acceptance criteria. Since vinyl chloride was not detected in the associated samples, no qualifications were applied to the data.

The 1,1-dichloroethene recoveries and the LCSD 1,1,2-trichloro-1,2,2-trifluoroethane recovery in the LCS/LCSD in batch 250405 were high and outside the laboratory specified acceptance criteria. Since 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane were not detected in the associated samples, no qualifications were applied to the data.

The 1,1-dichloroethene and carbon disulfide recoveries in the LCS/LCSD in batch 250407 were high and outside the laboratory specified acceptance criteria. Since 1,1-dichloroethene and carbon disulfide were not detected in the associated samples, no qualifications were applied to the data.

The 1,1-dichloroethene, carbon disulfide and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSDs in batches 250453 and 250529 were high and outside the laboratory specified acceptance criteria. Since 1,1-dichloroethene, carbon disulfide and 1,1,2-trichloro-1,2,2-trifluoroethane were not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

One trip blank accompanied the samples, TB-2. VOCs were not detected in the trip blank above the MDLs.

1.8 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-L5S-0.5-1, with the following exception.

Acetone was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-L5S-0.5-1 and reported at a concentration greater than the RL in field duplicate DUP-02, resulting in a non-calculable RPD between the results. Therefore, the acetone concentrations in field duplicate pair DG-L5S-0.5-1/DUP-02 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L5S-0.5-1	Acetone	33	J	NC	33	J	7
DUP-02	Acetone	56	NA		56	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment

- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250048 and 250190). PAHs were not detected in the method blanks above the MDLs, with the following exceptions.

Naphthalene was detected in the method blank in batch 250048 at an estimated concentration greater than the MDL and less than the RL. Since the naphthalene concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

Chrysene was detected in the method blank in batch 250190 at an estimated concentration greater than the MDL and less than the RL. Since the chrysene concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-L5S-0.5-1, with the following exceptions.

The 2-methylnaphthalene, acenaphthylene, anthracene and naphthalene RPD results were greater than 50%. Therefore, the concentrations of these compounds in field duplicate pair DG-L5S-0.5-1/DUP-02 were J qualified as estimated.

Acenaphthene, benzo[k]fluoranthene and fluorene were detected in one sample of the field duplicate pair, and not detected in the other sample, resulting in non-calculable RPDs. Therefore, the non-detect results for these compounds in field duplicate pair DG-L5S-0.5-1/DUP-02 were UJ qualified as estimated less than the MDLs and the concentrations were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L5S-0.5-1	2-Methylnaphthalene	72	NA	100	72	J	7
DUP-02	2-Methylnaphthalene	24	NA		24	J	7
DG-L5S-0.5-1	Acenaphthene	11	U	NC	11	UJ	7
DUP-02	Acenaphthene	6.3	J		6.3	J	7
DG-L5S-0.5-1	Acenaphthylene	40	NA	76	40	J	7
DUP-02	Acenaphthylene	18	NA		18	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L5S-0.5-1	Anthracene	76	NA	76	76	J	7
DUP-02	Anthracene	34	NA		34	J	7
DG-L5S-0.5-1	Benzo[k]fluoranthene	74	NA	NC	74	J	7
DUP-02	Benzo[k]fluoranthene	4.0	U		4.0	UJ	7
DG-L5S-0.5-1	Fluorene	8.5	U	NC	8.5	UJ	7
DUP-02	Fluorene	6.4	J		6.4	J	7
DG-L5S-0.5-1	Naphthalene	65	B	102	65	J	7
DUP-02	Naphthalene	21	NA		21	J	7

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250053 and 250087). The organochlorine pesticides were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

There were no decachlorobiphenyl and tetrachloro-m-xylene recoveries (0%) in sample DG-L5S-0.5-1. Since this sample was analyzed at a 1:10 dilution, no qualifications were applied to the data.

The decachlorobiphenyl recovery in sample DUP-02 was high and outside the laboratory specified acceptance criteria. Since the other surrogate had acceptable recovery, no qualifications were applied to the data based on professional and technical judgment.

3.7 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-L5S-0.5-1.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank

⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of solid samples are 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 342523 and 342977). PCBs were not detected in the method blanks above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

One sample set specific MS/MSD pair was reported, using sample DUP-02. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The Aroclor-1016 and Aroclor-1260 recoveries in the MS were low and outside the laboratory specified acceptance criteria. Additionally, the Aroclor-1016 and Aroclor-1260 RPD results were high and outside the laboratory specified acceptance criteria. Therefore, based on professional and technical judgement, the non-detect Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248 and Aroclor-1254 results in sample DUP-02 were UJ qualified as estimate less than the MDLs and the Aroclor-1260 concentration was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-02	Aroclor-1016	110	U F2 F1	110	UJ	4
DUP-02	Aroclor-1221	120	U	120	UJ	4
DUP-02	Aroclor-1232	110	U	110	UJ	4
DUP-02	Aroclor-1242	93	U	93	UJ	4
DUP-02	Aroclor-1248	120	U	120	UJ	4
DUP-02	Aroclor-1254	110	U	110	UJ	4
DUP-02	Aroclor-1260	3000	F2 F1	3000	J	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD RPD result was outside the acceptance criteria.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-L5S-0.5-1, with the following exception.

The Aroclor-1260 RPD result was greater than 50%. Therefore, the Aroclor-1260 concentrations in field duplicate pair DG-L5S-0.5-1/DUP-02 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L5S-0.5-1	Aroclor-1260	13000	NA	125	13000	J	7
DUP-02	Aroclor-1260	3000	F2 F1		3000	J	7

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD RPD result was outside the acceptance criteria.
NA- Not applicable

4.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250044 and 250075). DRO was not detected in the method blanks above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

5.7 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for DRO. Acceptable precision (RPD ≤50%) was not demonstrated between the field duplicate and the original sample, DG-L5S-0.5-1. Therefore, the DRO concentrations in field duplicate pair DG-L5S-0.5-1/DUP-02 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L5S-0.5-1	DRO	210000	NA	55	210000	J	7
DUP-02	DRO	120000	NA		120000	J	7

µg/kg - Microgram per kilogram.
NA- Not applicable

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250194 and 250197). Metals were not detected in the method blanks above the MDLs, with the following exception.

Silver was detected in the method blank in batch 250194 at an estimated concentration greater than the MDL and less than the RL. Therefore, the estimated silver concentrations in samples DG-I3S-0.5-1, DG-J3S-0.5-1 and DG-J3S-3.5-4 were U qualified as not detected at the RL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I3S-0.5-1	Silver	180	J B	760	U	3
DG-J3S-0.5-1	Silver	210	J B	630	U	3
DG-J3S-3.5-4	Silver	230	J B	790	U	3

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-L3S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The zinc MS recovery was low and outside the laboratory specified acceptance criteria. Since the zinc concentration in the sample was greater than four times the spike concentration, no qualifications were applied to the data.

The silver recoveries were high and outside the laboratory specified acceptance criteria. Since silver was not detected in sample DG-L3S-0.5-1, no qualifications were applied to the data.

One or both of the recoveries of the following compounds were high and outside the laboratory specified acceptance criteria: Barium, beryllium, chromium, copper, lead, nickel, and vanadium.

Since the post digestion spike (PDS) recoveries for these compounds were less than 125%, the concentrations of these compounds in sample DG-L3S-0.5-1 were J qualified as estimated.

The antimony recoveries in the MS/MSD pair using sample DG-L3S-0.5-1 were low and outside the laboratory specified acceptance criteria. The PDS recovery was also low and outside the laboratory specified acceptance criteria. Therefore, the antimony concentration in sample DG-L3S-0.5-1 was J- qualified as estimated with a low bias.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L3S-0.5-1	Antimony	2300	F1	2300	J-	4
DG-L3S-0.5-1	Barium	75000	F1	75000	J	4
DG-L3S-0.5-1	Beryllium	140	J F1	140	J	4
DG-L3S-0.5-1	Chromium	26000	F1	26000	J	4
DG-L3S-0.5-1	Copper	140000	F1	140000	J	4
DG-L3S-0.5-1	Lead	170000	F1	170000	J	4
DG-L3S-0.5-1	Nickel	20000	F1	20000	J	4
DG-L3S-0.5-1	Vanadium	76000	F1	76000	J	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated that one serial dilution, using sample DG-L3S-0.5-1, was analyzed. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, chromium, cobalt, copper, lead, nickel, vanadium and zinc RPDs were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-L3S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L3S-0.5-1	Barium	75000	F1	75000	J	8
DG-L3S-0.5-1	Chromium	26000	F1	26000	J	8
DG-L3S-0.5-1	Cobalt	11000	NA	11000	J	8
DG-L3S-0.5-1	Copper	140000	F1	140000	J	8
DG-L3S-0.5-1	Lead	170000	F1	170000	J	8
DG-L3S-0.5-1	Nickel	20000	F1	20000	J	8
DG-L3S-0.5-1	Vanadium	76000	F1	76000	J	8
DG-L3S-0.5-1	Zinc	290000	NA	290000	J	8

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
NA - Not applicable

6.7 Field Duplicate

Two field duplicate samples, DUP-02 and DUP-12, were collected with the sample set and analyzed for metals. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-L5S-0.5-1 and DG-L3S-3.5-4, respectively, with the following exceptions.

Selenium was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-L5S-0.5-1 and not detected in field duplicate DUP-02, resulting a non-calculable RPD. Therefore, the non-detect selenium result in field duplicate DUP-02 was UJ qualified as estimated less than the MDL and the selenium concentration in sample DG-L5S-0.5-1 was J qualified as estimated.

The following compounds in field duplicate pair DG-L3S-3.5-4/DUP-12 have RPD results greater than 50%: Arsenic, barium, cadmium, chromium, copper, lead, nickel and zinc. Therefore, the concentrations of these compounds in field duplicate pair DG-L3S-3.5-4/DUP-12 were J qualified as estimated.

Antimony, beryllium and silver were detected at estimated concentrations greater than the MDLs and less than the RLs in one of the samples in field duplicate pair DG-L3S-3.5-4/DUP-12 and detected at concentrations greater than the RLs in the other sample, resulting in non-calculable

RPD results. Therefore, the concentrations of these compounds in field duplicate pair DG-L3S-3.5-4/DUP-12 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L3S-3.5-4	Antimony	17000	NA	NC	17000	J	7
DUP-12	Antimony	910	J		910	J	7
DG-L3S-3.5-4	Arsenic	150000	NA	117	150000	J	7
DUP-12	Arsenic	39000	NA		39000	J	7
DG-L3S-3.5-4	Barium	720000	NA	151	720000	J	7
DUP-12	Barium	100000	NA		100000	J	7
DG-L3S-3.5-4	Beryllium	760	NA	NC	760	J	7
DUP-12	Beryllium	110	J		110	J	7
DG-L3S-3.5-4	Cadmium	1900	NA	132	1900	J	7
DUP-12	Cadmium	390	NA		390	J	7
DG-L3S-3.5-4	Chromium	23000	NA	56	23000	J	7
DUP-12	Chromium	13000	NA		13000	J	7
DG-L3S-3.5-4	Copper	450000	NA	129	450000	J	7
DUP-12	Copper	97000	NA		97000	J	7
DG-L3S-3.5-4	Lead	1800000	NA	173	1800000	J	7
DUP-12	Lead	130000	NA		130000	J	7
DG-L3S-3.5-4	Nickel	21000	NA	63	21000	J	7
DUP-12	Nickel	11000	NA		11000	J	7
DG-L3S-3.5-4	Silver	3100	NA	NC	3100	J	7
DUP-12	Silver	190	J		190	J	7
DG-L3S-3.5-4	Zinc	1300000	NA	151	1300000	J	7
DUP-12	Zinc	180000	NA		180000	J	7
DG-L5S-0.5-1	Selenium	640	J	NC	640	J	7
DUP-02	Selenium	460	U		460	UJ	7

µg/kg - Microgram per kilogram.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.8 Sensitivity

The samples were reported to the MDLs. The MDLs met the proposed SSSLs in the Work Plan Table 6. Elevated non-detect results were reported due to dilutions analyzed.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250236 and 250239). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Two field duplicate samples, DUP-02 and DUP-12, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD ≤50%) was not demonstrated between the field duplicates and the original samples, DG-L5S-0.5-1 and DG-L3S-3.5-4, respectively. Therefore, the mercury concentrations in field duplicate pairs DG-L5S-0.5-1/DUP-02 and DG-L3S-3.5-4/DUP-12 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L3S-3.5-4	Mercury	1200	NA	169	1200	J	7
DUP-12	Mercury	100	NA		100	J	7
DG-L5S-0.5-1	Mercury	190	NA	64	190	J	7
DUP-02	Mercury	370	NA		370	J	7

µg/kg - Microgram per kilogram.
NA - Not applicable

7.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	24 October 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88203-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of five soil samples, collected 22 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Sacramento, California and sent to TA Nashville, Tennessee for analysis of the following test:

- Volatile Organic Compounds (VOCs) 1,2,3-Trichloropropane and 1,2-Dibromo-3-Chloropropane by United States Environmental Protection Agency (USEPA) Methods 5035/8260B

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88203-1	DG-J5S-0.5-1
720-88203-2	DG-H5S-0.5-1
720-88203-3	DG-F5S-0.5-1

Laboratory ID	Client ID
720-88203-4	DG-D5S-0.5-1
720-88203-5	DG-B5S-0.5-1

The samples were received by TA Sacramento, California at 1.7°C and by TA Nashville, Tennessee at 2.4°C, within the criteria of <6°C.

Incorrect error corrections were observed on the original chain of custody (COC) instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 538385 and 528850). VOCs were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy. See section 1.5 below.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks were not submitted with the sample set.

1.8 Field Blank

Field blanks were not submitted with the sample set.

1.9 Field Duplicate

Field duplicate samples were not submitted with the sample set.

1.10 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

Geosyntec consultants

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Memorandum

Date:	7 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88215-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of twenty soil samples and four field duplicate samples, collected 22 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Metals by United States Environmental Protection Agency (USEPA) Methods 3050B/6010B
- Mercury by USEPA Method 7471A

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88215-1	DG-J6S-0.5-1
720-88215-2	DG-J6S-3.5-4
720-88215-3	DG-L6S-0.5-1
720-88215-4	DG-L6S-3.5-4
720-88215-5	DG-M6S-0.5-1
720-88215-6	DG-M6S-3.5-4
720-88215-7	DG-M8S-0.5-1
720-88215-8	DG-M8S-3.5-4
720-88215-9	DUP-10
720-88215-10	DUP-9
720-88215-11	DG-D6S-0.5-1
720-88215-12	DG-D6S-3.5-4

Laboratory ID	Client ID
720-88215-13	DG-E6S-0.5-1
720-88215-14	DG-E6S-3.5-4
720-88215-15	DG-G6S-0.5-1
720-88215-16	DG-G6S-3.5-4
720-88215-17	DG-I6S-0.5-1
720-88215-18	DG-I6S-3.5-4
720-88215-19	DUP-8
720-88215-20	DUP-7
720-88215-21	DG-A2S-0.5-1
720-88215-22	DG-A2S-3.5-4
720-88215-23	DG-B2S-0.5-1
720-88215-24	DG-B2S-3.5-4

The samples were received at TA Pleasanton, California at 3.1ºC, within the criteria of ≤6ºC. No sample preservation issues were noted by the laboratory.

The following samples were received at the laboratory but were not documented on the chain of custody (COC): DG-A2S-0.5-1, DG-A2S-3.5-4, DG-B2S-0.5-1 and DG-B2S-3.5-4. The client requested the analyses of these samples by USEPA methods 3050B/6010B and 7471A.

The sample collection times were not listed on the COC for field duplicate samples. The laboratory assigned collection times of 0:00.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate

- ✓ Laboratory Control Sample
- ✓ Serial Dilation
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250197, 250235 and 25092). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exception.

Barium was detected in the method blank in batch 250235 at an estimated concentration greater than the MDL and less than the reporting limit (RL). Since the barium concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Serial Dilution

Serial dilutions were not reported with the sample set.

1.7 Field Duplicate

Four field duplicate samples, DUP-7, DUP-8, DUP-9 and DUP-10, were collected with the sample set and analyzed for metals. Acceptable precision [relative percent difference (RPD) $\leq$50%] was demonstrated between the field duplicates and the original samples, DG-E6S-3.5-4, DG-G6S-0.5-1, DG-I6S-0.5-1 and DG-L6S-0.5-1, respectively, with the following exceptions.

Beryllium was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-E6S-3.5-4 and not detected in field duplicate DUP-7, resulting in a non-calculable RPD. Therefore, the non-detect beryllium result in field duplicate DUP-7 was UJ qualified as estimated less than the MDL and the estimated beryllium concentration in sample DG-E6S-3.5-4 was J qualified as estimated.

Arsenic was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-7 and at a concentration greater than the RL in sample DG-E6S-3.5-4, resulting in a non-calculable RPD. Therefore, the arsenic concentrations in this field duplicate pair were J qualified as estimated.

Cadmium, lead and zinc in field duplicate pair DG-E6S-3.5-4/DUP-7 had RPD results greater than 50%. Therefore, the concentrations of cadmium, lead and zinc in this field duplicate pair were J qualified as estimated.

Copper and lead in field duplicate pair DG-I6S-0.5-1/DUP- had RPD results greater than 50%. Therefore, the concentrations of copper and lead in this field duplicate pair were J qualified as estimated.

Beryllium was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-9 and not detected in sample DG-I6S-0.5-1, resulting in a non-calculable RPD. Therefore, the non-detect beryllium result in sample DG-I6S-0.5-1 was UJ qualified as

estimated less than the MDL and the estimated beryllium concentration in field duplicate DUP-9 was J qualified as estimated.

Arsenic was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-I6S-0.5-1 and at a concentration greater than the RL in field duplicate DUP-9, resulting in a non-calculable RPD. Therefore, the arsenic concentrations in this field duplicate pair were J qualified as estimated.

Antimony was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-L6S-0.5-1 and not detected in field duplicate DUP-10, resulting in a non-calculable RPD. Therefore, the non-detect antimony result in field duplicate DUP-10 was UJ qualified as estimated less than the MDL and the estimated antimony concentration in sample DG-L6S-0.5-1 was J qualified as estimated.

Lead was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-L6S-0.5-1 and at a concentration greater than the RL in field duplicate DUP-10, resulting in a non-calculable RPD. Therefore, the lead concentrations in this field duplicate pair were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier*	Reason code**
DG-E6S-3.5-4	Arsenic	4600	NA	NC	4600	J	7
DUP-7	Arsenic	1800	J		1800	J	7
DG-E6S-3.5-4	Beryllium	120	J	NC	120	J	7
DUP-7	Beryllium	78	U		78	UJ	7
DG-E6S-3.5-4	Cadmium	1100	NA	106	1100	J	7
DUP-7	Cadmium	340	NA		340	J	7
DG-E6S-3.5-4	Lead	170000	NA	98	170000	J	7
DUP-7	Lead	58000	NA		58000	J	7
DG-E6S-3.5-4	Zinc	230000	NA	82	230000	J	7
DUP-7	Zinc	96000	NA		96000	J	7
DG-I6S-0.5-1	Arsenic	3100	J	NC	3100	J	7
DUP-9	Arsenic	3500	NA		3500	J	7
DG-I6S-0.5-1	Beryllium	130	U	NC	130	UJ	7
DUP-9	Beryllium	250	J		250	J	7
DG-I6S-0.5-1	Copper	22000	NA	51	22000	J	7

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier*	Reason code**
DUP-9	Copper	13000	NA		13000	J	7
DG-I6S-0.5-1	Lead	37000	NA	85	37000	J	7
DUP-9	Lead	15000	NA		15000	J	7
DG-L6S-0.5-1	Antimony	380	J	NC	380	J	7
DUP-10	Antimony	270	U		270	UJ	7
DG-L6S-0.5-1	Lead	740	J	NC	740	J	7
DUP-10	Lead	2200	NA		2200	J	7

µg/kg - Microgram per kilogram.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Validation qualifiers are defined in Attachment 1 at the end of this report.
** - Reason codes are defined in Attachment 2 at the end of this report.

1.8 Sensitivity

The samples were reported to the MDLs. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6. Elevated non-detect results were reported due to dilutions analyzed.

1.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank

⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250269 and 250416). Mercury was not detected in the method blanks above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two project specific MS/MSD pairs were reported, using samples DG-J6S-0.5-1 and DG-A2S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exception.

The mercury recovery in the MSD using sample DG-A2S-0.5-1 was high and outside the laboratory specified acceptance criteria. Therefore, the mercury concentration in sample DG-A2S-0.5-1 was J+ qualified as estimated with a high bias.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A2S-0.5-1	Mercury	520	F1	520	J+	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Field Duplicate

Four field duplicate samples, DUP-7, DUP-8, DUP-9 and DUP-10, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-E6S-3.5-4, DG-G6S-0.5-1, DG-I6S-0.5-1 and DG-L6S-0.5-1, respectively.

2.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

Geosyntec consultants

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Memorandum

Date:	29 November 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88216-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of sixteen soil samples and two field duplicate samples, collected 22 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B and 5030B/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (ARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exception.

Due to MS/MSD recoveries less than 30%, the non-detect antimony result in sample DG-G6S-MS/MDS was R qualified as rejected. See section 6.4 below.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88216-1	DG-A4S-0.5-1
720-88216-2	DG-A4S-3.5-4
720-88216-3	DG-A4S-19.5-20
720-88216-4	DG-A6S-0.5-1
720-88216-5	DG-A6S-3.5-4
720-88216-6	DG-A6S-19.5-20
720-88216-7	DG-B6S-0.5-1
720-88216-8	DG-B6S-3.5-4
720-88216-9	DG-G6S-MS/MDS

Laboratory ID	Client ID
720-88216-10	DUP-6
720-88216-11	DG-L8S-0.5-1
720-88216-12	DG-L8S-3.5-4
720-88216-13	DG-K8S-0.5-1
720-88216-14	DG-K8S-3.5-4
720-88216-15	DG-J8S-0.5-1
720-88216-16	DG-J8S-3.5-4
720-88216-17	DG-K8S-MS/MDS
720-88216-18	DUP-20

The samples were received at TA Pleasanton, California at 3.1°C and at TA Canton, Ohio at 4.2°C, within the criteria of ≤6°C. No sample preservation issues were noted by the laboratory.

The sample collection times were not listed on the chain of custody (COC) for the field duplicate samples and sample DG-K8S-MS/MSD. The laboratory assigned collections time of 0:00.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

An incorrect error correction was observed on the original COC, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B and 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and the Internal Standard Recovery Report indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DG-G6S-MS/MDS was low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results of the associated compounds in sample DG-G6S-MS/MDS were UJ qualified as estimated less than the method detection limits (MDLs).

The lab chronicle indicated that the sample aliquots taken from 8-oz. jars were used for the 5030B/8260B VOC analyses of samples DG-G6S-MS/MDS and DG-K8S-MS/MDS instead of the Terra Core collected samples; this is inconsistent with the QAPP specified method for extraction, USEPA method 5035. Therefore, based on professional and technical judgment, the non-detect VOC results in samples DG-G6S-MS/MDS and DG-K8S-MS/MDS were UJ qualified as estimated less than the MDLs. The results are considered screening level results.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K8S-MS/MDS	1,1,1,2-Tetrachloroethane	0.74	U	0.74	UJ	1
DG-K8S-MS/MDS	1,1,1-Trichloroethane	0.59	U	0.59	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K8S-MS/MDS	1,1,2,2-Tetrachloroethane	0.73	U	0.73	UJ	1
DG-K8S-MS/MDS	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U*F1	2.0	UJ	1
DG-K8S-MS/MDS	1,1,2-Trichloroethane	0.68	U	0.68	UJ	1
DG-K8S-MS/MDS	1,1-Dichloroethane	0.66	U	0.66	UJ	1
DG-K8S-MS/MDS	1,1-Dichloroethene	0.60	U*	0.60	UJ	1
DG-K8S-MS/MDS	1,1-Dichloropropene	0.67	U	0.67	UJ	1
DG-K8S-MS/MDS	1,2,3-Trichlorobenzene	0.72	U	0.72	UJ	1
DG-K8S-MS/MDS	1,2,3-Trichloropropane	0.75	U	0.75	UJ	1
DG-K8S-MS/MDS	1,2,4-Trichlorobenzene	0.69	U	0.69	UJ	1
DG-K8S-MS/MDS	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-K8S-MS/MDS	1,2-Dibromo-3-Chloropropane	1.7	U	1.7	UJ	1
DG-K8S-MS/MDS	1,2-Dichlorobenzene	0.66	U	0.66	UJ	1
DG-K8S-MS/MDS	1,2-Dichloroethane	0.74	U	0.74	UJ	1
DG-K8S-MS/MDS	1,2-Dichloropropane	0.61	U	0.61	UJ	1
DG-K8S-MS/MDS	1,3,5-Trimethylbenzene	0.63	U	0.63	UJ	1
DG-K8S-MS/MDS	1,3-Dichlorobenzene	0.70	U	0.70	UJ	1
DG-K8S-MS/MDS	1,3-Dichloropropane	0.71	U	0.71	UJ	1
DG-K8S-MS/MDS	1,4-Dichlorobenzene	0.69	U	0.69	UJ	1
DG-K8S-MS/MDS	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-K8S-MS/MDS	2-Butanone (MEK)	20	U	20	UJ	1
DG-K8S-MS/MDS	2-Chlorotoluene	0.63	U	0.63	UJ	1
DG-K8S-MS/MDS	2-Hexanone	9.7	U	9.7	UJ	1
DG-K8S-MS/MDS	4-Chlorotoluene	0.66	U	0.66	UJ	1
DG-K8S-MS/MDS	4-Isopropyltoluene	2.4	U	2.4	UJ	1
DG-K8S-MS/MDS	4-Methyl-2-pentanone (MIBK)	9.7	U	9.7	UJ	1
DG-K8S-MS/MDS	Acetone	37	U	37	UJ	1
DG-K8S-MS/MDS	Benzene	0.63	U	0.63	UJ	1
DG-K8S-MS/MDS	Bromobenzene	0.77	U	0.77	UJ	1
DG-K8S-MS/MDS	Bromoform	1.9	U	1.9	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K8S-MS/MDS	Bromomethane	0.77	U	0.77	UJ	1
DG-K8S-MS/MDS	Carbon disulfide	1.9	U	1.9	UJ	1
DG-K8S-MS/MDS	Carbon tetrachloride	0.60	U	0.60	UJ	1
DG-K8S-MS/MDS	Chlorobenzene	0.67	U	0.67	UJ	1
DG-K8S-MS/MDS	Chlorobromomethane	0.70	U	0.70	UJ	1
DG-K8S-MS/MDS	Chlorodibromomethane	0.69	U	0.69	UJ	1
DG-K8S-MS/MDS	Chloroethane	0.54	U	0.54	UJ	1
DG-K8S-MS/MDS	Chloroform	0.64	U	0.64	UJ	1
DG-K8S-MS/MDS	Chloromethane	0.77	U	0.77	UJ	1
DG-K8S-MS/MDS	cis-1,2-Dichloroethene	0.66	U	0.66	UJ	1
DG-K8S-MS/MDS	cis-1,3-Dichloropropene	0.67	U	0.67	UJ	1
DG-K8S-MS/MDS	Dibromomethane	0.84	U	0.84	UJ	1
DG-K8S-MS/MDS	Dichlorobromomethane	0.70	U	0.70	UJ	1
DG-K8S-MS/MDS	Dichlorodifluoromethane	0.77	U	0.77	UJ	1
DG-K8S-MS/MDS	Ethylbenzene	0.73	U	0.73	UJ	1
DG-K8S-MS/MDS	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-K8S-MS/MDS	GRO-C4-C12	97	U	97	UJ	1
DG-K8S-MS/MDS	Hexachlorobutadiene	0.88	U	0.88	UJ	1
DG-K8S-MS/MDS	Isopropylbenzene	0.66	U	0.66	UJ	1
DG-K8S-MS/MDS	Methyl tert-butyl ether	1.2	U	1.2	UJ	1
DG-K8S-MS/MDS	Methylene Chloride	5.4	U	5.4	UJ	1
DG-K8S-MS/MDS	Naphthalene	1.5	U	1.5	UJ	1
DG-K8S-MS/MDS	n-Butylbenzene	0.97	U	0.97	UJ	1
DG-K8S-MS/MDS	N-Propylbenzene	0.64	U	0.64	UJ	1
DG-K8S-MS/MDS	sec-Butylbenzene	0.70	U	0.70	UJ	1
DG-K8S-MS/MDS	Styrene	0.61	U	0.61	UJ	1
DG-K8S-MS/MDS	tert-Butylbenzene	0.71	U	0.71	UJ	1
DG-K8S-MS/MDS	Tetrachloroethene	0.65	U	0.65	UJ	1
DG-K8S-MS/MDS	Toluene	0.69	U	0.69	UJ	1
DG-K8S-MS/MDS	trans-1,2-Dichloroethene	0.73	U	0.73	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K8S-MS/MDS	trans-1,3-Dichloropropene	0.65	U	0.65	UJ	1
DG-K8S-MS/MDS	Trichloroethene	0.61	U	0.61	UJ	1
DG-K8S-MS/MDS	Trichlorofluoromethane	0.54	U	0.54	UJ	1
DG-K8S-MS/MDS	Vinyl acetate	4.9	U	4.9	UJ	1
DG-K8S-MS/MDS	Vinyl chloride	0.71	U	0.71	UJ	1
DG-K8S-MS/MDS	Xylenes, Total	1.2	U	1.2	UJ	1
DG-G6S-MS/MDS	1,1,1,2-Tetrachloroethane	0.70	U	0.70	UJ	1
DG-G6S-MS/MDS	1,1,1-Trichloroethane	0.56	U	0.56	UJ	1
DG-G6S-MS/MDS	1,1,2,2-Tetrachloroethane	0.69	U*	0.69	UJ	1, 11
DG-G6S-MS/MDS	1,1,2-Trichloro-1,2,2-trifluoroethane	1.9	UF1	1.9	UJ	1
DG-G6S-MS/MDS	1,1,2-Trichloroethane	0.65	U	0.65	UJ	1
DG-G6S-MS/MDS	1,1-Dichloroethane	0.63	U	0.63	UJ	1
DG-G6S-MS/MDS	1,1-Dichloroethene	0.57	U*	0.57	UJ	1
DG-G6S-MS/MDS	1,1-Dichloropropene	0.64	U	0.64	UJ	1
DG-G6S-MS/MDS	1,2,3-Trichlorobenzene	0.69	U*F1	0.69	UJ	1, 11
DG-G6S-MS/MDS	1,2,3-Trichloropropane	0.71	U*	0.71	UJ	1, 11
DG-G6S-MS/MDS	1,2,4-Trichlorobenzene	0.66	U*	0.66	UJ	1, 11
DG-G6S-MS/MDS	1,2,4-Trimethylbenzene	1.5	U*	1.5	UJ	1, 11
DG-G6S-MS/MDS	1,2-Dibromo-3-Chloropropane	1.6	U*	1.6	UJ	1, 11
DG-G6S-MS/MDS	1,2-Dichlorobenzene	0.63	U*	0.63	UJ	1, 11
DG-G6S-MS/MDS	1,2-Dichloroethane	0.70	U	0.70	UJ	1
DG-G6S-MS/MDS	1,2-Dichloropropane	0.58	U	0.58	UJ	1
DG-G6S-MS/MDS	1,3,5-Trimethylbenzene	0.60	U*F1	0.60	UJ	1, 11
DG-G6S-MS/MDS	1,3-Dichlorobenzene	0.67	U*	0.67	UJ	1, 11
DG-G6S-MS/MDS	1,3-Dichloropropane	0.68	U	0.68	UJ	1
DG-G6S-MS/MDS	1,4-Dichlorobenzene	0.66	U*	0.66	UJ	1, 11
DG-G6S-MS/MDS	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-G6S-MS/MDS	2-Butanone (MEK)	19	U	19	UJ	1
DG-G6S-MS/MDS	2-Chlorotoluene	0.60	U*F1	0.60	UJ	1, 11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-G6S-MS/MDS	2-Hexanone	9.3	U	9.3	UJ	1
DG-G6S-MS/MDS	4-Chlorotoluene	0.63	U*	0.63	UJ	1, 11
DG-G6S-MS/MDS	4-Isopropyltoluene	2.3	U*	2.3	UJ	1, 11
DG-G6S-MS/MDS	4-Methyl-2-pentanone (MIBK)	9.3	U	9.3	UJ	1
DG-G6S-MS/MDS	Acetone	35	U	35	UJ	1
DG-G6S-MS/MDS	Benzene	0.60	U	0.60	UJ	1
DG-G6S-MS/MDS	Bromobenzene	0.73	U*	0.73	UJ	1, 11
DG-G6S-MS/MDS	Bromoform	1.9	U	1.9	UJ	1
DG-G6S-MS/MDS	Bromomethane	0.73	U	0.73	UJ	1
DG-G6S-MS/MDS	Carbon disulfide	1.9	U*	1.9	UJ	1
DG-G6S-MS/MDS	Carbon tetrachloride	0.57	U	0.57	UJ	1
DG-G6S-MS/MDS	Chlorobenzene	0.64	U	0.64	UJ	1
DG-G6S-MS/MDS	Chlorobromomethane	0.67	U	0.67	UJ	1
DG-G6S-MS/MDS	Chlorodibromomethane	0.66	U	0.66	UJ	1
DG-G6S-MS/MDS	Chloroethane	0.52	U	0.52	UJ	1
DG-G6S-MS/MDS	Chloroform	0.61	U	0.61	UJ	1
DG-G6S-MS/MDS	Chloromethane	0.73	U	0.73	UJ	1
DG-G6S-MS/MDS	cis-1,2-Dichloroethene	0.63	U	0.63	UJ	1
DG-G6S-MS/MDS	cis-1,3-Dichloropropene	0.64	U	0.64	UJ	1
DG-G6S-MS/MDS	Dibromomethane	0.80	U	0.80	UJ	1
DG-G6S-MS/MDS	Dichlorobromomethane	0.67	U	0.67	UJ	1
DG-G6S-MS/MDS	Dichlorodifluoromethane	0.73	U	0.73	UJ	1
DG-G6S-MS/MDS	Ethylbenzene	0.69	U	0.69	UJ	1
DG-G6S-MS/MDS	Ethylene Dibromide	1.3	U	1.3	UJ	1
DG-G6S-MS/MDS	GRO-C4-C12	93	U	93	UJ	1
DG-G6S-MS/MDS	Hexachlorobutadiene	0.83	U*	0.83	UJ	1, 11
DG-G6S-MS/MDS	Isopropylbenzene	0.63	U	0.63	UJ	1
DG-G6S-MS/MDS	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DG-G6S-MS/MDS	Methylene Chloride	5.2	U	5.2	UJ	1
DG-G6S-MS/MDS	Naphthalene	1.4	U*	1.4	UJ	1, 11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-G6S-MS/MDS	n-Butylbenzene	0.93	U*	0.93	UJ	1, 11
DG-G6S-MS/MDS	N-Propylbenzene	0.61	U*F1	0.61	UJ	1, 11
DG-G6S-MS/MDS	sec-Butylbenzene	0.67	U*	0.67	UJ	1, 11
DG-G6S-MS/MDS	Styrene	0.58	U	0.58	UJ	1
DG-G6S-MS/MDS	tert-Butylbenzene	0.68	U*F1	0.68	UJ	1, 11
DG-G6S-MS/MDS	Tetrachloroethene	0.62	U	0.62	UJ	1
DG-G6S-MS/MDS	Toluene	0.66	U	0.66	UJ	1
DG-G6S-MS/MDS	trans-1,2-Dichloroethene	0.69	U	0.69	UJ	1
DG-G6S-MS/MDS	trans-1,3-Dichloropropene	0.62	U	0.62	UJ	1
DG-G6S-MS/MDS	Trichloroethene	0.58	U	0.58	UJ	1
DG-G6S-MS/MDS	Trichlorofluoromethane	0.52	U	0.52	UJ	1
DG-G6S-MS/MDS	Vinyl acetate	4.6	UF1	4.6	UJ	1
DG-G6S-MS/MDS	Vinyl chloride	0.68	U	0.68	UJ	1
DG-G6S-MS/MDS	Xylenes, Total	1.1	U	1.1	UJ	1

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses, with the following exceptions.

As noted above, sample DG-K8S-MS/MDS was analyzed from an 8-oz. jar instead of the QAPP specified Terra Core samplers; since sample DG-K8S-MS/MDS didn't have a collection time, the holding time couldn't be determined. Since the VOC results for sample DG-K8S-MS/MDS were UJ qualified due to analysis from an 8-oz. jar, no additional qualifications were applied to the data.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250405, 250622 and 250644). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate

Two sample set specific MS/MSD pairs were reported, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The tert-butylbenzene, 2-chlorotoluene, N-propylbenzene, 1,1,2-trichloro-1,2,2-trifluoroethane and 1,3,5-trimethylbenzene recoveries in the MS/MSD pair using sample DG-G6S-MS/MD were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-G6S-MS/MD, no qualifications were applied to the data.

The 1,2,3-trichlorobenzene and vinyl acetate recoveries in the MS/MSD pair using sample DG-G6S-MS/MD were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect 1,2,3-trichlorobenzene and vinyl acetate results in sample DG-G6S-MS/MD were UJ qualified as estimated less than the MDLs.

The 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the MS/MSD pair using sample DG-K8S-MS/MDS were high and outside the laboratory specified acceptance criteria. Since 1,1,2-trichloro-1,2,2-trifluoroethane was not detected in sample DG-K8S-MS/MDS, no qualifications were applied to the data.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-G6S-MS/MDS	1,2,3-Trichlorobenzene	0.69	* F1 U	0.69	UJ	4
DG-G6S-MS/MDS	Vinyl acetate	4.6	F1 U	4.6	UJ	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.

An MS/MSD pair was not reported in batch 250405. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six LCS/LCSD pairs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pairs in batches 250405 and 250644 and the carbon disulfide and 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250622 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Two field duplicate pairs were collected with the sample set, but not analyzed for VOCs.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ⊗ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250190 and 250290). PAHs were not detected in the method blanks above the MDLs, with the following exceptions.

Chrysene was detected in the method blank in batch 250190 and pyrene was detected in the method blank in batch 250290 at estimated concentrations greater than the MDLs and less than the reporting limits (RLs). Since the concentrations of these compounds in the associated samples were greater than the RLs, no qualifications were applied to the data.

Fluoranthene was detected in the method blank in batch 250290 at an estimated concentration greater than the MDL and less than the RL. Therefore, the estimated fluoranthene concentration in sample DG-K8S-MS/MDS was U qualified as not detected at the RL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K8S-MS/MDS	Fluoranthene	4.6	J B	4.9	U	3

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

Two field duplicate pairs were collected with the sample set but not analyzed for PAHs.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPD between the primary and confirmation gas chromatography (GC) column for 4,4'-DDD in sample DG-G6S-MS/MDS exceeded 40%. Therefore, based on professional and technical judgment, the estimated 4,4'-DDD concentration in sample DG-G6S-MS/MDS was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-G6S-MS/MDS	4,4'-DDD	0.90	J p	0.90	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250160 and 250393). Organochlorine pesticides were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Two field duplicate pairs were collected with the sample set, but not analyzed for organochlorine pesticides.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were not reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of solid samples are 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 342652 and 343154). PCBs were not detected in the method blanks above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The recovery and RPD results were within the laboratory specified acceptance criteria.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

Two field duplicate pairs were collected with the sample set, but not analyzed for PCBs.

4.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were not reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250263 and 250358). DRO was not detected in the method blanks above the MDL, with the following exception.

DRO was detected in the method blank in batch 250263 at an estimated concentration greater than the MDL and less than the RL. Since the DRO concentration in the associated sample was greater than the RL, no qualifications were applied to the data.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

5.7 Field Duplicate

Two field duplicate pairs were collected with the sample set, but not analyzed for DRO.

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives, with the following exception. Due to MS/MSD recoveries less than 30%, the non-detect antimony result in sample DG-G6S-MS/MDS was R qualified as rejected. Therefore, the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 99.7%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five method blanks were reported (batches 250235, 250242, 250292, 250310 and 250365). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Barium was detected in the method blank in batch 250235 and arsenic was detected in the method blank in batch 250242 at estimated concentrations greater than the MDLs and less than the RLs. Since the concentrations of these metals in the associated samples were greater than the RLs, no qualifications were applied to the data.

Antimony and barium were detected in the method blank in batch 250365 at estimated concentrations great than the MDLs and less than the RLs. Since the MS/MSD pair using sample DG-K8S-MS/MDS were the only samples in batch 250365, no qualifications were applied to the data.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The antimony recoveries in the MS/MSD pair using sample DG-G6S-MS/MDS were low, less than 30% and outside the laboratory specified acceptance criteria. Therefore, the non-detect antimony result in sample DG-G6S-MS/MDS was R qualified as rejected.

The beryllium and silver recoveries in the MSD and post digestion spike (PDS) using sample DG-G6S-MS/MDS were high and outside the laboratory specified acceptance criteria. Since these metals were not detected in sample DG-G6S-MS/MDS, no qualifications were applied to the data.

The barium, copper and vanadium recoveries in the MSD and PDS using sample DG-G6S-MS/MDS were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these metals in sample DG-G6S-MS/MDS were J+ qualified as estimated with high biases.

The antimony recoveries in the MS/MSD pair using sample DG-K8S-MS/MDS were low and outside the laboratory specified acceptance criteria. Therefore, the estimated antimony concentration in sample DG-K8S-MS/MDS was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K8S-MS/MDS	Antimony	1100	J	1100	J	4
DG-G6S-MS/MDS	Antimony	300	F1 U	300	R	4
DG-G6S-MS/MDS	Barium	42000	F1	42000	J+	4
DG-G6S-MS/MDS	Copper	120000	F1	120000	J+	4
DG-G6S-MS/MDS	Vanadium	81000	F1	81000	J+	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

Batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated two serial dilutions were analyzed with the sample set, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, cobalt, chromium and vanadium RPDs for the serial dilution using sample DG-G6S-MS/MDS and the barium, cobalt, chromium, nickel, lead and vanadium RPDs for the serial dilution using sample DG-K8S-MS/MDS were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these metals in the associated samples were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K8S-MS/MDS	Barium	83000	B	83000	J	8
DG-K8S-MS/MDS	Chromium	88000	NA	88000	J	8
DG-K8S-MS/MDS	Cobalt	17000	NA	17000	J	8
DG-K8S-MS/MDS	Lead	19000	NA	19000	J	8
DG-K8S-MS/MDS	Nickel	42000	NA	42000	J	8
DG-K8S-MS/MDS	Vanadium	100000	NA	100000	J	8
DG-G6S-MS/MDS	Barium	42000	F1	42000	J	8
DG-G6S-MS/MDS	Chromium	11000	NA	11000	J	8
DG-G6S-MS/MDS	Cobalt	8200	NA	8200	J	8
DG-G6S-MS/MDS	Vanadium	81000	F1	81000	J	8

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
NA - Not applicable

6.7 Field Duplicate

Two field duplicate samples, DUP-6 and DUP-20, were collected with the sample set and analyzed for metals. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-A6S-3.5-4 and DG-L8S-3.5-4, respectively, with the following exceptions.

Silver was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-6 and not detected in sample DG-A6S-3.5-4, resulting in a non-calculable RPD. Therefore, the non-detect silver result in sample DG-A6S-3.5-4 was UJ qualified as estimated less than the MDL and the estimated silver concentration in field duplicate DUP-6 was J qualified as estimated.

The arsenic and barium RPDs for field duplicate pair DG-A6S-3.5-4/DUP-6 were greater than 50%. Therefore, the arsenic and barium concentrations in field duplicate pair DG-A6S-3.5-4/DUP-6 were J qualified as estimated.

Beryllium and thallium were reported at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-20 and not detected in sample DG-L8S-3.5-4, resulting in non-calculable RPD results. Therefore, the non-detect beryllium and thallium results in sample DG-L8S-3.5-4 were UJ qualified as estimated less than the MDLs and the estimated beryllium and thallium concentrations in field duplicate DUP-20 were J qualified as estimated.

The lead RPD for field duplicate pair DG-L8S-3.5-4/DUP-20 was greater than 50%. Therefore, the lead concentrations in field duplicate pair DG-L8S-3.5-4/DUP-20 were J qualified as estimated

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A6S-3.5-4	Arsenic	4800	NA	53	4800	J	7
DUP-6	Arsenic	8300	NA		8300	J	7
DG-A6S-3.5-4	Barium	86000	NA	60	86000	J	7
DUP-6	Barium	160000	NA		160000	J	7
DG-L8S-3.5-4	Beryllium	120	U	NC	120	UJ	7
DUP-20	Beryllium	280	J		280	J	7
DG-L8S-3.5-4	Lead	8100	NA	99	8100	J	7
DUP-20	Lead	24000	NA		24000	J	7
DG-L8S-3.5-4	Thallium	540	U	NC	540	UJ	7

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-20	Thallium	800	J		800	J	7
DG-A6S-3.5-4	Silver	190	U	NC	190	UJ	7
DUP-6	Silver	200	J		200	J	7

µg/kg - Microgram per kilogram.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250283). Mercury was not detected in the method blank above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-G6S-MS/MDS and DG-K8S-MS/MDS. The recovery and RPD results were within the laboratory specified acceptance criteria.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Two field duplicate samples, DUP-6 and DUP-20, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A6S-3.5-4 and DG-L8S-3.5-4, respectively.

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	3 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88217-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of five soil samples and two field duplicate samples, collected 22 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 5035/8260B were performed at TA Nashville, Tennessee and TA Pleasanton, California. USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to matrix spike (MS)/MS duplicate (MSD) recoveries less than 30% the non-detect antimony result in sample DG-A5S-3.5-4 was R qualified as rejected. See section 6.4 below.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88217-1	DUP-03
720-88217-2	DUP-04
720-88217-3	DG-A5S-0.5-1
720-88217-4	DG-A5S-3.5-4

Laboratory ID	Client ID
720-88217-5	DG-A5S-19.5-20
720-88217-6	DG-H6S-0.5-1.0
720-88217-7	DG-H6S-3.5-4.0

The samples were received at TA Pleasanton, California at 1.9°C, 2.6°C and 3.1°C; at TA Canton, Ohio at 1.4°C and 4.2°C; and at TA Nashville, Tennessee at 2.6°C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory:

- The VOC aliquots for samples DUP-04, DG-H6S-0.5-1 and DG-H6S-3.5-4 were received in pre-weighed containers with labels that were added in the field and therefore, not included in the containers' tare weight. The laboratory indicated that the label weight was approximately 0.15 grams (g). No qualifications were applied to the data, based on professional and technical judgement.
- Containers were received by the laboratory for the following samples that were not listed on the COC: DG-H6S-0.5-1 and DG-H6S-3.5-4. The client requested VOCs, DRO, metals,

mercury, PAHs, PCBs and asbestos analyses for both samples and 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane by USEPA method 8260B for sample DG-H6S-0.5-1.

The collection times were not listed on the COC for field duplicate samples. The laboratory assigned collection times of 0:00.

Field duplicate samples DUP-3 and DUP-4 were reported in this job, 720-88217-1; however, parent samples DG-I5S-3.5-4 and DG-F5S-3.5-4, respectively, were reported in job 720-88218-1.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and the Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DUP-04 was low and outside the laboratory specified

acceptance criteria. The fluorobenzene, chlorobenzene-d5 and 1,4-dichlorobenzene-d4 recoveries for sample DG-A5S-19.5-20 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated compounds in these samples were UJ qualified as estimated less than the method detection limits (MDLs), the estimated concentrations greater than the MDLs and less than the reporting limits (RLs) were J qualified as estimated and the concentrations were J+ qualified as estimated with a high bias.

The narrative indicated that the gasoline range organics (GRO) concentration in sample DG-A5S-19.5-20 was due to the presence of discrete cis-1,2-dichloroethene, trichloroethene and trans-1,2-dichloroethene peaks. Therefore, the estimated GRO concentration in sample DG-A5S-19.5-20 was U qualified as not detect at the RL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-A5S-19.5-20	1,1,1,2-Tetrachloroethane	0.60	U*	0.60	UJ	11
DG-A5S-19.5-20	1,1,1-Trichloroethane	0.49	U*	0.49	UJ	11
DG-A5S-19.5-20	1,1,2,2-Tetrachloroethane	0.60	U*	0.60	UJ	11
DG-A5S-19.5-20	1,1,2-Trichloro-1,2,2-trifluoroethane	1.7	U*	1.7	UJ	11
DG-A5S-19.5-20	1,1,2-Trichloroethane	0.56	U*	0.56	UJ	11
DG-A5S-19.5-20	1,1-Dichloroethane	0.54	U*	0.54	UJ	11
DG-A5S-19.5-20	1,1-Dichloroethene	1.8	J *	1.8	J	11
DG-A5S-19.5-20	1,1-Dichloropropene	0.55	U*	0.55	UJ	11
DG-A5S-19.5-20	1,2,3-Trichlorobenzene	0.59	U*	0.59	UJ	11
DG-A5S-19.5-20	1,2,3-Trichloropropane	0.61	U*	0.61	UJ	11
DG-A5S-19.5-20	1,2,4-Trichlorobenzene	0.57	U*	0.57	UJ	11
DG-A5S-19.5-20	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DG-A5S-19.5-20	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-A5S-19.5-20	1,2-Dichlorobenzene	0.54	U*	0.54	UJ	11
DG-A5S-19.5-20	1,2-Dichloroethane	0.60	U*	0.60	UJ	11
DG-A5S-19.5-20	1,2-Dichloropropane	0.50	U*	0.50	UJ	11
DG-A5S-19.5-20	1,3,5-Trimethylbenzene	0.52	U*	0.52	UJ	11
DG-A5S-19.5-20	1,3-Dichlorobenzene	0.57	U*	0.57	UJ	11
DG-A5S-19.5-20	1,3-Dichloropropane	0.58	U*	0.58	UJ	11
DG-A5S-19.5-20	1,4-Dichlorobenzene	0.57	U*	0.57	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-A5S-19.5-20	2,2-Dichloropropane	1.6	U*	1.6	UJ	11
DG-A5S-19.5-20	2-Butanone (MEK)	17	U*	17	UJ	11
DG-A5S-19.5-20	2-Chlorotoluene	0.52	U*	0.52	UJ	11
DG-A5S-19.5-20	2-Hexanone	8.0	U*	8.0	UJ	11
DG-A5S-19.5-20	4-Chlorotoluene	0.54	U*	0.54	UJ	11
DG-A5S-19.5-20	4-Isopropyltoluene	2.0	U*	2.0	UJ	11
DG-A5S-19.5-20	4-Methyl-2-pentanone (MIBK)	8.0	U*	8.0	UJ	11
DG-A5S-19.5-20	Acetone	55	*	55	J+	11
DG-A5S-19.5-20	Benzene	0.52	U*	0.52	UJ	11
DG-A5S-19.5-20	Bromobenzene	0.63	U*	0.63	UJ	11
DG-A5S-19.5-20	Bromoform	1.6	U*	1.6	UJ	11
DG-A5S-19.5-20	Bromomethane	0.63	U*	0.63	UJ	11
DG-A5S-19.5-20	Carbon disulfide	1.6	U*	1.6	UJ	11
DG-A5S-19.5-20	Carbon tetrachloride	0.49	U*	0.49	UJ	11
DG-A5S-19.5-20	Chlorobenzene	0.55	U*	0.55	UJ	11
DG-A5S-19.5-20	Chlorobromomethane	0.57	U*	0.57	UJ	11
DG-A5S-19.5-20	Chlorodibromomethane	0.57	U*	0.57	UJ	11
DG-A5S-19.5-20	Chloroethane	0.45	U*	0.45	UJ	11
DG-A5S-19.5-20	Chloroform	0.53	U*	0.53	UJ	11
DG-A5S-19.5-20	Chloromethane	0.63	U*	0.63	UJ	11
DG-A5S-19.5-20	cis-1,2-Dichloroethene	120	*	120	J+	11
DG-A5S-19.5-20	cis-1,3-Dichloropropene	0.55	U*	0.55	UJ	11
DG-A5S-19.5-20	Dibromomethane	0.68	U*	0.68	UJ	11
DG-A5S-19.5-20	Dichlorobromomethane	0.57	U*	0.57	UJ	11
DG-A5S-19.5-20	Dichlorodifluoromethane	0.63	U*	0.63	UJ	11
DG-A5S-19.5-20	Ethylbenzene	0.60	U*	0.60	UJ	11
DG-A5S-19.5-20	Ethylene Dibromide	1.1	U*	1.1	UJ	11
DG-A5S-19.5-20	GRO C4-C12	140	J *	200	U	11, 13
DG-A5S-19.5-20	Hexachlorobutadiene	0.72	U*	0.72	UJ	11
DG-A5S-19.5-20	Isopropylbenzene	0.54	U*	0.54	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-A5S-19.5-20	Methyl tert-butyl ether	0.95	U*	0.95	UJ	11
DG-A5S-19.5-20	Methylene Chloride	4.5	U*	4.5	UJ	11
DG-A5S-19.5-20	Naphthalene	1.2	U*	1.2	UJ	11
DG-A5S-19.5-20	n-Butylbenzene	0.80	U*	0.80	UJ	11
DG-A5S-19.5-20	N-Propylbenzene	0.53	U*	0.53	UJ	11
DG-A5S-19.5-20	sec-Butylbenzene	0.57	U*	0.57	UJ	11
DG-A5S-19.5-20	Styrene	0.50	U*	0.50	UJ	11
DG-A5S-19.5-20	tert-Butylbenzene	0.58	U*	0.58	UJ	11
DG-A5S-19.5-20	Tetrachloroethene	0.53	U*	0.53	UJ	11
DG-A5S-19.5-20	Toluene	0.57	U*	0.57	UJ	11
DG-A5S-19.5-20	trans-1,2-Dichloroethene	15	*	15	J+	11
DG-A5S-19.5-20	trans-1,3-Dichloropropene	0.53	U*	0.53	UJ	11
DG-A5S-19.5-20	Trichloroethene	38	*	38	J+	11
DG-A5S-19.5-20	Trichlorofluoromethane	0.45	U*	0.45	UJ	11
DG-A5S-19.5-20	Vinyl acetate	4.0	U*	4.0	UJ	11
DG-A5S-19.5-20	Vinyl chloride	0.58	U*	0.58	UJ	11
DUP-04	1,1,2,2-Tetrachloroethane	0.51	U*	0.51	UJ	11
DUP-04	1,2,3-Trichlorobenzene	0.51	U*	0.51	UJ	11
DUP-04	1,2,3-Trichloropropane	0.53	U*	0.53	UJ	11
DUP-04	1,2,4-Trichlorobenzene	0.49	U*	0.49	UJ	11
DUP-04	1,2,4-Trimethylbenzene	1.1	U*	1.1	UJ	11
DUP-04	1,2-Dibromo-3-Chloropropane	1.2	U*	1.2	UJ	11
DUP-04	1,2-Dichlorobenzene	0.47	U*	0.47	UJ	11
DUP-04	1,3,5-Trimethylbenzene	0.44	U*	0.44	UJ	11
DUP-04	1,3-Dichlorobenzene	0.49	U*	0.49	UJ	11
DUP-04	1,4-Dichlorobenzene	0.49	U*	0.49	UJ	11
DUP-04	2-Chlorotoluene	0.44	U*	0.44	UJ	11
DUP-04	4-Chlorotoluene	0.47	U*	0.47	UJ	11
DUP-04	4-Isopropyltoluene	1.7	U*	1.7	UJ	11
DUP-04	Bromobenzene	0.54	U*	0.54	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-04	Hexachlorobutadiene	0.62	U*	0.62	UJ	11
DUP-04	Naphthalene	1.0	U*	1.0	UJ	11
DUP-04	n-Butylbenzene	0.68	U*	0.68	UJ	11
DUP-04	N-Propylbenzene	0.45	U*	0.45	UJ	11
DUP-04	sec-Butylbenzene	0.49	U*	0.49	UJ	11
DUP-04	tert-Butylbenzene	0.50	U*	0.50	UJ	11

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250350, 250645 and 539562). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five LCS/LCSD pairs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS in batch 250645 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

One field duplicate sample, DUP-4, was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4 (job 720-88218-1), with the following exception.

Vinyl chloride was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-4 and not detected in sample DG-F5S-3.5-4 (job 720-88218-1), resulting in a non-calculable RPD. Therefore, the estimated vinyl chloride concentration in field duplicate DUP-4 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-04	Vinyl chloride	0.88	J	0.88	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250190 and 250290). PAHs were not detected in the method blanks above the MDLs, with the following exceptions.

Chrysene was detected in the method blank in batch 250190 at an estimated concentration greater than the MDL and less than the RL. Since the chrysene concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

Fluoranthene and pyrene were detected in the method blank in batch 250290 at estimated concentrations greater than the MDLs and less than the RLs. Since the fluoranthene and pyrene

concentrations in the associated samples were greater than the RLs, no qualifications were applied to the data.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

One field duplicate sample, DUP-4, was collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4 (from job 720-88218-1), with the following exceptions.

Acenaphthene was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-4 and not detected in sample DG-F5S-3.5-4 (job 720-88218-1), resulting in a non-calculable RPD. Therefore, the estimated acenaphthene concentration in field duplicate DUP-4 was J qualified as estimated.

The 2-methylnaphthalene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene RPDs for field duplicate pair DG-F5S-3.5-4 (from job 720-88218-1)/DUP-4 were greater than 50%. Therefore, these compounds J qualified as estimated in sample DUP-4.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-04	2-Methylnaphthalene	53	NA	53	J	7
DUP-04	Acenaphthene	6.0	J	6.0	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-04	Acenaphthylene	59	NA	59	J	7
DUP-04	Anthracene	61	NA	61	J	7
DUP-04	Benzo[a]anthracene	260	NA	260	J	7
DUP-04	Benzo[a]pyrene	320	NA	320	J	7
DUP-04	Benzo[b]fluoranthene	520	NA	520	J	7
DUP-04	Benzo[g,h,i]perylene	150	NA	150	J	7
DUP-04	Chrysene	330	B	330	J	7
DUP-04	Dibenz(a,h)anthracene	44	NA	44	J	7
DUP-04	Fluoranthene	370	NA	370	J	7
DUP-04	Fluorene	17	NA	17	J	7
DUP-04	Indeno[1,2,3-cd]pyrene	120	NA	120	J	7
DUP-04	Phenanthrene	260	NA	260	J	7
DUP-04	Pyrene	560	NA	560	J	7

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250160). Organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

One field duplicate sample, DUP-4, was collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4 (job 720-88218-1).

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample

- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 342652 and 343099). PCBs were not detected in the method blanks above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

One field duplicate sample, DUP-4, was collected with the sample set and analyzed for PCBs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4 (job 720-88218-1).

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250263 and 250358). DRO was not detected in the method blanks above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

5.7 Field Duplicate

One field duplicate sample, DUP-4, was collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4 (from job 720-88218-1).

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives, with the following exception. Due to MS/MSD recoveries less than 30%, the non-detect antimony result in sample DG-A5S-3.5-4 was R qualified as rejected. The remaining results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 99.7%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250235, 250242 and 250310). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Barium was detected in the method blank in batch 250235 at an estimated concentration greater than the MDL and less than the RL. Since the barium concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

Arsenic was detected in the method blank in batch 250242 at an estimated concentration greater than the MDL and less than the RL. Therefore, the estimated arsenic concentrations in samples DG-A5S-3.5-4 and DG-A5S-19.5-20 were U qualified as not detected at the RLs.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A5S-3.5-4	Arsenic	2100	J B	3100	U	3
DG-A5S-19.5-20	Arsenic	2100	J B	3000	U	3

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-A5S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The silver recoveries were high and outside the laboratory specified acceptance criteria. Since silver was not detected in sample DG-A5S-3.5-4, no qualifications were applied to the data.

The antimony recoveries were low, less than 30% and outside the laboratory specified acceptance criteria. Therefore, the non-detect antimony result in sample DG-A5S-3.5-4 was R qualified as rejected.

The barium, copper and vanadium recoveries were high and outside the laboratory specified acceptance criteria. The recovery of barium in the post digestion spike (PDS) was also high and outside the laboratory specified acceptance criteria. Therefore, the barium concentration in sample DG-A5S-3.5-4 was J+ qualified as estimated with a high bias. The copper and vanadium recoveries in the PDS were less than 125%. Therefore, the copper and vanadium concentrations in sample DG-A5S-3.5-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A5S-3.5-4	Antimony	800	J F1	800	R	4
DG-A5S-3.5-4	Barium	83000	F1	83000	J+	4
DG-A5S-3.5-4	Copper	45000	F1	45000	J	4
DG-A5S-3.5-4	Vanadium	100000	F1	100000	J	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated that one serial dilution, using sample DG-A5S-3.5-4, was analyzed. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, cobalt, chromium, nickel and vanadium RPD results were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A5S-3.5-4	Barium	83000	F1	83000	J	8
DG-A5S-3.5-4	Chromium	96000	NA	96000	J	8

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A5S-3.5-4	Cobalt	30000	NA	30000	J	8
DG-A5S-3.5-4	Nickel	68000	NA	68000	J	8
DG-A5S-3.5-4	Vanadium	100000	F1	100000	J	8

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
NA - Not applicable

6.7 Field Duplicate

Two field duplicate samples, DUP-3 and DUP-4, were collected with the sample set and analyzed for metals. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-I5S-3.5-4 and DG-F5S-3.5-4 (job 720-88218-1), respectively, with the following exceptions.

Molybdenum and silver were reported at concentrations greater than the MDLs in sample DG-I5S-3.5-4 (from job 720-88218-1) and not detected in field duplicate DUP-3, resulting in non-calculable RPDs. Therefore, the non-detect molybdenum and silver results in field duplicate DUP-3 were UJ qualified as estimated less than the MDLs.

Beryllium and cadmium were reported at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-3 and at concentrations greater than the RLs in sample DG-I5S-3.5-4 (job 720-88218-1), resulting in non-calculable RPDs. Therefore, the estimated beryllium and cadmium concentrations in field duplicate DUP-3 were J qualified as estimated.

The antimony, arsenic, barium, copper, lead and zinc RPD results for field duplicate pair DG-I5S-3.5-4 (job 720-88218-1)/DUP-3 were greater than 50%. Therefore, the concentrations of these metals in field duplicate DUP-3 were J qualified as estimated.

Selenium and silver were reported at concentrations greater than the MDLs in sample DG-F5S-3.5-4 (job 720-88218-1) and not detected in field duplicate DUP-4, resulting in non-calculable RPDs. Therefore, the non-detect selenium and silver results in field duplicate DUP-4 were UJ qualified as estimated less than the MDLs.

Beryllium was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-4 and at a concentration greater than the RL in sample DG-F5S-3.5-4 (job 720-88218-1), resulting in a non-calculable RPD. Therefore, the estimated beryllium concentration in field duplicate DUP-4 was J qualified as estimated.

The antimony, barium, cadmium, chromium, copper, lead, nickel, vanadium and zinc RPD results for field duplicate pair DG-F5S-3.5-4/DUP-4 were greater than 50%. Therefore, the concentrations of these metals in field duplicate DUP-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-03	Antimony	2600	NA	2600	J	7
DUP-03	Arsenic	120000	NA	120000	J	7
DUP-03	Barium	88000	B	88000	J	7
DUP-03	Beryllium	220	J	220	J	7
DUP-03	Cadmium	130	J	130	J	7
DUP-03	Copper	25000	NA	25000	J	7
DUP-03	Lead	79000	NA	79000	J	7
DUP-03	Molybdenum	170	U	170	UJ	7
DUP-03	Silver	130	U	130	UJ	7
DUP-03	Zinc	160000	NA	160000	J	7
DUP-04	Antimony	1800	NA	1800	J	7
DUP-04	Barium	85000	B	85000	J	7
DUP-04	Beryllium	120	J	120	J	7
DUP-04	Cadmium	430	NA	430	J	7
DUP-04	Chromium	10000	NA	10000	J	7
DUP-04	Copper	130000	NA	130000	J	7
DUP-04	Lead	300000	NA	300000	J	7
DUP-04	Nickel	7100	NA	7100	J	7
DUP-04	Selenium	440	U	440	UJ	7
DUP-04	Silver	150	U	150	UJ	7
DUP-04	Vanadium	78000	NA	78000	J	7
DUP-04	Zinc	240000	NA	240000	J	7

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250416). Mercury was not detected in the method blank above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Two field duplicate samples, DUP-3 and DUP-4, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD ≤50%) was not demonstrated between the field duplicates and the original samples, DG-I5S-3.5-4 and DG-F5S-3.5-4 (job 720-88218-1), respectively. Therefore, the mercury concentrations in field duplicates DUP-3 and DUP-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-03	Mercury	85	NA	85	J	7
DUP-04	Mercury	95	NA	95	J	7

µg/kg - Microgram per kilogram.
NA - Not applicable

7.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	3 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88218-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of twenty-one soil samples, collected 22 August 2018 and 23 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B and 5030B/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to matrix spike (MS)/MS duplicate (MSD) recoveries less than 20% the non-detect vinyl acetate result in sample DG-D5S-3.5-4 was R qualified as rejected. See section 1.4 below.

Due to MS/MSD recoveries less than 30% the non-detect antimony result in sample DG-C5S-0.5-1 was R qualified as rejected. See section 6.4 below.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88218-1	DG-J5S-0.5-1
720-88218-2	DG-J5S-3.5-4
720-88218-3	DG-J5S-7-7.5
720-88218-4	DG-I5S-0.5-1
720-88218-5	DG-I5S-3.5-4
720-88218-6	DG-H5S-0.5-1
720-88218-7	DG-H5S-3.5-4
720-88218-8	DG-G5S-0.5-1
720-88218-9	DG-G5S-3.5-4
720-88218-10	DG-F5S-0.5-1
720-88218-11	DG-F5S-3.5-4

Laboratory ID	Client ID
720-88218-12	DG-E5S-0.5-1
720-88218-13	DG-E5S-3.5-4
720-88218-14	DG-D5S-0.5-1
720-88218-15	DG-D5S-3.5-4
720-88218-16	DG-C5S-0.5-1
720-88218-17	DG-C5S-3.5-4
720-88218-18	DG-C5S-9-9.5
720-88218-19	DG-B5S-0.5-1
720-88218-20	DG-B5S-3.5-4
720-88218-21	DG-E5S-9.0-9.5

The samples were received at TA Pleasanton, California at 1.9°C, 2.6°C and 3.1°C and at TA Canton, Ohio at 1.4°C and 4.2°C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory:

- Samples DG-J5S-0.5-1, DG-J5S-3.5-4, DG-J5S-7-7.5, DG-I5S-0.5-1, DG-I5S-3.5-4, DG-H5S-0.5-1, DG-H5S-3.5-4, DG-G5S-0.5-1, DG-G5S-3.5-4, DG-F5S-0.5-1, DG-E5S-0.5-1, DG-E5S-3.5-4, DG-D5S-0.5-1, DG-D5S-3.5-4, DG-C5S-0.5-1, DG-C5S-3.5-4, DG-B5S-0.5-1, DG-B5S-3.5-4 and DG-E5S-9.0-9.5 were received in pre-weighed containers with labels that were added in the field and therefore, not included in the containers' tare weight. The laboratory indicated that the label weight was approximately 0.15 grams (g). No qualifications were applied to the data, based on professional and technical judgement.

- The container labels for the following samples did not match the information listed on the chain of custody (COC) form:
    - Sample DG-E5S-9.0-9.5: Sample containers were received by the laboratory that were not listed on the COC. The client requested VOCs, DRO, metals, mercury, PAHs, organochlorine pesticides, PCBs and asbestos analyses.
    - Sample DG-F5S-0.5-1: Each of the sample containers listed a different sample ID but all the containers had the same sample depth and same collection time. The laboratory assigned the sample ID DG-F5S-0.5-1 and collection time 15:45, based on sample depth and sample collection time.
    - Sample DG-F5S-3.5-4: Each of the sample containers listed a different sample ID but all the containers had the same sample depth and same collection time. The laboratory assigned the sample ID DG-F5S-3.5-4 and collection time 15:45, based on sample depth and sample collection time.
    - Sample DG-C5S-9-9.5: Sample containers listed sample ID DG-B5S-9-9.5; however, sample ID DG-C5S-9-9.5 was recorded on the COC. The laboratory assigned the sample ID sample DG-C5S-9-9.5, based on the sample collection and the sample depth.

Field duplicate parent samples DG-I5S-3.5-4 and DG-F5S-3.5-4 were reported in this job, 720-88218-1; however, field duplicates DUP-3 and DUP-4, respectively, were reported in job 720-88217-1.

Incorrect error corrections were observed on the original COC, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B and 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives, with the following exceptions. Due to MS/MSD recoveries less than 20% the non-detect vinyl acetate result in sample DG-D5S-3.5-4 was R qualified as rejected. The remaining results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 99.9%.

The narrative indicated that the internal standard recoveries for sample DG-C5S-9-9.5 were outside the laboratory specified acceptance criteria; however, the Internal Standard Recovery Report showed the internal standard recoveries were within the laboratory specified acceptance criteria. Therefore, no qualifications were applied to the data.

The narrative and the Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DG-H5S-0.5-1 was low and outside the laboratory specified acceptance criteria. The fluorobenzene, chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for DG-F5S-3.5-4 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated analytes in these samples

were UJ qualified as estimated less than the method detection limits (MDLs) and the concentrations were J+ qualified as estimated with a high bias.

The narrative indicated that the gasoline range organics (GRO) concentration in sample DG-B5S-3.5-4 was due to the presence of discrete trichloroethene peaks. Therefore, the estimated GRO concentration in sample DG-B5S-3.5-4 was U qualified as not detected at the reporting limit (RL).

The narrative indicated that the GRO concentration in sample DG-C5S-9-9.5 was due to the presence of discrete cis-1,2-dichloroethene and trichloroethene peaks. Therefore, the estimated GRO concentration in sample DG-C5S-9-9.5 was U qualified as not detected at the RL.

The narrative indicated that the 8 oz. jar was used for the VOC analysis of sample DG-D5S-3.5-4 instead of the Terra Core collected samples; this is inconsistent with the QAPP specified method for extraction, USEPA method 5035. Therefore, based on professional and technical judgement, the non-detect VOC results in sample DG-D5S-3.5-4 were UJ qualified as estimated less than the MDLs. The results are considered screening level results.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B5S-3.5-4	GRO C4-C12	76	J	190	U	13
DG-C5S-9-9.5	GRO C4-C12	150	J	170	U	13
DG-F5S-3.5-4	1,1,1,2-Tetrachloroethane	0.88	U*	0.88	UJ	11
DG-F5S-3.5-4	1,1,1-Trichloroethane	0.71	U*	0.71	UJ	11
DG-F5S-3.5-4	1,1,2,2-Tetrachloroethane	0.87	U*	0.87	UJ	11
DG-F5S-3.5-4	1,1,2-Trichloroethane	0.81	U*	0.81	UJ	11
DG-F5S-3.5-4	1,1-Dichloroethane	0.79	U*	0.79	UJ	11
DG-F5S-3.5-4	1,1-Dichloropropene	0.80	U*	0.80	UJ	11
DG-F5S-3.5-4	1,2,3-Trichlorobenzene	0.86	U*	0.86	UJ	11
DG-F5S-3.5-4	1,2,3-Trichloropropane	0.90	U*	0.90	UJ	11
DG-F5S-3.5-4	1,2,4-Trichlorobenzene	0.83	U*	0.83	UJ	11
DG-F5S-3.5-4	1,2,4-Trimethylbenzene	1.9	U*	1.9	UJ	11
DG-F5S-3.5-4	1,2-Dibromo-3-Chloropropane	2.0	U*	2.0	UJ	11
DG-F5S-3.5-4	1,2-Dichlorobenzene	0.79	U*	0.79	UJ	11
DG-F5S-3.5-4	1,2-Dichloroethane	0.88	U*	0.88	UJ	11
DG-F5S-3.5-4	1,2-Dichloropropane	0.73	U*	0.73	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-F5S-3.5-4	1,3,5-Trimethylbenzene	0.76	U*	0.76	UJ	11
DG-F5S-3.5-4	1,3-Dichlorobenzene	0.84	U*	0.84	UJ	11
DG-F5S-3.5-4	1,3-Dichloropropane	0.85	U*	0.85	UJ	11
DG-F5S-3.5-4	1,4-Dichlorobenzene	0.83	U*	0.83	UJ	11
DG-F5S-3.5-4	2,2-Dichloropropane	2.3	U*	2.3	UJ	11
DG-F5S-3.5-4	2-Butanone (MEK)	24	U*	24	UJ	11
DG-F5S-3.5-4	2-Chlorotoluene	0.76	U*	0.76	UJ	11
DG-F5S-3.5-4	2-Hexanone	12	U*	12	UJ	11
DG-F5S-3.5-4	4-Chlorotoluene	0.79	U*	0.79	UJ	11
DG-F5S-3.5-4	4-Isopropyltoluene	2.9	U*	2.9	UJ	11
DG-F5S-3.5-4	4-Methyl-2-pentanone (MIBK)	12	U*	12	UJ	11
DG-F5S-3.5-4	Acetone	58	*	58	J+	11
DG-F5S-3.5-4	Benzene	0.76	U*	0.76	UJ	11
DG-F5S-3.5-4	Bromobenzene	0.92	U*	0.92	UJ	11
DG-F5S-3.5-4	Bromoform	2.3	U*	2.3	UJ	11
DG-F5S-3.5-4	Bromomethane	0.92	U*	0.92	UJ	11
DG-F5S-3.5-4	Carbon tetrachloride	0.72	U*	0.72	UJ	11
DG-F5S-3.5-4	Chlorobenzene	0.80	U*	0.80	UJ	11
DG-F5S-3.5-4	Chlorobromomethane	0.84	U*	0.84	UJ	11
DG-F5S-3.5-4	Chlorodibromomethane	0.83	U*	0.83	UJ	11
DG-F5S-3.5-4	Chloroethane	0.65	U*	0.65	UJ	11
DG-F5S-3.5-4	Chloroform	0.77	U*	0.77	UJ	11
DG-F5S-3.5-4	Chloromethane	0.92	U*	0.92	UJ	11
DG-F5S-3.5-4	cis-1,2-Dichloroethene	0.79	U*	0.79	UJ	11
DG-F5S-3.5-4	cis-1,3-Dichloropropene	0.80	U*	0.80	UJ	11
DG-F5S-3.5-4	Dibromomethane	1.0	U*	1.0	UJ	11
DG-F5S-3.5-4	Dichlorobromomethane	0.84	U*	0.84	UJ	11
DG-F5S-3.5-4	Dichlorodifluoromethane	0.92	U*	0.92	UJ	11
DG-F5S-3.5-4	Ethylbenzene	0.87	U*	0.87	UJ	11
DG-F5S-3.5-4	Ethylene Dibromide	1.7	U*	1.7	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-F5S-3.5-4	GRO C4-C12	120	U*	120	UJ	11
DG-F5S-3.5-4	Hexachlorobutadiene	1.0	U*	1.0	UJ	11
DG-F5S-3.5-4	Isopropylbenzene	0.79	U*	0.79	UJ	11
DG-F5S-3.5-4	Methyl tert-butyl ether	1.4	U*	1.4	UJ	11
DG-F5S-3.5-4	Methylene Chloride	6.5	U*	6.5	UJ	11
DG-F5S-3.5-4	Naphthalene	1.7	U*	1.7	UJ	11
DG-F5S-3.5-4	n-Butylbenzene	1.2	U*	1.2	UJ	11
DG-F5S-3.5-4	N-Propylbenzene	0.77	U*	0.77	UJ	11
DG-F5S-3.5-4	sec-Butylbenzene	0.84	U*	0.84	UJ	11
DG-F5S-3.5-4	Styrene	0.73	U*	0.73	UJ	11
DG-F5S-3.5-4	tert-Butylbenzene	0.85	U*	0.85	UJ	11
DG-F5S-3.5-4	Tetrachloroethene	0.78	U*	0.78	UJ	11
DG-F5S-3.5-4	Toluene	0.83	U*	0.83	UJ	11
DG-F5S-3.5-4	trans-1,2-Dichloroethene	0.87	U*	0.87	UJ	11
DG-F5S-3.5-4	trans-1,3-Dichloropropene	0.78	U*	0.78	UJ	11
DG-F5S-3.5-4	Trichloroethene	0.73	U*	0.73	UJ	11
DG-F5S-3.5-4	Trichlorofluoromethane	0.65	U*	0.65	UJ	11
DG-F5S-3.5-4	Vinyl acetate	5.8	U*	5.8	UJ	11
DG-F5S-3.5-4	Vinyl chloride	0.85	U*	0.85	UJ	11
DG-H5S-0.5-1	1,1,2,2-Tetrachloroethane	0.61	U*	0.61	UJ	11
DG-H5S-0.5-1	1,2,3-Trichlorobenzene	0.60	U*	0.60	UJ	11
DG-H5S-0.5-1	1,2,3-Trichloropropane	0.63	U*	0.63	UJ	11
DG-H5S-0.5-1	1,2,4-Trichlorobenzene	0.58	U*	0.58	UJ	11
DG-H5S-0.5-1	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DG-H5S-0.5-1	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-H5S-0.5-1	1,2-Dichlorobenzene	0.55	U*	0.55	UJ	11
DG-H5S-0.5-1	1,3,5-Trimethylbenzene	0.53	U*	0.53	UJ	11
DG-H5S-0.5-1	1,3-Dichlorobenzene	0.59	U*	0.59	UJ	11
DG-H5S-0.5-1	1,4-Dichlorobenzene	0.58	U*	0.58	UJ	11
DG-H5S-0.5-1	2-Chlorotoluene	0.53	U*	0.53	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-H5S-0.5-1	4-Chlorotoluene	0.55	U*	0.55	UJ	11
DG-H5S-0.5-1	4-Isopropyltoluene	2.0	U*	2.0	UJ	11
DG-H5S-0.5-1	Bromobenzene	0.64	U*	0.64	UJ	11
DG-H5S-0.5-1	Hexachlorobutadiene	0.73	U*	0.73	UJ	11
DG-H5S-0.5-1	Naphthalene	1.2	U*	1.2	UJ	11
DG-H5S-0.5-1	n-Butylbenzene	0.81	U*	0.81	UJ	11
DG-H5S-0.5-1	N-Propylbenzene	0.54	U*	0.54	UJ	11
DG-H5S-0.5-1	sec-Butylbenzene	0.59	U*	0.59	UJ	11
DG-H5S-0.5-1	tert-Butylbenzene	0.59	U*	0.59	UJ	11
DG-D5S-3.5-4	1,1,1,2-Tetrachloroethane	0.72	U	0.72	UJ	1
DG-D5S-3.5-4	1,1,1-Trichloroethane	0.58	U	0.58	UJ	1
DG-D5S-3.5-4	1,1,2,2-Tetrachloroethane	0.71	U F1 F2	0.71	UJ	1
DG-D5S-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U F1	2.0	UJ	1
DG-D5S-3.5-4	1,1,2-Trichloroethane	0.66	U	0.66	UJ	1
DG-D5S-3.5-4	1,1-Dichloroethane	0.64	U	0.64	UJ	1
DG-D5S-3.5-4	1,1-Dichloroethene	0.59	U	0.59	UJ	1
DG-D5S-3.5-4	1,1-Dichloropropene	0.65	U	0.65	UJ	1
DG-D5S-3.5-4	1,2,3-Trichlorobenzene	0.70	U	0.70	UJ	1
DG-D5S-3.5-4	1,2,3-Trichloropropane	0.73	U	0.73	UJ	1
DG-D5S-3.5-4	1,2,4-Trichlorobenzene	0.67	U	0.67	UJ	1
DG-D5S-3.5-4	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-D5S-3.5-4	1,2-Dibromo-3-Chloropropane	1.6	U	1.6	UJ	1
DG-D5S-3.5-4	1,2-Dichlorobenzene	0.64	U	0.64	UJ	1
DG-D5S-3.5-4	1,2-Dichloroethane	0.72	U	0.72	UJ	1
DG-D5S-3.5-4	1,2-Dichloropropane	0.60	U	0.60	UJ	1
DG-D5S-3.5-4	1,3,5-Trimethylbenzene	0.62	U	0.62	UJ	1
DG-D5S-3.5-4	1,3-Dichlorobenzene	0.68	U	0.68	UJ	1
DG-D5S-3.5-4	1,3-Dichloropropane	0.69	U	0.69	UJ	1
DG-D5S-3.5-4	1,4-Dichlorobenzene	0.67	U	0.67	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-D5S-3.5-4	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-D5S-3.5-4	2-Butanone (MEK)	20	U	20	UJ	1
DG-D5S-3.5-4	2-Chlorotoluene	0.62	U	0.62	UJ	1
DG-D5S-3.5-4	2-Hexanone	9.5	U	9.5	UJ	1
DG-D5S-3.5-4	4-Chlorotoluene	0.64	U	0.64	UJ	1
DG-D5S-3.5-4	4-Isopropyltoluene	2.4	U	2.4	UJ	1
DG-D5S-3.5-4	4-Methyl-2-pentanone (MIBK)	9.5	U	9.5	UJ	1
DG-D5S-3.5-4	Acetone	36	U F2	36	UJ	1
DG-D5S-3.5-4	Benzene	0.62	U	0.62	UJ	1
DG-D5S-3.5-4	Bromobenzene	0.75	U	0.75	UJ	1
DG-D5S-3.5-4	Bromoform	1.9	U	1.9	UJ	1
DG-D5S-3.5-4	Bromomethane	0.75	U	0.75	UJ	1
DG-D5S-3.5-4	Carbon disulfide	1.9	U	1.9	UJ	1
DG-D5S-3.5-4	Carbon tetrachloride	0.59	U	0.59	UJ	1
DG-D5S-3.5-4	Chlorobenzene	0.65	U	0.65	UJ	1
DG-D5S-3.5-4	Chlorobromomethane	0.68	U	0.68	UJ	1
DG-D5S-3.5-4	Chlorodibromomethane	0.67	U	0.67	UJ	1
DG-D5S-3.5-4	Chloroethane	0.53	U	0.53	UJ	1
DG-D5S-3.5-4	Chloroform	0.62	U	0.62	UJ	1
DG-D5S-3.5-4	Chloromethane	0.75	U	0.75	UJ	1
DG-D5S-3.5-4	cis-1,2-Dichloroethene	0.64	U	0.64	UJ	1
DG-D5S-3.5-4	cis-1,3-Dichloropropene	0.65	U	0.65	UJ	1
DG-D5S-3.5-4	Dibromomethane	0.81	U	0.81	UJ	1
DG-D5S-3.5-4	Dichlorobromomethane	0.68	U	0.68	UJ	1
DG-D5S-3.5-4	Dichlorodifluoromethane	0.75	U	0.75	UJ	1
DG-D5S-3.5-4	Ethylbenzene	0.71	U	0.71	UJ	1
DG-D5S-3.5-4	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-D5S-3.5-4	GRO C4-C12	95	U	95	UJ	1
DG-D5S-3.5-4	Hexachlorobutadiene	0.85	U	0.85	UJ	1
DG-D5S-3.5-4	Isopropylbenzene	0.64	U	0.64	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-D5S-3.5-4	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DG-D5S-3.5-4	Methylene Chloride	5.3	U	5.3	UJ	1
DG-D5S-3.5-4	Naphthalene	1.4	U	1.4	UJ	1
DG-D5S-3.5-4	n-Butylbenzene	0.95	U	0.95	UJ	1
DG-D5S-3.5-4	N-Propylbenzene	0.62	U	0.62	UJ	1
DG-D5S-3.5-4	sec-Butylbenzene	0.68	U	0.68	UJ	1
DG-D5S-3.5-4	Styrene	0.60	U	0.60	UJ	1
DG-D5S-3.5-4	tert-Butylbenzene	0.69	U	0.69	UJ	1
DG-D5S-3.5-4	Tetrachloroethene	0.63	U	0.63	UJ	1
DG-D5S-3.5-4	Toluene	0.67	U	0.67	UJ	1
DG-D5S-3.5-4	trans-1,2-Dichloroethene	0.71	U	0.71	UJ	1
DG-D5S-3.5-4	trans-1,3-Dichloropropene	0.63	U	0.63	UJ	1
DG-D5S-3.5-4	Trichloroethene	0.60	U F1	0.60	UJ	1
DG-D5S-3.5-4	Trichlorofluoromethane	0.53	U	0.53	UJ	1
DG-D5S-3.5-4	Vinyl acetate	4.7	U F1	4.7	UJ	1
DG-D5S-3.5-4	Vinyl chloride	0.69	U	0.69	UJ	1
DG-D5S-3.5-4	Xylenes, Total	1.2	U	1.2	UJ	1

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD relative percent difference (RPD) was outside the acceptance criteria.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses, with the following exceptions.

As noted above, sample DG-D5S-3.5-4 was analyzed from the 8-oz. jar instead of the QAPP-specified Terra Core samplers; the samples were prepared nine days after collection. Since the

VOC results for this samples were UJ qualified due to analysis from the 8-oz. jar, no additional qualifications were applied to the data.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Seven method blanks were reported (batches 250350, 250405, 250407, 250450, 250453, 250625 and 250642). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate

One sample set specific MS/MSD pair was reported, using sample DG-D5S-3.5-4 in batch 250642. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The acetone and 1,1,2,2-tetrachloroethane RPD results were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-D5S-3.5-4, no qualifications were applied to the data.

One or both of the 1,1,2-trichloro-1,2,2-trifluoroethane and trichloroethene recoveries in the MS/MSD pair were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-D5S-3.5-4, no qualifications were applied to the data.

The 1,1,2,2-tetrachloroethane recovery in the MSD was low and outside the laboratory specified acceptance criteria. Therefore, the non-detect 1,1,2,2-tetrachloroethane result in sample DG-D5S-3.5-4 was UJ qualified as estimated less than the MDL.

The vinyl chloride recoveries in the MS/MSD pair were low and outside the laboratory specified acceptance criteria. Since the MSD recovery was less than 20%, the non-detect vinyl chloride result in sample DG-D5S-3.5-4 was R qualified as rejected.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-D5S-3.5-4	1,1,2,2-Tetrachloroethane	0.71	U F1 F2	0.71	UJ	4
DG-D5S-3.5-4	Vinyl acetate	4.7	U F1	4.7	R	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD RPD was outside the acceptance criteria.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

MS/MSD pairs were not reported in batches 250350, 250405, 250407, 250450, 250453 and 250625. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Fourteen LCS/LCSD pairs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pairs in batches 250405 and 250625 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The carbon disulfide and 1,1-dichloroethene recoveries in the LCS/LCSD pairs in batches 250407 and 250450 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The carbon disulfide, 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250453 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The carbon disulfide recoveries in the LCS/LCSD pair in batch 250642 were high and outside the laboratory specified acceptance criteria. Since carbon disulfide was not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

One field duplicate sample, DUP-4 (job 720-88217-1), was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4, with the following exception.

Vinyl chloride was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-4 (job 720-88217-1) and not detected in sample DG-F5S-3.5-4, resulting a in non-calculable RPD. Therefore, the non-detect vinyl chloride result in sample DG-F5S-3.5-4 was UJ qualified as estimated less than the MDL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-F5S-3.5-4	Vinyl chloride	0.85	U*	0.85	UJ	7

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that samples DG-H5S-0.5-1 and DG-F5S-0.5-1 could not be concentrated down to the final volume during the USEPA method 3546 extraction. Based on professional and technical judgement, no qualifications were applied to the data.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250190, 250290 and 250376). PAHs were not detected in the method blanks above the MDLs, with the following exceptions.

Chrysene was detected in the method blank in batch 250190 at an estimated concentration greater than the MDL and less than the RL. Since the chrysene concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

Fluoranthene and pyrene were detected in the method blank in batch 250290 at estimated concentrations greater than the MDLs and less than the RLs. Since the fluoranthene and pyrene concentrations in the associated samples were greater than the RLs, no qualifications were applied to the data.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

One field duplicate sample, DUP-4 (job 720-88217-1), was collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4, with the following exceptions.

Acenaphthene was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-4 (job 720-88217-1) and not detected in sample DG-F5S-3.5-4, resulting in a non-calculable RPD. Therefore, the non-detect acenaphthene result in sample DG-F5S-3.5-4 was UJ qualified as estimated less than the MDL.

The 2-methylnaphthalene, acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene RPDs for field duplicate pair DG-F5S-3.5-4/DUP-4 (job 720-88217-1) were greater than 50%. Therefore, the concentrations of these compounds in sample DG-F5S-3.5-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-F5S-3.5-4	2-Methylnaphthalene	30	NA	30	J	7
DG-F5S-3.5-4	Acenaphthene	2.7	U	2.7	UJ	7
DG-F5S-3.5-4	Acenaphthylene	9.3	NA	9.3	J	7
DG-F5S-3.5-4	Anthracene	17	NA	17	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-F5S-3.5-4	Benzo[a]anthracene	41	NA	41	J	7
DG-F5S-3.5-4	Benzo[a]pyrene	50	NA	50	J	7
DG-F5S-3.5-4	Benzo[b]fluoranthene	81	NA	81	J	7
DG-F5S-3.5-4	Benzo[g,h,i]perylene	24	NA	24	J	7
DG-F5S-3.5-4	Chrysene	64	B	64	J	7
DG-F5S-3.5-4	Dibenz(a,h)anthracene	5.4	NA	5.4	J	7
DG-F5S-3.5-4	Fluoranthene	110	NA	110	J	7
DG-F5S-3.5-4	Fluorene	7.9	NA	7.9	J	7
DG-F5S-3.5-4	Indeno[1,2,3-cd]pyrene	21	NA	21	J	7
DG-F5S-3.5-4	Phenanthrene	110	NA	110	J	7
DG-F5S-3.5-4	Pyrene	150	NA	150	J	7

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
NA - Not applicable

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the sample dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment

- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPD results between the primary and confirmation columns were greater than 40% for cis-chlordane in sample DG-B5S-0.5-1 and 4,4'-DDT in sample DG-D5S-0.5-1. Therefore, these compounds in these samples were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B5S-0.5-1	cis-Chlordane	0.52	J p	0.52	J	13
DG-D5S-0.5-1	4,4'-DDT	2.1	J p	2.1	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250160, 250393 and 250294). Organochlorine pesticides were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-B5S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

Batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

The decachlorobiphenyl recoveries were high and outside the laboratory specified acceptance criteria in samples DG-J5S-0.5-1, DG-J5S-3.5-4 and DG-H5S-0.5-1. Since the other surrogate recoveries were acceptable and based on professional and technical judgement, no qualifications were applied to the data.

3.7 Field Duplicate

One field duplicate sample, DUP-4 (from job 720-88217-1), was collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4.

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the PCB results for samples DG-J5S-0.5-1 and DG-D5S-0.5-1 did not directly match the laboratory's PCB standards due to contribution between detections of Aroclor-1254 and Aroclor-1260 in the samples. Therefore, the Aroclor-1254 and Aroclor-1260 concentrations in samples DG-J5S-0.5-1 and DG-D5S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-J5S-0.5-1	Aroclor-1254	590	NA	590	J	13
DG-J5S-0.5-1	Aroclor-1260	420	NA	420	J	13
DG-D5S-0.5-1	Aroclor-1254	60	NA	60	J	13
DG-D5S-0.5-1	Aroclor-1260	37	J	37	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 342652 and 343096). PCBs were not detected in the method blanks above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-B5S-3.5-4 and DG-E5S-9.0-9.5. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

The decachlorobiphenyl recoveries were high and outside the laboratory specified acceptance criteria in samples DG-J5S-0.5-1, DG-J5S-3.5-4 and DG-H5S-0.5-1. Since the other surrogate

recoveries were acceptable and based on professional and technical judgement, no qualifications were applied to the data.

4.7 Field Duplicate

One field duplicate sample, DUP-4 (from job 720-88217-1), was collected with the sample set and analyzed for PCBs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250263, 250358 and 250382). DRO was not detected in the method blanks above the MDL, with the following exception.

DRO was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 250263. Since the DRO concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

There were no p-terphenyl recoveries (0%) in samples DG-J5S-0.5-1, DG-F5S-0.5-1 and DG-D5S-0.5-1. Since the samples were analyzed at dilutions, no qualifications were applied to the data.

5.7 Field Duplicate

One field duplicate sample, DUP-4 (from job 720-88217-1), was collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-F5S-3.5-4.

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives, with the following exception. Due to MS/MSD recoveries less than 30%, the non-detect antimony result in sample DG-C5S-0.5-1 was R qualified as rejected. The remaining results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 99.7%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250242, 250262 and 250280). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Antimony was detected in the method blank in batch 250262 at an estimated concentration greater than the MDL and less than the RL. Since only beryllium results were reported from batch 250262 no qualifications were applied to the data.

Arsenic was detected in the method blanks in batches 250242 and 250262 at estimated concentrations greater than the MDL and less than the RL. Therefore, the estimated arsenic concentrations in samples DG-F5S-0.5-1 and DG-E5S-0.5-1 were U qualified as not detected at the RLs.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A5S-3.5-4	Arsenic	2100	J B	3100	U	3
DG-A5S-19.5-20	Arsenic	2100	J B	3000	U	3

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-C5S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The copper recoveries in the MS/MSD pair using sample DG-C5S-0.5-1 in analytical batch 250431 were high and outside the laboratory specified acceptance criteria. Since the copper concentration in sample DG-C5S-0.5-1 was greater than four times the spike concentration, no qualifications were applied to the data.

The silver recovery in the MS using sample DG-C5S-0.5-1 in analytical batch 250431 was high and outside the laboratory specified acceptance criteria. Since silver was not detected in sample DG-C5S-0.5-1, no qualifications were applied to the data.

The antimony recoveries in the MS/MSD pair using sample DG-C5S-0.5-1 in analytical batches 250431 and 250558 were low, less than 30% and outside the laboratory specified acceptance criteria. Therefore, the non-detect antimony result in sample DG-C5S-0.5-1 was R qualified as rejected.

One or both of the barium, lead, vanadium and zinc recoveries in the MS/MSD pair using sample DG-C5S-0.5-1 were high and outside the laboratory specified acceptance criteria. The post digestion spike (PDS) recoveries for these compounds were also high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-C5S-0.5-1 were J+ qualified as estimated with a high bias.

One or both of the cadmium, chromium, cobalt and nickel recoveries in the MS/MSD pair using sample DG-C5S-0.5-1 in analytical batch 250431 were high and outside the laboratory specified acceptance criteria. Since the PDS recoveries for these compounds were acceptable, the concentrations of these compounds in sample DG-C5S-0.5-1 were J qualified as estimated.

One or both of the nickel, thallium and zinc recoveries in the MS/MSD pair using sample DG-C5S-0.5-1 were low and outside the laboratory specified acceptance criteria. Since the PDS recoveries for these compounds were acceptable or high and outside the laboratory specified acceptance criteria, the non-detect results for these compounds in sample DG-C5S-0.5-1 were UJ qualified as estimated less than MDLs and the concentrations were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C5S-0.5-1	Antimony	190	U F1	190	R	4
DG-C5S-0.5-1	Barium	53000	F1	53000	J+	4
DG-C5S-0.5-1	Cadmium	510	F1	510	J	4
DG-C5S-0.5-1	Chromium	15000	F1	15000	J	4
DG-C5S-0.5-1	Cobalt	11000	F1	11000	J	4
DG-C5S-0.5-1	Lead	130000	F1	130000	J+	4
DG-C5S-0.5-1	Nickel	9400	F1	9400	J	4
DG-C5S-0.5-1	Thallium	330	U	330	UJ	4
DG-C5S-0.5-1	Vanadium	94000	F1	94000	J+	4
DG-C5S-0.5-1	Zinc	130000	F1	130000	J	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

Batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated that one serial dilution, using sample DG-C5S-0.5-1, was analyzed. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, cobalt, chromium, copper, nickel, lead, vanadium and zinc RPDs were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C5S-0.5-1	Barium	53000	F1	53000	J	8

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C5S-0.5-1	Chromium	15000	F1	15000	J	8
DG-C5S-0.5-1	Cobalt	11000	F1	11000	J	8
DG-C5S-0.5-1	Copper	140000	NA	140000	J	8
DG-C5S-0.5-1	Lead	130000	F1	130000	J	8
DG-C5S-0.5-1	Nickel	9400	F1	9400	J	8
DG-C5S-0.5-1	Vanadium	94000	F1	94000	J	8
DG-C5S-0.5-1	Zinc	130000	F1	130000	J	8

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
NA - Not applicable

6.7 Field Duplicate

Two field duplicate samples, DUP-3 and DUP-4 (job 720-88217-1), were collected with the sample set and analyzed for metals. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-I5S-3.5-4 and DG-F5S-3.5-4, respectively, with the following exceptions.

Molybdenum and silver were reported at concentrations greater than the MDLs in sample DG-I5S-3.5-4 and not detected in field duplicate DUP-3 (job 720-88217-1), resulting in non-calculable RPDs. Therefore, the molybdenum and silver concentrations in sample DG-I5S-3.5-4 were J qualified as estimated.

The antimony, arsenic, barium, copper, lead and zinc RPD results for field duplicate pair DG-I5S-3.5-4/DUP-3 (job 720-88217-1) were greater than 50%. Therefore, the concentrations of these metals in sample DG-I5S-3.5-4 were J qualified as estimated.

Beryllium and cadmium were reported at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-3 (job 720-88217-1) and at concentrations greater than the RLs in sample DG-I5S-3.5-4, resulting in non-calculable RPDs. Therefore, the beryllium and cadmium concentrations in sample DG-I5S-3.5-4 were J qualified as estimated.

Selenium and silver were reported at concentrations greater than the MDLs in sample DG-F5S-3.5-4 and not detected in field duplicate DUP-4 (job 720-88217-1), resulting in non-calculable RPDs. Therefore, the selenium and silver concentrations in sample DG-F5S-3.5-4 were J qualified as estimated.

Beryllium was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-4 (job 720-88217-1) and at a concentration greater than the RL in sample DG-F5S-3.5-4, resulting in a non-calculable RPD. Therefore, the beryllium concentration in sample DG-F5S-3.5-4 was J qualified as estimated.

The antimony, barium, cadmium, chromium, copper, lead, nickel, vanadium and zinc RPDs for field duplicate pair DG-F5S-3.5-4/DUP-4 were greater than 50%. Therefore, the concentrations of these metals in sample DG-F5S-3.5-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-F5S-3.5-4	Antimony	13000	NA	13000	J	7
DG-F5S-3.5-4	Barium	1400000	NA	1400000	J	7
DG-F5S-3.5-4	Beryllium	570	NA	570	J	7
DG-F5S-3.5-4	Cadmium	2800	NA	2800	J	7
DG-F5S-3.5-4	Chromium	43000	NA	43000	J	7
DG-F5S-3.5-4	Copper	800000	NA	800000	J	7
DG-F5S-3.5-4	Lead	2600000	NA	2600000	J	7
DG-F5S-3.5-4	Nickel	29000	NA	29000	J	7
DG-F5S-3.5-4	Selenium	1400	J	1400	J	7
DG-F5S-3.5-4	Silver	6000	NA	6000	J	7
DG-F5S-3.5-4	Vanadium	45000	NA	45000	J	7
DG-F5S-3.5-4	Zinc	2300000	NA	2300000	J	7
DG-I5S-3.5-4	Antimony	35000	NA	35000	J	7
DG-I5S-3.5-4	Arsenic	740000	B	740000	J	7
DG-I5S-3.5-4	Barium	1200000	NA	1200000	J	7
DG-I5S-3.5-4	Beryllium	820	NA	820	J	7
DG-I5S-3.5-4	Cadmium	2300	NA	2300	J	7
DG-I5S-3.5-4	Copper	380000	NA	380000	J	7
DG-I5S-3.5-4	Lead	2600000	NA	2600000	J	7
DG-I5S-3.5-4	Molybdenum	740	J	740	J	7
DG-I5S-3.5-4	Silver	6700	NA	6700	J	7
DG-I5S-3.5-4	Zinc	1400000	NA	1400000	J	7

µg/kg - Microgram per kilogram.

B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions the analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250272 and 250416). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-J5S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Two field duplicate samples, DUP-3 and DUP-4 (from job 720-88217-1), were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was not demonstrated between the field duplicates and the original samples, DG-I5S-3.5-4 and DG-F5S-3.5-4, respectively. Therefore, the mercury concentrations in samples DG-F5S-3.5-4 and DG-I5S-3.5-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-F5S-3.5-4	Mercury	310	NA	310	J	7
DG-I5S-3.5-4	Mercury	310	NA	310	J	7

µg/kg - Microgram per kilogram.
NA - Not applicable

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

Geosyntec consultants

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Memorandum

Date:	3 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88220-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of ten groundwater samples, one field duplicate sample, three field blanks and one trip blank, collected 22 August 2018 and 23 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5030B/8260B
- 1,2,3-Trichloropropane by USEPA Methods 5030B/8260B using Selected Ion Monitoring (SIM)
- Diesel Range Organics (DRO) by USEPA Methods 3510C/8015B
- Dissolved Metals by USEPA Methods 3010A/6010B
- Dissolved Mercury by USEPA Method 7470A
- Hexavalent Chromium (Cr VI) by USEPA Method 7196A

USEPA methods 5030B/8260BSIM were performed at TA Irvine, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88220-1	DG-C3W
720-88220-2	DG-F3W
720-88220-3	DG-I3W
720-88220-4	DG-K3W
720-88220-5	DG-M3W
720-88220-6	DG-L5W
720-88220-7	DG-J5W
720-88220-8	DG-H5W

Laboratory ID	Client ID
720-88220-9	DG-H6W
720-88220-10	DG-P5W
720-88220-11	FB-1
720-88220-12	FB-2
720-88220-13	FB-3
720-88220-15	TB-3
720-88220-16	DUP-02

The samples were received by TA Pleasanton, California at 1.9ºC, 2.6ºC and 3.1ºC and by TA Irvine, California at 2.7ºC and 3.0ºC, within the criteria of $\leq$6ºC.

Incorrect error corrections were observed on the original chain of custody (COC) instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The COC requested 1,2,3-trichloropropane analysis by Modified Method 524.2; however, the client later requested 1,2,3-trichloropropane analysis by 8260B-SIM. Method 8260B-SIM was used to analyze the samples for 1,2,3-trichloropropane.

The COC did not specify whether the metals samples were total or dissolved. The client confirmed the metals samples were field filtered.

The laboratory did not receive sample containers TB-2. The analysis for TB-2 was canceled.

The collection times were not listed on the COC for samples DUP-02, FB-1, FB-2, FB-3 and TB-3. The laboratory assigned collection times of 0:00.

Trip blank TB-3 was sent in a separate cooler from the other project samples from TA Pleasanton, California to TA Irvine, California. Therefore, the trip blank was not considered for USEPA method 8260B-SIM validation.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA methods 5030B/8260B and methods 5030B/8260B-SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated the following USEPA method 8260B samples were analyzed from vials with significant headspace: DG-C3W, DG-F3W, DG-K3W, DG-H6W, DG-P5W and TB-3. Significant headspace is defined as a bubble greater than 6 mm in diameter. Therefore, the non-

detect VOC results in these samples were UJ qualified as estimated less than the method detection limits (MDLs) and the VOC concentrations were J qualified as estimated.

The narrative indicated the USEPA method 8260B-SIM samples DG-H6W and TB-3 were analyzed for 1,2,3-trichloropropane from vials with significant headspace. Therefore, the non-detect 1,2,3-trichloropropane results in these samples were UJ qualified as estimated less than the MDL.

The narrative indicated the gasoline range organics (GRO) concentrations in samples DG-L5W, DG-P5W and DUP-02 were due to the presence of discrete cis-1,2-dichloroethene, trichloroethene and unknown peaks. Therefore, the GRO concentration in sample DG-L5W was U qualified as not detected at the reported concentration and the estimated GRO concentrations in samples DG-P5W and DUP-02 were U qualified as not detected at the reporting limit (RL).

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-C3W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-C3W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-C3W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-C3W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-C3W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-C3W	1,1-Dichloroethane	0.14	J	0.14	J	1
DG-C3W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-C3W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-C3W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-C3W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-C3W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-C3W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-C3W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-C3W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-C3W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-C3W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-C3W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-C3W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-C3W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-C3W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-C3W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-C3W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-C3W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-C3W	2-Hexanone	3.0	U	3.0	UJ	1
DG-C3W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-C3W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-C3W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-C3W	Acetone	20	U	20	UJ	1
DG-C3W	Benzene	0.25	U	0.25	UJ	1
DG-C3W	Bromobenzene	0.20	U	0.20	UJ	1
DG-C3W	Bromoform	0.50	U	0.50	UJ	1
DG-C3W	Bromomethane	0.49	U	0.49	UJ	1
DG-C3W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-C3W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-C3W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-C3W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-C3W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-C3W	Chloroethane	0.17	U	0.17	UJ	1
DG-C3W	Chloroform	0.40	U	0.40	UJ	1
DG-C3W	Chloromethane	0.19	U	0.19	UJ	1
DG-C3W	cis-1,2-Dichloroethene	7.6	NA	7.6	J	1
DG-C3W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-C3W	Dibromomethane	0.30	U	0.30	UJ	1
DG-C3W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-C3W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-C3W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-C3W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-C3W	GRO C4-C12	21	U	21	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-C3W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-C3W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-C3W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-C3W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-C3W	Naphthalene	0.22	U	0.22	UJ	1
DG-C3W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-C3W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-C3W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-C3W	Styrene	0.22	U	0.22	UJ	1
DG-C3W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-C3W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-C3W	Toluene	0.17	U	0.17	UJ	1
DG-C3W	trans-1,2-Dichloroethene	0.53	NA	0.53	J	1
DG-C3W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-C3W	Trichloroethene	3.9	NA	3.9	J	1
DG-C3W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-C3W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-C3W	Vinyl chloride	0.78	NA	0.78	J	1
DG-C3W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-F3W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-F3W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-F3W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-F3W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-F3W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-F3W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-F3W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-F3W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-F3W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-F3W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-F3W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-F3W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-F3W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-F3W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-F3W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-F3W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-F3W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-F3W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-F3W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-F3W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-F3W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-F3W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-F3W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-F3W	2-Hexanone	3.0	U	3.0	UJ	1
DG-F3W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-F3W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-F3W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-F3W	Acetone	20	U	20	UJ	1
DG-F3W	Benzene	0.25	U	0.25	UJ	1
DG-F3W	Bromobenzene	0.20	U	0.20	UJ	1
DG-F3W	Bromoform	0.50	U	0.50	UJ	1
DG-F3W	Bromomethane	0.49	U	0.49	UJ	1
DG-F3W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-F3W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-F3W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-F3W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-F3W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-F3W	Chloroethane	0.17	U	0.17	UJ	1
DG-F3W	Chloroform	0.40	U	0.40	UJ	1
DG-F3W	Chloromethane	0.19	U	0.19	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-F3W	cis-1,2-Dichloroethene	7.9	NA	7.9	J	1
DG-F3W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-F3W	Dibromomethane	0.30	U	0.30	UJ	1
DG-F3W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-F3W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-F3W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-F3W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-F3W	GRO C4-C12	21	U	21	UJ	1
DG-F3W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-F3W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-F3W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-F3W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-F3W	Naphthalene	0.22	U	0.22	UJ	1
DG-F3W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-F3W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-F3W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-F3W	Styrene	0.22	U	0.22	UJ	1
DG-F3W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-F3W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-F3W	Toluene	0.17	U	0.17	UJ	1
DG-F3W	trans-1,2-Dichloroethene	0.39	J	0.39	J	1
DG-F3W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-F3W	Trichloroethene	0.60	NA	0.60	J	1
DG-F3W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-F3W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-F3W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-F3W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-H6W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-H6W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-H6W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-H6W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U	0.091	UJ	1
DG-H6W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-H6W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-H6W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-H6W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-H6W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-H6W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-H6W	1,2,3-Trichloropropane	0.0025	U	0.0025	UJ	1
DG-H6W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-H6W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-H6W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-H6W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-H6W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-H6W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-H6W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-H6W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-H6W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-H6W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-H6W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-H6W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-H6W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-H6W	2-Hexanone	3.0	U	3.0	UJ	1
DG-H6W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-H6W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-H6W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-H6W	Acetone	20	U	20	UJ	1
DG-H6W	Benzene	0.25	U	0.25	UJ	1
DG-H6W	Bromobenzene	0.20	U	0.20	UJ	1
DG-H6W	Bromoform	0.50	U	0.50	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-H6W	Bromomethane	0.49	U	0.49	UJ	1
DG-H6W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-H6W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-H6W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-H6W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-H6W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-H6W	Chloroethane	0.17	U	0.17	UJ	1
DG-H6W	Chloroform	0.40	U	0.40	UJ	1
DG-H6W	Chloromethane	0.19	U	0.19	UJ	1
DG-H6W	cis-1,2-Dichloroethene	0.25	J	0.25	J	1
DG-H6W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-H6W	Dibromomethane	0.30	U	0.30	UJ	1
DG-H6W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-H6W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-H6W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-H6W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-H6W	GRO C4-C12	21	U	21	UJ	1
DG-H6W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-H6W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-H6W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-H6W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-H6W	Naphthalene	0.22	U	0.22	UJ	1
DG-H6W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-H6W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-H6W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-H6W	Styrene	0.22	U	0.22	UJ	1
DG-H6W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-H6W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-H6W	Toluene	0.17	U	0.17	UJ	1
DG-H6W	trans-1,2-Dichloroethene	0.13	U*	0.13	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-H6W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-H6W	Trichloroethene	0.20	U	0.20	UJ	1
DG-H6W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-H6W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-H6W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-H6W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-K3W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-K3W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-K3W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-K3W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-K3W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-K3W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-K3W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-K3W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-K3W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-K3W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-K3W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-K3W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-K3W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-K3W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-K3W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-K3W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-K3W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-K3W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-K3W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-K3W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-K3W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-K3W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-K3W	2-Chlorotoluene	0.20	U	0.20	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-K3W	2-Hexanone	3.0	U	3.0	UJ	1
DG-K3W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-K3W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-K3W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-K3W	Acetone	20	U	20	UJ	1
DG-K3W	Benzene	0.25	U	0.25	UJ	1
DG-K3W	Bromobenzene	0.20	U	0.20	UJ	1
DG-K3W	Bromoform	0.50	U	0.50	UJ	1
DG-K3W	Bromomethane	0.49	U	0.49	UJ	1
DG-K3W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-K3W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-K3W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-K3W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-K3W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-K3W	Chloroethane	0.17	U	0.17	UJ	1
DG-K3W	Chloroform	0.40	U	0.40	UJ	1
DG-K3W	Chloromethane	0.19	U	0.19	UJ	1
DG-K3W	cis-1,2-Dichloroethene	3.9	NA	3.9	J	1
DG-K3W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-K3W	Dibromomethane	0.30	U	0.30	UJ	1
DG-K3W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-K3W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-K3W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-K3W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-K3W	GRO C4-C12	21	U	21	UJ	1
DG-K3W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-K3W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-K3W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-K3W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-K3W	Naphthalene	0.22	U	0.22	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-K3W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-K3W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-K3W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-K3W	Styrene	0.22	U	0.22	UJ	1
DG-K3W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-K3W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-K3W	Toluene	0.17	U	0.17	UJ	1
DG-K3W	trans-1,2-Dichloroethene	0.13	U	0.13	UJ	1
DG-K3W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-K3W	Trichloroethene	0.20	U	0.20	UJ	1
DG-K3W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-K3W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-K3W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-K3W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-L5W	GRO C4-C12	57	NA	57	U	13
DG-P5W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-P5W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-P5W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-P5W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U	0.091	UJ	1
DG-P5W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-P5W	1,1-Dichloroethane	0.11	J	0.11	J	1
DG-P5W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-P5W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-P5W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-P5W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-P5W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-P5W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-P5W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-P5W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-P5W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-P5W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-P5W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-P5W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-P5W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-P5W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-P5W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-P5W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-P5W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-P5W	2-Hexanone	3.0	U	3.0	UJ	1
DG-P5W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-P5W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-P5W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-P5W	Acetone	20	U	20	UJ	1
DG-P5W	Benzene	0.25	U	0.25	UJ	1
DG-P5W	Bromobenzene	0.20	U	0.20	UJ	1
DG-P5W	Bromoform	0.50	U	0.50	UJ	1
DG-P5W	Bromomethane	0.49	U	0.49	UJ	1
DG-P5W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-P5W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-P5W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-P5W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-P5W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-P5W	Chloroethane	0.17	U	0.17	UJ	1
DG-P5W	Chloroform	0.40	U	0.40	UJ	1
DG-P5W	Chloromethane	0.19	U	0.19	UJ	1
DG-P5W	cis-1,2-Dichloroethene	6.0	NA	6.0	J	1
DG-P5W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-P5W	Dibromomethane	0.30	U	0.30	UJ	1
DG-P5W	Dichlorobromomethane	0.20	U	0.20	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
DG-P5W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-P5W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-P5W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-P5W	GRO C4-C12	30	J	50	U	1, 13
DG-P5W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-P5W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-P5W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-P5W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-P5W	Naphthalene	0.22	U	0.22	UJ	1
DG-P5W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-P5W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-P5W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-P5W	Styrene	0.22	U	0.22	UJ	1
DG-P5W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-P5W	Tetrachloroethene	0.33	J	0.33	J	1
DG-P5W	Toluene	0.17	U	0.17	UJ	1
DG-P5W	trans-1,2-Dichloroethene	0.75	NA	0.75	J	1
DG-P5W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-P5W	Trichloroethene	4.1	NA	4.1	J	1
DG-P5W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-P5W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-P5W	Vinyl chloride	0.73	NA	0.73	J	1
DG-P5W	Xylenes, Total	0.40	U	0.40	UJ	1
DUP-02	GRO C4-C12	31	J	50	U	13
TB-3	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
TB-3	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
TB-3	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
TB-3	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U	0.091	UJ	1
TB-3	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
TB-3	1,1-Dichloroethane	0.11	U	0.11	UJ	1
TB-3	1,1-Dichloroethene	0.20	U	0.20	UJ	1
TB-3	1,1-Dichloropropene	0.20	U	0.20	UJ	1
TB-3	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
TB-3	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
TB-3	1,2,3-Trichloropropane	0.0025	U	0.0025	UJ	1
TB-3	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
TB-3	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
TB-3	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
TB-3	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
TB-3	1,2-Dichloroethane	0.077	U	0.077	UJ	1
TB-3	1,2-Dichloropropane	0.20	U	0.20	UJ	1
TB-3	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
TB-3	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
TB-3	1,3-Dichloropropane	0.17	U	0.17	UJ	1
TB-3	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
TB-3	2,2-Dichloropropane	0.17	U	0.17	UJ	1
TB-3	2-Butanone (MEK)	8.4	U	8.4	UJ	1
TB-3	2-Chlorotoluene	0.20	U	0.20	UJ	1
TB-3	2-Hexanone	3.0	U	3.0	UJ	1
TB-3	4-Chlorotoluene	0.20	U	0.20	UJ	1
TB-3	4-Isopropyltoluene	0.20	U	0.20	UJ	1
TB-3	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
TB-3	Acetone	20	U	20	UJ	1
TB-3	Benzene	0.25	U	0.25	UJ	1
TB-3	Bromobenzene	0.20	U	0.20	UJ	1
TB-3	Bromoform	0.50	U	0.50	UJ	1
TB-3	Bromomethane	0.49	U	0.49	UJ	1
TB-3	Carbon disulfide	0.78	U	0.78	UJ	1
TB-3	Carbon tetrachloride	0.11	U	0.11	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
TB-3	Chlorobenzene	0.13	U	0.13	UJ	1
TB-3	Chlorobromomethane	0.25	U	0.25	UJ	1
TB-3	Chlorodibromomethane	0.10	U	0.10	UJ	1
TB-3	Chloroethane	0.17	U	0.17	UJ	1
TB-3	Chloroform	0.40	U	0.40	UJ	1
TB-3	Chloromethane	0.19	U	0.19	UJ	1
TB-3	cis-1,2-Dichloroethene	0.076	U	0.076	UJ	1
TB-3	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
TB-3	Dibromomethane	0.30	U	0.30	UJ	1
TB-3	Dichlorobromomethane	0.20	U	0.20	UJ	1
TB-3	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
TB-3	Ethylbenzene	0.13	U	0.13	UJ	1
TB-3	Ethylene Dibromide	0.075	U	0.075	UJ	1
TB-3	GRO C4-C12	21	U	21	UJ	1
TB-3	Hexachlorobutadiene	0.27	U	0.27	UJ	1
TB-3	Isopropylbenzene	0.20	U	0.20	UJ	1
TB-3	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
TB-3	Methylene Chloride	1.5	U	1.5	UJ	1
TB-3	Naphthalene	0.22	U	0.22	UJ	1
TB-3	n-Butylbenzene	0.30	U	0.30	UJ	1
TB-3	N-Propylbenzene	0.20	U	0.20	UJ	1
TB-3	sec-Butylbenzene	0.17	U	0.17	UJ	1
TB-3	Styrene	0.22	U	0.22	UJ	1
TB-3	tert-Butylbenzene	0.20	U	0.20	UJ	1
TB-3	Tetrachloroethene	0.20	U	0.20	UJ	1
TB-3	Toluene	0.17	U	0.17	UJ	1
TB-3	trans-1,2-Dichloroethene	0.13	U	0.13	UJ	1
TB-3	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
TB-3	Trichloroethene	0.20	U	0.20	UJ	1
TB-3	Trichlorofluoromethane	0.30	U	0.30	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier**	Reason code***
TB-3	Vinyl acetate	0.60	U	0.60	UJ	1
TB-3	Vinyl chloride	0.20	U	0.20	UJ	1
TB-3	Xylenes, Total	0.40	U	0.40	UJ	1

µg/L - Micrograms per litter.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the laboratory control sample (LCS)/LCS duplicate (LCSD) recovery and/or relative percent difference (RPD) results are outside acceptance criteria.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding time for the VOC analysis of preserved water samples is 14 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six method blanks were reported (8260B batches 250552, 250553, 250554 and 250627 and 8260B-SIM batches 496565 and 496818). VOCs were not detected in the method blanks above the MDLs, with the following exception.

Naphthalene was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 250552. Since naphthalene was not detected in the associated samples, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-J5W. The recovery and RPD results were within the laboratory specified acceptance criteria.

Batch MS/MSD pairs (batch QC) were also reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Eight LCS/LCSD pairs and two LCSs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene and carbon disulfide recoveries in the LCS/LCSD pair in batch 250552 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualifications were applied to the data.

The 1,1-dichloroethene, carbon disulfide and trans-1,2-dichloroethene recoveries in the LCS/LCSD pair in batch 250553 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

One trip blank was submitted with the data set, TB-3. VOCs were not detected in the trip blank above the MDLs. As noted in the Executive Summary, TB-3 was not in the same sample cooler as the other project samples sent to TA Irvine, California. Therefore, the trip blank was not considered for validation.

1.8 Field Blank

Three field blanks were submitted for method 8260B analyses, FB-1, FB-2 and FB-3. VOCs were not detected in the field blanks above the MDLs. The field blanks were not analyzed by method 8260B-SIM.

1.9 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, DG-L5W, with the following exceptions.

2-Butanone, benzene and toluene were detected at estimated concentrations greater than the MDLs and less than the RLs in sample DG-L5W and not detected in field duplicate DUP-02, resulting in non-calculable RPDs. Therefore, the non-detect results for these compounds in field duplicate DUP-02 were UJ qualified as estimated less than the MDLs and the concentrations in sample DG-L5W were J qualified as estimated.

GRO was detected at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-02 and detected at a concentration greater then the RL in sample DG-L5W, resulting in a non-calculable RPD. However, since both results were U qualified as not detect due to the presence of discreate peaks, additional qualifications were not applied to the data.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	RPD %	Validation Result (µg/L)	Validation Qualifier*	Reason code**
DG-L5W	2-Butanone (MEK)	8.8	J	NC	8.8	J	7
DUP-02	2-Butanone (MEK)	8.4	U		8.4	UJ	7
DG-L5W	Benzene	0.27	J	NC	0.27	J	7
DUP-02	Benzene	0.25	U		0.25	UJ	7
DG-L5W	Toluene	0.26	J	NC	0.26	J	7
DUP-02	Toluene	0.17	U		0.17	UJ	7

µg/L - Microgram per litter.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

1.10 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 7.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated the DRO concentrations in samples DG-I3W and DG-L5W were due to the presence of discrete unknown peaks. Therefore, the DRO concentrations were U qualified as not detected at the reported concentrations.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason code
DG-I3W	DRO [C10-C28]	57	NA	57	U	13
DG-L5W	DRO [C10-C28]	170	NA	170	U	13

µg/L - Microgram per litter
NA - Not applicable

2.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250307). DRO was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. An LCS/LCSD pair was used to assess precision and accuracy.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

2.7 Field Blank

Three field blanks were submitted with the data set, FB-1, FB-2 and FB-3. DRO was not detected in the field blanks above the MDL.

2.8 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$30%) was not demonstrated between the field duplicate and the original sample, DG-L5W, since the DRO result for sample DG-L5W was U qualified as not detected at the reported concentration due to the presence of discreate peaks. Therefore, the DRO concentration in field duplicate DUP-02 was J qualified as estimated and the non-detect DRO result in sample DG-L5W was UJ qualified as estimated less than the reported result.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason code
DUP-02	Diesel Range Organics [C10-C28]	190	NA	190	J	7
DG-L5W	Diesel Range Organics [C10-C28]	170	NA	170	UJ	7

µg/L - Microgram per litter
NA - Not applicable

2.9 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

2.10 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 DISSOLVED METALS

The samples were analyzed for dissolved metals per USEPA Methods 3010A/6010B (mercury evaluated separately in Section 4.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
⊗ Serial Dilution
✓ Laboratory Control Sample
✓ Field Blank
⊗ Field Duplicate
⊗ Sensitivity
✓ Electronic Deliverable Review

3.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding time for the metals analyses of a water sample is 180 days from collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250227). Dissolved metals were not detected in the method blank above the MDLs, with the following exception.

Beryllium was reported at an estimated concentration greater than the MDL and less than the RL in the method blank. Therefore, the estimated beryllium concentrations in samples DG-C3W, DG-P5W, DG-F3W, DG-I3W, DG-M3W, DG-L5W and DG-H5W were U qualified as not detect at the RL.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason code
DG-C3W	Beryllium	0.00042	J B	0.002	U	3
DG-F3W	Beryllium	0.00069	J B	0.002	U	3
DG-H5W	Beryllium	0.00062	J B	0.002	U	3
DG-I3W	Beryllium	0.00089	J B	0.002	U	3
DG-L5W	Beryllium	0.001	J B	0.002	U	3
DG-M3W	Beryllium	0.0011	J B	0.002	U	3
DG-P5W	Beryllium	0.00034	J B	0.002	U	3

µg/L - Microgram per liter.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-J5W. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.5 Serial Dilution

The narrative indicated that one serial dilution, using sample DG-J5W, was analyzed. The RPD results were within the laboratory specified acceptance criteria, with the following exception.

The barium RPD result was high and outside the laboratory specified acceptance criteria. Therefore, the barium concentration in sample DG-J5W was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason code
DG-J5W	Barium	0.24	NA	0.24	J	8

µg/L - Microgram per liter.
NA - Not applicable

3.6 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.7 Field Blank

Three field blanks were submitted with the data set, FB-1, FB-2 and FB-3. Dissolved metals were not detected in the field blanks above the MDLs.

3.8 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for dissolved metals. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, DG-L5W, with the following exceptions.

Beryllium was detected at an estimated concentration greater than the MDL and less than the RL in sample DG-L5W and not detected in field duplicate DUP-02, resulting in a non-calculable RPD. However, since the estimated beryllium concentration in sample DG-L5W was U qualified as not detect at the RL due to method blank contamination, no additional qualifications were applied to the data based on technical and professional judgment.

Chromium was detected at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-02 and not detected in sample DG-L5W, resulting in a non-calculable RPD. Therefore, the non-detect chromium result in sample DG-L5W was UJ qualified as estimated less then the MDL and the estimated chromium concentration in field duplicate DUP-02 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	RPD %	Validation Result (µg/L)	Validation Qualifier	Reason code
DG-L5W	Chromium	0.0015	U	NC	0.0015	UJ	7

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	RPD %	Validation Result (µg/L)	Validation Qualifier	Reason code
DUP-02	Chromium	0.0019	J		0.0019	J	7

µg/L - Microgram per litter.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

3.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 7, with the following exceptions.

Analyte	Laboratory MDL (µg/L)	SSSL (µg/L)
Silver	1.2	0.19
Thallium	3.5	2.0

3.10 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 DISSOLVED MERCURY

The samples were analyzed for dissolved mercury per USEPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Deliverable Review

4.1 Overall Assessment

The dissolved mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250432). Dissolved mercury was not detected in the method blank above the MDL.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-J5W. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

4.6 Field Blank

Three field blanks were submitted with the data set, FB-1, FB-2 and FB-3. Dissolved mercury was not detected in the field blanks above the MDL.

4.7 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for dissolved mercury. Acceptable precision (RPD ≤30%) was demonstrated between the field duplicate and the original sample, DG-L5W.

4.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 HEXAVALENT CHROMIUM

The samples were analyzed for Cr VI per USEPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The Cr VI data reported in this package are considered to be usable for meeting project objectives, with the following exceptions. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values

qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

5.2 Holding Times

The holding times for the Cr VI analysis of a water sample is 24 hours from sample collection to analysis. The holding times were met for the sample analyses, with the following exceptions.

Samples DG-C3W and DG-F3W were analyzed 35 hours after collection. Therefore, the non-detect Cr VI results in samples DG-C3W and DG-F3W were UJ qualified as estimated less than the MDL.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason code
DG-C3W	Cr (VI)	0.0037	H U	0.0037	UJ	2
DG-F3W	Cr (VI)	0.0037	H U	0.0037	UJ	2

µg/L - Microgram per liter.
H - Laboratory flag indicating that the sample was prepared or analyzed outside the specified holding time.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250111). Cr VI was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-J5W. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.6 Field Blank

Three field blanks were submitted for Cr VI analysis, FB-1, FB-2 and FB-3. Cr VI was not detected in the field blanks above the MDL.

5.7 Field Duplicate

One field duplicate sample, DUP-02, was collected with the sample set and analyzed for Cr VI. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, DG-L5W.

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

5.9 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	3 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88231-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of six soil field duplicate samples, collected 23 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Metals by United States Environmental Protection Agency (USEPA) Methods 3050B/6010B
- Mercury by USEPA Method 7471A

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88231-1	DUP-17
720-88231-2	DUP-18
720-88231-3	DUP-19

Laboratory ID	Client ID
720-88231-4	DUP-26
720-88231-5	DUP-27
720-88231-6	DUP-28

The samples were received at TA Pleasanton, California at 1.8ºC, within the criteria of <6ºC. No sample preservation issues were noted by the laboratory.

The field duplicate samples reported in this job are associated with parent samples reported in other jobs. Field duplicate parent samples DG-D8S-3.5-4, DG-E10S-0.5-1 and DG-H10S-0.5-1 were reported in job 720-88234-1 and parent samples DG-G8S-0.5-1, DG-I8S-3.5-4 and DG-J10S-0.5-1 were reported in job 720-88235-1. The field duplicate pairs are as follows: DG-D8S-3.5-4/DUP-17, DG-G8S-0.5-1/DUP-18, DG-I8S-3.5-4/DUP-19, DG-E10S-0.5-1/DUP-26, DG-H10S-0.5-1/DUP-27 and DG-J10S-0.5-1/DUP-28.

The collection times were not listed on the chain of custody (COC) for field duplicate samples. The laboratory assigned collection times of 0:00.

1.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid

analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250280). Metals were not detected in the method blank above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair as reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Field Duplicate

Six field duplicate samples, DUP-17, DUP-18, DUP-19, DUP-26, DUP-27 and DUP-28, were collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-D8S-3.5-4 (job 720-88234-1), DG-G8S-0.5-1 (job 720-88235-1), DG-I8S-3.5-4 (job 720-88235-1), DG-E10S-0.5-1 (job 720-88234-1), DG-H10S-0.5-1 (job 720-88234-1) and DG-J10S-0.5-1 (job 720-88235-1), respectively, with the following exceptions.

Antimony was reported at a concentration greater than the RL in field duplicate DUP-17 and at an estimated concentration greater than the MDL and less than the RL in sample DG-D8S-3.5-4 (job 720-88234-1), resulting in a non-calculable RPD. Therefore, the antimony concentration in field duplicate DUP-17 was J qualified as estimated.

Cadmium was reported at a concentration greater than the MDL in field duplicate DUP-17 and not detected in sample DG-D8S-3.5-4 (job 720-88234-1), resulting in a non-calculable RPD. Therefore, the cadmium concentration in field duplicate DUP-17 was J qualified as estimated.

Arsenic was reported at a concentration greater than the RL in sample DG-G8S-0.5-1 (job 720-88235-1) and at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-18, resulting in a non-calculable RPD. Therefore, the estimated arsenic concentration in field duplicate DUP-18 was J qualified as estimated.

The barium, cobalt, copper, lead and vanadium RPD results in field duplicate pair DG-I8S-3.5-4/DUP-19 were greater than 50%. Therefore, the concentrations of these metals in field duplicate DUP-19 were J qualified as estimated.

Cadmium and selenium were reported at concentrations greater than the MDLs in field duplicate DUP-19 and not detected in sample DG-I8S-3.5-4 (job 720-88235-1), resulting in non-calculable RPDs. Therefore, the cadmium and selenium concentrations in field duplicate DUP-19 were J qualified as estimated.

Selenium was reported at a concentration greater than the MDL in sample DG-H10S-0.5-1 (job 720-88234-1) and not detected in field duplicate DUP-27, resulting in a non-calculable RPD. Therefore, the non-detect selenium result in field duplicate DUP-27 was UJ qualified as estimated less than the MDL.

Antimony was detected at an estimated concentration greater than the MDL and less than the RL in sample DG-J10S-0.5-1 (job 720-88235-1) and not detected in field duplicate DUP-28, resulting in a non-calculable RPD result. However, since the estimated antimony concentration in sample DG-J10S-0.5-1 (job 720-88235-1) was U qualified as not detect at the RL due to method blank contamination, no additional qualifications were applied to the data.

The barium, chromium, lead and zinc RPDs in field duplicate pair DG-J10S-0.5-1/DUP-28 were greater than 50%. Therefore, the concentrations of these metals in field duplicate DUP-28 were J qualified as estimated.

Cadmium, molybdenum and thallium were reported at concentrations greater than the RLs in one of the samples in field duplicate pair DG-J10S-0.5-1/DUP-28 and at estimated concentrations greater than the MDLs and less than the RLs in the other sample, resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in field duplicate DUP-28 were J qualified as estimated.

Silver was reported at a concentration greater than the MDL in field duplicate DUP-28 and not detected in sample DG-J10S-0.5-1 (job 720-88235-1), resulting in a non-calculable RPD. Therefore, the silver concentration in field duplicate DUP-28 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier*	Reason code**
DUP-17	Antimony	1800	NA	1800	J	7
DUP-17	Cadmium	53	J	53	J	7
DUP-18	Arsenic	2900	J	2900	J	7
DUP-19	Barium	25000	NA	25000	J	7
DUP-19	Cadmium	120	J	120	J	7
DUP-19	Cobalt	15000	NA	15000	J	7
DUP-19	Copper	120000	NA	120000	J	7
DUP-19	Lead	49000	NA	49000	J	7
DUP-19	Selenium	690	J	690	J	7
DUP-19	Vanadium	120000	NA	120000	J	7
DUP-27	Selenium	510	U	510	UJ	7
DUP-28	Barium	190000	NA	190000	J	7
DUP-28	Cadmium	440	NA	440	J	7
DUP-28	Chromium	40000	NA	40000	J	7
DUP-28	Lead	250000	NA	250000	J	7
DUP-28	Molybdenum	700	J	700	J	7
DUP-28	Silver	250	J	250	J	7
DUP-28	Thallium	1600	NA	1600	J	7
DUP-28	Zinc	130000	NA	130000	J	7

µg/kg - Microgram per kilogram.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Validation qualifiers are defined in Attachment 1 at the end of this report.
** - Reason codes are defined in Attachment 2 at the end of this report.

1.7 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

1.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250285). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair as reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Field Duplicate

Six field duplicate samples, DUP-17, DUP-18, DUP-19, DUP-26, DUP-27 and DUP-28, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-D8S-3.5-4 (job 720-88234-1), DG-G8S-0.5-1 (job 720-88235-1), DG-I8S-3.5-4 (job 720-88235-1), DG-E10S-0.5-1 (job 720-88234-1), DG-H10S-0.5-1 (job 720-88234-1) and DG-J10S-0.5-1 (job 720-88235-1), respectively.

2.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

2.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88234-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of twenty soil samples, including one sample for matrix spike/matrix spike duplicate (MS/MSD) analyses, collected 23 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88234-1	DG-D10S-0.5-1
720-88234-2	DG-D10S-3.5-4
720-88234-3	DG-E10S-0.5-1
720-88234-4	DG-E10S-3.5-4
720-88234-5	DG-H10S-0.5-1
720-88234-6	DG-H10S-3.5-4
720-88234-7	DG-I10S-0.5-1
720-88234-8	DG-I10S-3.5-4
720-88234-9	DG-K10S-0.5-1
720-88234-10	DG-K10S-3.5-4

Laboratory ID	Client ID
720-88234-11	DG-F8S-0.5-1
720-88234-12	DG-F8S-3.5-4
720-88234-13	DG-E8S-0.5-1
720-88234-14	DG-E8S-3.5-4
720-88234-15	DG-D8S-0.5-1
720-88234-16	DG-D8S-3.5-4
720-88234-17	DG-B8S-0.5-1
720-88234-18	DG-B8S-3.5-4
720-88234-19	DG-C10S-0.5-1
720-88234-20	DG-C10S-3.5-4

The samples were received at TA Pleasanton, California at 1.8ºC, within the criteria of ≤6ºC. No sample preservation issues were noted by the laboratory.

The year was not included for the sample collection dates or the first relinquishing documentation on the chain of custody (COC).

1.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilution
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250280 and 280292). Metals were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-I10S-0.5-1. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, zinc, and lead recoveries were low and outside the laboratory specified acceptance criteria. Since the barium, zinc, and lead concentrations in sample DG-I10S-0.5-1 were greater than four times the spike concentrations, no qualifications were applied to the data.

The chromium, nickel and vanadium recoveries in the MSD were high, and outside the laboratory specified acceptance criteria. Since the post digestion spike (PDS) recoveries for these metals were greater than 125%, the concentrations of chromium, nickel, and vanadium in sample DG-I10S-0.5-1 were J+ qualified as estimated with high biases.

One or both of the antimony and copper recoveries in the MS/MSD pair using sample DG-I10S-0.5-1 were low and outside the laboratory specified acceptance criteria. the PDS recovery of antimony was within the laboratory specified acceptance criteria and the copper recovery was greater than 125%. The antimony RPD was also high, outside the laboratory specified acceptance

criteria. Therefore, the nondetect antimony result in sample DG-I10S-0.5-1 was UJ qualified as estimated less than the MDL and the copper concentration was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier *	Reason Code **
DG-I10S-0.5-1	Chromium	22000	F1	22000	J+	4
DG-I10S-0.5-1	Nickel	19000	F1	19000	J+	4
DG-I10S-0.5-1	Vanadium	20000	F1	20000	J+	4
DG-I10S-0.5-1	Antimony	280	U, F1, F2	280	UJ	4
DG-I10S-0.5-1	Copper	43000	F1	43000	J	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
F2- Laboratory flag indicating the MS/MSD RPD was outside the acceptance criteria
U – Laboratory flag indicating not detected above the MDL
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report

One batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Serial Dilution

The narrative indicated that one serial dilution was analyzed, using sample DG-I10S-0.5-1. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, cadmium, chromium, cobalt, lead, nickel, vanadium and zinc RPDs were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of barium, cadmium, chromium, cobalt, lead, nickel, vanadium and zinc in sample DG-I10S-0.5-1 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-I10S-0.5-1	Barium	500000	F2	500000	J	8
DG-I10S-0.5-1	Chromium	22000	F1	22000	J	8
DG-I10S-0.5-1	Cobalt	3900	NA	3900	J	8

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-I10S-0.5-1	Lead	500000	F2	500000	J	8
DG-I10S-0.5-1	Nickel	19000	F1	19000	J	8
DG-I10S-0.5-1	Vanadium	20000	F1	20000	J	8
DG-I10S-0.5-1	Zinc	520000	F2	520000	J	8
DG-I10S-0.5-1	Cadmuim	2200	NA	2200	J	8

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
F2 - Laboratory flag indicating the RPD was outside the acceptance criteria
NA - Not applicable

1.7 Field Duplicate

Three field duplicate samples, DUP-17, DUP-26 and DUP-27, were collected with the sample set reported in 720-88231-1. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original samples, DG-D8S-3.5-4, DG-E10S-0.5-1 and DG-H10S-0.5-1 respectively, with the following exceptions.

Antimony was detected at an estimated concentration greater than the MDL and less than the reporting limit (RL) in sample DG-D8S-3.5-4 and detected at a concentration greater than the RL in field duplicate DUP-17, resulting in a non-calculable RPD. Therefore, the concentrations of antimony in field duplicate pair DG-D8S-3.5-4/DUP-17 were J qualified as estimated.

Cadmium was detected at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-17 and not detected in sample DG-D8S-3.5-4, resulting in a non-calculable RPD. Therefore, the non-detect cadmium result in sample DG-D8S-3.5-4 was UJ qualified as estimated less than the MDL and the cadmium concentration in field duplicate DUP-17 was J qualified as estimated.

Selenium was detected at an estimated concentration greater than the MDL and less than the RL in sample DG-H10S-0.5-1 and not detected in field duplicate DUP-27, resulting in a non-calculable RPD. Therefore, the non-detect selenium result in field duplicate DUP-27 was UJ qualified as estimated less than the MDL and the selenium concentration in DG-H10S-0.5-1 was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/Kg)	Laboratory Flag	RPD (%)	Validation Result (µg/Kg)	Validation Qualifier	Reason Code
DG-D8S-35.-4	Antimony	1200	J	NC	1200	J	7
DUP-17	Antimony	1800	NA		1800	J	7

Sample ID	Analyte	Laboratory Result (µg/Kg)	Laboratory Flag	RPD (%)	Validation Result (µg/Kg)	Validation Qualifier	Reason Code
DG-D8S-35.-4	Cadmium	42	U	NC	42	UJ	7
DUP-17	Cadmium	53	J		0.0015	J	7
DG-H10S-0.5-1	Selenium	670	J	NC	670	J	7
DUP-27	Selenium	510	U		510	UJ	7

µg/Kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL
NA – Not applicable

1.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

1.9 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

2.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250410). Mercury was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-I10S-0.5-1. The recovery RPD results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.6 Field Duplicate

Three field duplicate samples, DUP-17, DUP-26 and DUP-27, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original samples, DG-D8S-3.5-4, DG-E10S-0.5-1 and DG-H10S-0.5-1 respectively.

2.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

Geosyntec consultants

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88235-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of twenty soil samples, including one sample for matrix spike/ matrix spike duplicate (MS/MSD) analyses, collected 23 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88235-1	DG-C6S-0.5-1
720-88235-2	DG-C6S-3.5-4
720-88235-3	DG-F6S-0.5-1
720-88235-4	DG-F6S-3.5-4
720-88235-5	DG-K6S-0.5-1
720-88235-6	DG-K6S-3.5-4
720-88235-7	DG-I8S-0.5-1
720-88235-8	DG-I8S-3.5-4
720-88235-9	DG-G8S-0.5-1
720-88235-10	DG-G8S-3.5-4

Laboratory ID	Client ID
720-88235-11	DG-J10S-0.5-1
720-88235-12	DG-J10S-3.5-4
720-88235-13	DG-L10S-0.5-1
720-88235-14	DG-L10S-3.5-4
720-88235-15	DG-H8S-0.5-1
720-88235-16	DG-H8S-3.5-4
720-88235-17	DG-C8S-0.5-1
720-88235-18	DG-C8S-3.5-4
720-88235-19	DG-F10S-0.5-1
720-88235-20	DG-F10S-3.5-4

The samples were received at TA Pleasanton, California at 2.3ºC, within the criteria of ≤6ºC. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not listed for the sample collection dates on the COC, and for the first sample transfer and the second sampling relinquishing documentation.

1.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilution
✓ Field Duplicate
✓ Sensitivity

✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

It was noted in the case narrative that the recoveries for the internal standards in the interference check standard ICSAB were outside the method specified acceptance criteria in batch 250701. Since the results in the ICSAB were within the method specified acceptance criteria and based on professional and technical judgement, no qualifications were applied to the data.

1.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five method blanks were reported (batches 250242, 250292, 250310, 250365 and 250385). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exceptions.

Arsenic was detected in the method blank in batch 250242 at an estimated concentration greater than the MDL and less than the reporting limit (RL). Therefore, the estimated arsenic concentration in sample DG-F10S-0.5-1 was U qualified as not detected at the RL.

Antimony and barium were detected in the method blank in batch 250365 at an estimated concentration greater than the MDL and less than the RL. Since barium was detected in the associated samples at concentrations greater than the RLs, no qualifications were applied to the barium data. However, the estimated antimony concentrations in samples DG-F10S-0.5-1, DG-J10S-3.5-4 and DG-L10S-3.5-4 were U qualified as not detected at the RL.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier *	Reason Code **
DG-F10S-0.5-1	Arsenic	2600	J B	3500	U	3
DG-J10S-0.5-1	Antimony	1000	J B	1200	U	3
DG-J10S-3.5-4	Antimony	980	J B	1500	U	3
DG-L10S-3.5-4	Antimony	1400	J B	1600	U	3

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report

Chromium was detected in the method blank in batch 250385 at an estimated concentration greater than the MDL and less than the RL. Since the associated sample result was greater than the RL, no qualifications were applied to the chromium data.

1.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-C6S-0.5-1. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of the following metals were high and outside the laboratory specified acceptance criteria: Barium, copper, lead, vanadium, and zinc. Therefore, the concentrations of barium, copper, lead, vanadium, and zinc in sample DG-C6S-0.5-1 were J+ qualified as estimated with high biases.

The antimony recoveries were low and outside the laboratory specified acceptance criteria. Therefore, the antimony concentration in sample DG-C6S-0.5-1 was J- qualified as estimated with a low bias.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-C6S-0.5-1	Antimony	1900	F1	1900	J-	4
DG-C6S-0.5-1	Barium	44000	F1	44000	J+	4
DG-C6S-0.5-1	Copper	150000	F1	150000	J+	4
DG-C6S-0.5-1	Lead	140000	F1	140000	J+	4

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-C6S-0.5-1	Vanadium	88000	F1	88000	J+	4
DG-C6S-0.5-1	Zinc	120000	F1	120000	J+	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL

Four batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Serial Dilution

The narrative indicated that one serial dilution was analyzed, using sample DG-C6S-0.5-1. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, chromium, cobalt, copper, lead, nickel, vanadium and zinc RPDs were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these metals in sample DG-C6S-0.5-1 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-C6S-0.5-1	Barium	44000	F1	44000	J	8
DG-C6S-0.5-1	Chromium	19000	NA	19000	J	8
DG-C6S-0.5-1	Cobalt	12000	NA	12000	J	8
DG-C6S-0.5-1	Copper	150000	F1	150000	J	8
DG-C6S-0.5-1	Lead	140000	F1	140000	J	8
DG-C6S-0.5-1	Nickel	15000	NA	15000	J	8
DG-C6S-0.5-1	Vanadium	88000	F1	88000	J	8
DG-C6S-0.5-1	Zinc	120000	F1	120000	J	8

µg/kg - Microgram per kilogram

F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
NA - Not applicable

1.7 Field Duplicate

Three field duplicate samples, DUP-18, DUP-19 and DUP-28, were collected with the sample set and analyzed for metals. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-G8S-0.5-1, DG-G8S-3.5-4 and DG-J10S-0.5-1, respectively, with the following exceptions. Note: The field duplicates were reported in 720-88231-1.

Arsenic was detected at a concentration greater than the RL in sample DG-G8S-0.5-1 and detected at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-18, resulting in a non-calculable RPD. Therefore, the concentrations of arsenic result in field duplicate pair DG-G8S-0.5-1/DUP-18 were J qualified as estimated.

The RPDs for barium, cobalt, copper, lead and vanadium were greater than 50% in field duplicate pair DG-I8S-3.5-4/DUP-19. Therefore, the concentrations of these metals in this field duplicate pair were J qualified as estimated.

Cadmium and selenium were detected at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-19 and not detected in sample DG-I8S-3.5-4, resulting in non-calculable RPDs. Therefore, the non-detect cadmium and selenium results in sample DG-I8S-3.5-4 were UJ qualified as estimated less than the MDLs and the cadmium and selenium concentrations in field duplicate DUP-19 were J qualified as estimated.

Thallium was detected at a concentration greater than the RL in sample in field duplicate DUP-19 and detected at an estimated concentration greater than the MDL and less than the RL in sample DG-I8S-3.5-4, resulting in a non-calculable RPD. Therefore, the concentrations of thallium in field duplicate pair DG-I8S-3.5-4/DUP-19 were J qualified as estimated.

The RPDs for barium, chromium, lead and zinc were greater than 50% in field duplicate pair DG-J10S-0.5-1/DUP-28. Therefore, the concentrations of these metals in this field duplicate pair were J qualified as estimated.

Antimony was detected at an estimated concentration greater than the MDL and less than the RL in sample DG-J10S-0.5-1 and not detected in field duplicate DUP-28, resulting in a non-calculable

RPD. Since antimony was U qualified as not detected at the RL in sample DG-J10S-0.5-1 due to the method blank contamination, no additional qualifications were applied to the antimony data.

Cadmium and thallium were detected at concentrations greater than the RLs in field duplicate DUP-28 and detected at estimated concentrations greater than the MDLs and less than the RLs in sample DG-J10S-0.5-1, resulting in non-calculable RPDs. Therefore, the concentrations of cadmium and thallium in field duplicate pair DG-J10S-0.5-1 /DUP-28 were J qualified as estimated.

Silver was detected at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-28 and not detected in sample DG-J10S-0.5-1, resulting in a non-calculable RPD. Therefore, the non-detect silver result in sample DG-J10S-0.5-1 was UJ qualified as estimated less than the MDL and the silver concentration in field duplicate DUP-28 was J qualified as estimated.

Molybdenum was detected at a concentration greater than the RL in sample DG-J10S-0.5-1 and detected at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-28, resulting in a non-calculable RPD. Therefore, the concentrations of molybdenum in field duplicate DG-J10S-0.5-1/DUP-28 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/Kg)	Laboratory Flag	RPD (%)	Validation Result (µg/Kg)	Validation Qualifier	Reason Code
DG-G8S-0.5-1	Arsenic	6300	NA	NC	6300	J	7
DUP-18	Arsenic	2900	J		2900	J	7
DG-I8S-3.5-4	Barium	49000	NA	65	49000	J	7
DUP-19	Barium	25000	NA		25000	J	7
DG-I8S-3.5-4	Cobalt	8300	NA	58	8300	J	7
DUP-19	Cobalt	15000	NA		15000	J	7
DG-I8S-3.5-4	Copper	67000	NA	57	67000	J	7
DUP-19	Copper	120000	NA		120000	J	7
DG-I8S-3.5-4	Lead	18000	NA	93	18000	J	7
DUP-19	Lead	49000	NA		49000	J	7
DG-I8S-3.5-4	Vanadium	71000	NA	51	71000	J	7
DUP-19	Vanadium	120000	NA		120000	J	7
DG-I8S-3.5-4	Cadmium	41	U	NC	41	UJ	7
DUP-19	Cadmium	120	J		120	J	7
DG-I8S-3.5-4	Selenium	500	U	NC	500	UJ	7

Sample ID	Analyte	Laboratory Result (µg/Kg)	Laboratory Flag	RPD (%)	Validation Result (µg/Kg)	Validation Qualifier	Reason Code
DUP-19	Selenium	690	J		690	J	7
DG-I8S-3.5-4	Thallium	850	J	NC	850	J	7
DUP-19	Thallium	1400	NA		1400	J	7
DG-J10S-0.5-1	Barium	78000	B	84	78000	J	7
DUP-28	Barium	190000	NA		190000	J	7
DG-J10S-0.5-1	Chromium	110000	NA	93	110000	J	7
DUP-28	Chromium	40000	NA		40000	J	7
DG-J10S-0.5-1	Lead	130000	NA	63	130000	J	7
DUP-28	Lead	250000	NA		250000	J	7
DG-J10S-0.5-1	Zinc	65000	NA	67	65000	J	7
DUP-28	Zinc	130000	NA		130000	J	7
DG-J10S-0.5-1	Cadmium	230	J	NC	230	J	7
DUP-28	Cadmium	440	NA		440	J	7
DG-J10S-0.5-1	Thallium	650	J	NC	650	J	7
DUP-28	Thallium	1600	NA		1600	J	7
DG-J10S-0.5-1	Silver	130	U	NC	130	UJ	7
DUP-28	Silver	250	J		250	J	7
DG-J10S-0.5-1	Molybdenum	15000	NA	NC	15000	J	7
DUP-28	Molybdenum	700	J		700	J	7

µg/Kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
B - Laboratory flag indicating the analyte was detected in the sample and method blank
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL

1.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

1.9 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

2.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250239 and 250285). Mercury was not detected in the method blanks above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-C6S-0.5-1 and DG-J10S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Field Duplicate

Three field duplicate samples, DUP-18, DUP-19 and DUP-28, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-G8S-0.5-1, DG-G8S-3.5-4 and DG-J10S-0.5-1 respectively. Note: The field duplicates were reported in 720-88231-1.

2.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	12 November 2018
To:	Anthony Smith
From:	Mary Tyler
	Kristoffer Henderson
CC:	J. Caprio
Subject:	**Stage 4 Data Validation - Level IV Data Deliverable, TestAmerica Work Order Number 720-88236-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 4 data validation of two groundwater samples, collected August 23, 2018, as part of the UPC OU-SM sampling event. The following analyses were performed at TestAmerica Pleasanton, California, with the exception of 1,2,3-trichloropropane by EPA method 524.2 using Selective Ion Monitoring (SIM) which was analyzed at TestAmerica Irvine, California:

- Volatile Organic Compounds (VOCs) by EPA Methods 5030B/8260B
- 1,2,3-Trichloropropane by EPA Method 524.2 using SIM
- Diesel Range Organics (DRO) by EPA Methods 3510C/8015B
- Dissolved Metals by EPA Methods 3010A/6010B
- Dissolved Mercury by EPA Method 7470A
- Standard Method 2540G - Percent Moisture/Solids
- Hexavalent Chromium by EPA Method 7196

EXECUTIVE SUMMARY

Overall, based on this Stage 4 data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the National Functional Guidelines for

Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 4 level in the data set:

Laboratory ID	Client ID
720-88236-1	DG-B5W
720-88236-2	DG-B4W

The samples were received at the laboratory at 1.0°C, within the QAPP criteria of <6°C. No sample preservation issues were noted by the laboratory.

The following issues were noted by the laboratory*:*

- It was noted that there was no indication on the chain of custody (COC) that the dissolved metals samples were field filtered. It was verified by the field sampler that the dissolved metals samples were filtered in the field.

The following issues were noted during data validation*:*

- Incorrect error corrections were observed on the COC, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

- There was no year in the first relinquished by section on the COC.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per EPA Methods 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Holding Times and Preservation
✓ Instrument Performance
✓ Initial Calibration
✓ Initial and Continuing Calibration Verification
✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Internal Standard
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for this sample set is 100%.

1.2 Holding Times and Preservation

The holding time for the VOC analysis of a preserved water sample is 14 days from collection to analysis. The holding times were met for the sample analyses.

Samples DG-B4W and DB-B5W were analyzed from vials with headspace. Therefore, based on professional and technical judgment, the non-detect results were UJ qualified as estimated less than the method detection limits (MDLs) and the concentrations were J qualified as estimated in samples DG-B4W and DB-B5W.

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier*	Reason code**
DG-B5W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-B5W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-B5W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-B5W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U	0.091	UJ	1
DG-B5W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-B5W	1,1-Dichloroethane	0.44	J	0.44	J	1
DG-B5W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-B5W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-B5W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier*	Reason code**
DG-B5W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-B5W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-B5W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-B5W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-B5W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-B5W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-B5W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-B5W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-B5W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-B5W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-B5W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-B5W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-B5W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-B5W	2-Hexanone	3.0	U	3.0	UJ	1
DG-B5W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-B5W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-B5W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-B5W	Acetone	20	U	20	UJ	1
DG-B5W	Benzene	0.25	U	0.25	UJ	1
DG-B5W	Bromobenzene	0.20	U	0.20	UJ	1
DG-B5W	Bromoform	0.50	U	0.50	UJ	1
DG-B5W	Bromomethane	0.49	U	0.49	UJ	1
DG-B5W	Carbon disulfide	0.78	U	0.78	UJ	1
DG-B5W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-B5W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-B5W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-B5W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-B5W	Chloroethane	0.17	U	0.17	UJ	1
DG-B5W	Chloroform	0.40	U	0.40	UJ	1
DG-B5W	Chloromethane	0.19	U	0.19	UJ	1
DG-B5W	cis-1,2-Dichloroethene	160	NA	160	J	1
DG-B5W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-B5W	Dibromomethane	0.30	U	0.30	UJ	1
DG-B5W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-B5W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-B5W	Ethylbenzene	0.13	U	0.13	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier*	Reason code**
DG-B5W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-B5W	Gasoline Range Organics (GRO) C4-C12	380	NA	380	J	1
DG-B5W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-B5W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-B5W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-B5W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-B5W	Naphthalene	0.22	U	0.22	UJ	1
DG-B5W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-B5W	n-Propylbenzene	0.20	U	0.20	UJ	1
DG-B5W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-B5W	Styrene	0.22	U	0.22	UJ	1
DG-B5W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-B5W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-B5W	Toluene	0.17	U	0.17	UJ	1
DG-B5W	trans-1,2-Dichloroethene	2.6	U	2.6	UJ	1
DG-B5W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-B5W	Trichloroethene	8.5	NA	8.5	J	1
DG-B5W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-B5W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-B5W	Vinyl chloride	410	NA	410	J	1
DG-B5W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-B5W	1,1-Dichloroethene	4.0	U	4.0	UJ	1
DG-B4W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-B4W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-B4W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-B4W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U	0.091	UJ	1
DG-B4W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-B4W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-B4W	1,1-Dichloroethene	0.20	U	0.20	UJ	1
DG-B4W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-B4W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-B4W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-B4W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-B4W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-B4W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier*	Reason code**
DG-B4W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-B4W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-B4W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-B4W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-B4W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-B4W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-B4W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-B4W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-B4W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-B4W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-B4W	2-Hexanone	3.0	U	3.0	UJ	1
DG-B4W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-B4W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-B4W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-B4W	Acetone	20	U	20	UJ	1
DG-B4W	Benzene	0.25	U	0.25	UJ	1
DG-B4W	Bromobenzene	0.20	U	0.20	UJ	1
DG-B4W	Bromoform	0.50	U	0.50	UJ	1
DG-B4W	Bromomethane	0.49	U	0.49	UJ	1
DG-B4W	Carbon disulfide	0.78	U	0.78	UJ	1
DG-B4W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-B4W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-B4W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-B4W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-B4W	Chloroethane	0.17	U	0.17	UJ	1
DG-B4W	Chloroform	0.40	U	0.40	UJ	1
DG-B4W	Chloromethane	0.19	U	0.19	UJ	1
DG-B4W	cis-1,2-Dichloroethene	0.86	NA	0.86	J	1
DG-B4W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-B4W	Dibromomethane	0.30	U	0.30	UJ	1
DG-B4W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-B4W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-B4W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-B4W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-B4W	GRO C4-C12	30	J	30	J	1
DG-B4W	Hexachlorobutadiene	0.27	U	0.27	UJ	1

Sample ID	Compound	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier*	Reason code**
DG-B4W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-B4W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-B4W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-B4W	Naphthalene	0.22	U	0.22	UJ	1
DG-B4W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-B4W	n-Propylbenzene	0.20	U	0.20	UJ	1
DG-B4W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-B4W	Styrene	0.22	U	0.22	UJ	1
DG-B4W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-B4W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-B4W	Toluene	0.17	U	0.17	UJ	1
DG-B4W	trans-1,2-Dichloroethene	0.13	U	0.13	UJ	1
DG-B4W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-B4W	Trichloroethene	0.20	U	0.20	UJ	1
DG-B4W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-B4W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-B4W	Vinyl chloride	1.8	NA	1.8	J	1
DG-B4W	Xylenes, Total	0.40	U	0.40	UJ	1

µg/L - microgram per liter
J - laboratory flag indicating the result is less than the reporting limit (RL) but greater than or equal to the MDL and the concentration is an approximate value.
U - laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
NA-not applicable
* Validation qualifiers are defined in Attachment 1 at the end of this report.
** Reason codes are defined in Attachment 2 at the end of this report.

1.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for bromofluorobenzene (BFB).

1.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated percent relative standard deviation (%RSD) of the RRFs or used curve fits.

The average RRFs for the system performance check standards (SPCCs) met the method specified acceptance criteria. The %RSDs of the calibration check compounds (CCCs) were within the method specified acceptance criteria.

The average RRFs and the %RSDs of the target analytes were within the method (15%) and validation specified acceptance criteria or the coefficients of determination (r^2) were greater than or equal to 0.990 for the curve fit calibrations. The average RRFs for target analytes met the method and validation specified acceptance criteria.

1.5 Initial and Continuing Calibration Verification (ICV and CCV)

The ICVs and CCVs were performed at the required frequency. The ICV and CCV RRFs met the method and validation criteria. The percent differences (%Ds) between the RRFs in the initial calibration and the CCVs were within the method and validation criteria.

1.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250641 and 250782). VOCs were not detected in the method blanks above the MDLs.

1.7 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

1.8 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCS duplicate (LCSD) pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria with the following exceptions.

One or both the recoveries of carbon disulfide, methylene chloride, trans-1,2-dichloromethane, 1,1,2-trichloro-1,2,2-trifluoroethane and 1,1-dichloroethene were high and outside the laboratory specified acceptance criteria in the LCS/LCSD pair in batch 250641. Since these compounds were not detected in the associated samples, no qualifications were added to the data.

1.9 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.10 Trip Blank

Trip blanks were not submitted with the sample set.

1.11 Field Duplicate

Field duplicate samples were not collected with the sample set.

1.12 Internal Standard

The internal standard areas and retention times were within method specified acceptance criteria.

1.13 Target Compound Identification

The target compound identifications were within the validation criteria.

1.14 Compound Quantitation

The compound quantitations were within the validation criteria.

1.15 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported for the samples.

1.16 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

2.0 1,2,3-TRICHLOROPROPANE

The samples were analyzed for 1,2,3-trichloropropane per EPA Method 524.2 using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Instrument Performance Check
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Laboratory Duplicate
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Internal Standard
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The 1,2,3-trichloropropane data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for the 1,2,3-trichloropropane analysis of a preserved water sample is 14 days from collection to analysis. The holding times were met for the sample analyses.

2.3 Instrument Performance Check

An instrument performance check sample (tune standard) was analyzed at the beginning of each 12-hour period during sample analysis. The samples were analyzed within the 12-hour period. All ion abundance criteria were met for BFB.

2.4 Initial Calibration

Appropriate initial calibrations were performed for each analyte. Based on the method of calibration, the laboratory calculated percent %RSD of the RRFs.

The average RRF and the %RSD of the target analyte were within the method (15%) and validation specified acceptance criteria. The average RRFs for target analytes met the method and validation specified acceptance criteria.

2.5 Initial and Continuing Calibration Verification

The ICVs and CCVs were performed at the required frequency. The ICV and CCV RRFs met the method and validation criteria. The %Ds between the RRFs in the initial calibration and the CCVs were within the method and validation criteria.

2.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 496340). 1,2,3-Trichloropropane was not detected in the method blank above the MDL.

2.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported.

2.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

2.9 Laboratory Duplicate

One batch laboratory duplicate was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.10 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

2.11 Trip Blank

Trip blanks were not submitted with the sample set.

2.12 Field Duplicate

Field duplicate samples were not collected with the sample set.

2.13 Internal Standards

The internal standard areas and retention times were within method specified acceptance criteria.

2.14 Target Compound Identification

The target compound identifications were within the validation criteria.

2.15 Compound Quantitation

The compound quantitations were within the validation criteria.

2.16 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported for the samples.

2.17 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

3.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per EPA Methods EPA Methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment

- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verification
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogate
- ✓ Field Duplicate
- ✓ Target Compound Identification
- ✓ Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Initial Calibration

Appropriate initial calibrations were performed for each analyte. The laboratory calculated the %RSDs of the calibration factors (CFs). The %RSDs of the CFs were within the method and validation criteria.

3.4 Continuing Calibration Verification

CCVs were performed at the required frequency. The %Ds of the CFs in the CCVs were within the method and validation specified acceptance criteria.

3.5 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250307). DRO was not detected in the method blank above the MDL.

3.6 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported.

3.7 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery results were within the laboratory specified acceptance criteria.

3.8 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

3.10 Target Compound Identification

The target compound identifications were within the validation criteria.

3.11 Compound Quantitation

The compound quantitations were within the validation criteria.

3.12 Sensitivity

The samples were reported to the MDL. No elevated nondetect results were reported.

3.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

4.0 DISSOLVED METALS

The samples were analyzed for dissolved metals per EPA Methods 3010A/6010C (Mercury evaluated separately in Section 5.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Initial Calibration
✓ Initial and Continuing Calibration Verifications
⊗ Initial and Continuing Calibration Blanks
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Serial Dilution
✓ Field Duplicate
✓ Target Compound Quantitation
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The dissolved metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for this sample set is 100%.

4.2 Holding Times

The holding time for the dissolved metals analysis of a water sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Initial Calibration

The initial calibration requirements were met.

The interference check standards (ICSA and ICSAB) met the method specified acceptance criteria.

4.4 Initial and Continuing Calibration Verifications

The percent recoveries in the ICVs and CCVs were within the method specified acceptance limits.

4.5 Initial and Continuing Calibration Blanks (ICB and CCB)

The ICBs and CCBs met the method specified acceptance criteria, with the following exceptions.

Antimony, beryllium and copper were detected at estimated concentrations greater than the MDLs and less than the RLs in bracketing CCBs in batch 250390. Since antimony and beryllium were either not detected or detected above the RLs in the associated samples, no qualifications were applied to the antimony and beryllium data. However, the estimated copper concentration in the associated sample was U qualified as not detected at the RL.

Sample	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-B5W	Copper	0.0030	J	0.020	U	3

mg/L-milligrams per liter
J-estimated concentration greater than the MDL and less than the RL

4.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250227). Metals were not detected in the method blank above the MDLs, with the following exception.

Beryllium was detected at an estimated concentration greater than the MDL and less than the RL. Since the beryllium was not detected in the associated samples, no qualifications were applied to the data.

4.7 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.9 Serial Dilution

One batch serial dilution was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.10 Field Duplicate

Field duplicate samples were not collected with the sample set.

4.11 Target Compound Quantitation

The compound quantitations were within the validation criteria.

4.12 Sensitivity

The samples were reported to the MDLs. No elevated nondetect results were reported.

4.13 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

5.0 DISSOLVED MERCURY

The samples were analyzed for dissolved mercury per EPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verifications
- ✓ Initial and Continuing Calibration Blanks
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Target Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The dissolved mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for this sample set is 100%.

5.2 Holding Times

The holding time for the dissolved mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

5.3 Initial Calibration

Appropriate initial calibrations were performed for mercury. Based on the method of calibration, the laboratory used a linear curve fit. The coefficient of determination (r^2) was greater than or equal to 0.990.

5.4 Initial and Continuing Calibration Verifications

The percent recoveries in the associated ICVs and CCVs were within the method specified acceptance criteria.

5.5 Initial and Continuing Calibration Blanks

The ICBs and CCBs met the method specified acceptance criteria.

5.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250432). Mercury was not detected in the method blank above the MDL.

5.7 Matrix Spike/Matrix Spike Duplicate

One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

5.10 Target Compound Quantitation

The compound quantitations were within the validation criteria.

5.11 Sensitivity

The sample was reported to the MDL. No elevated nondetect results were reported.

5.12 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

6.0 HEXAVALENT CHROMIUM

The samples were analyzed for hexavalent chromium per EPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Initial Calibration
- ✓ Initial and Continuing Calibration Verifications
- ✓ Initial and Continuing Calibration Blanks
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Target Compound Quantitation
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The hexavalent chromium data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the hexavalent chromium analysis of a water sample is 24 hours from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Initial Calibration

Appropriate initial calibrations were performed for hexavalent chromium. Based on the method of calibration, the laboratory used a linear curve fit. The coefficient of determination (r^2) was greater than or equal to 0.990.

6.4 Initial and Continuing Calibration Verifications

The percent recoveries in the associated ICVs and CCVs were within the method specified acceptance criteria.

6.5 Initial and Continuing Calibration Blanks

The ICBs and CCBs met the method specified acceptance criteria.

6.6 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250205). Hexavalent chromium was not detected in the method blank above the MDL.

6.7 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-B5W. The recovery and RPD results were within the laboratory specified acceptance criteria.

6.8 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery results were within the laboratory specified acceptance criteria.

6.9 Field Duplicate

Field duplicate samples were not collected with the sample set.

6.10 Target Compound Quantitation

The compound quantitations were within the validation criteria.

6.11 Sensitivity

The sample was reported to the MDL. No elevated nondetect results were reported.

6.12 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

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

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher that the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower that the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other

RPD-relative percent difference

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Memorandum

Date:	4 December 2018
To:	Anthony Smith
Janet From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88237-1, Revision 1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of ten soil samples, collected 23 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88237-1	DG-B4S-0.5-1
720-88237-2	DG-B4S-3.5-4
720-88237-3	DG-C4S-0.5-1
720-88237-4	DG-C4S-3-5-4
720-88237-5	DG-A7S-0-5-1

Laboratory ID	Client ID
720-88237-6	DG-A7S-3-5-4
720-88237-7	DG-A7S-10-10.5
720-88237-8	DG-B7S-0.5-1
720-88237-9	DG-B7S-3.5-4
720-88237-10	DG-B7S-14.5-15

The samples were received at TA Pleasanton, California at 1.0°C and at TA Canton, Ohio at 1.4°C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

Field duplicate parent samples DG-A7S-10-10.5 and DG-B4S-0.5-1 were reported in this job, 720-88237-1; however, field duplicates DUP-05 and DUP-11, respectively, were reported in job 720-88238-1.

The year was not included in the collection dates on the chain of custody (COC) and in the first sample relinquishing documentation.

The laboratory report was revised on 14 November 2018 to correct the sample ID for sample DG-A7S-10-10.5 and t request that metals results be reported in milligram per kilogram (mg/Kg). The revised report was identified as Job ID 720-88237-1, Revision 1.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
⊗ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and the Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DG-A7S-10-10.5 was low and outside the laboratory specified acceptance criteria. The fluorobenzene, chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for sample DG-B7S-14.5-15 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated compounds in these samples were UJ qualified as estimated less than the method detection limits (MDLs), the estimated concentrations less than the reporting limits (RLs) and greater than the MDLs were J qualified as estimated and the concentrations were J+ qualified as estimated with a high bias.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-A7S-10-10.5	1,1,2,2-Tetrachloroethane	0.60	U*	0.60	UJ	11
DG-A7S-10-10.5	1,2,3-Trichlorobenzene	0.59	U*	0.59	UJ	11
DG-A7S-10-10.5	1,2,3-Trichloropropane	0.61	U*	0.61	UJ	11
DG-A7S-10-10.5	1,2,4-Trichlorobenzene	0.56	U*	0.56	UJ	11
DG-A7S-10-10.5	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DG-A7S-10-10.5	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-A7S-10-10.5	1,2-Dichlorobenzene	0.54	U*	0.54	UJ	11
DG-A7S-10-10.5	1,3,5-Trimethylbenzene	0.52	U*	0.52	UJ	11
DG-A7S-10-10.5	1,3-Dichlorobenzene	0.57	U*	0.57	UJ	11
DG-A7S-10-10.5	1,4-Dichlorobenzene	0.56	U*	0.56	UJ	11
DG-A7S-10-10.5	2-Chlorotoluene	0.52	U*	0.52	UJ	11
DG-A7S-10-10.5	4-Chlorotoluene	0.54	U*	0.54	UJ	11
DG-A7S-10-10.5	4-Isopropyltoluene	2.0	U*	2.0	UJ	11
DG-A7S-10-10.5	Bromobenzene	0.63	U*	0.63	UJ	11
DG-A7S-10-10.5	Hexachlorobutadiene	0.71	U*	0.71	UJ	11
DG-A7S-10-10.5	Naphthalene	1.2	U*	1.2	UJ	11
DG-A7S-10-10.5	n-Butylbenzene	0.79	U*	0.79	UJ	11
DG-A7S-10-10.5	N-Propylbenzene	0.52	U*	0.52	UJ	11
DG-A7S-10-10.5	sec-Butylbenzene	0.57	U*	0.57	UJ	11
DG-A7S-10-10.5	tert-Butylbenzene	0.58	U*	0.58	UJ	11
DG-B7S-14.5-15	1,1,1,2-Tetrachloroethane	0.53	U*	0.53	UJ	11
DG-B7S-14.5-15	1,1,1-Trichloroethane	0.43	U*	0.43	UJ	11
DG-B7S-14.5-15	1,1,2,2-Tetrachloroethane	0.53	U*	0.53	UJ	11
DG-B7S-14.5-15	1,1,2-Trichloro-1,2,2-trifluoroethane	1.5	U*	1.5	UJ	11
DG-B7S-14.5-15	1,1,2-Trichloroethane	0.49	U*	0.49	UJ	11
DG-B7S-14.5-15	1,1-Dichloroethane	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	1,1-Dichloroethene	0.44	U*	0.44	UJ	11
DG-B7S-14.5-15	1,1-Dichloropropene	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	1,2,3-Trichlorobenzene	0.52	U*	0.52	UJ	11
DG-B7S-14.5-15	1,2,3-Trichloropropane	0.54	U*	0.54	UJ	11
DG-B7S-14.5-15	1,2,4-Trichlorobenzene	0.50	U*	0.50	UJ	11
DG-B7S-14.5-15	1,2,4-Trimethylbenzene	1.2	U*	1.2	UJ	11
DG-B7S-14.5-15	1,2-Dibromo-3-Chloropropane	1.2	U*	1.2	UJ	11
DG-B7S-14.5-15	1,2-Dichlorobenzene	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	1,2-Dichloroethane	0.53	U*	0.53	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B7S-14.5-15	1,2-Dichloropropane	0.44	U*	0.44	UJ	11
DG-B7S-14.5-15	1,3,5-Trimethylbenzene	0.46	U*	0.46	UJ	11
DG-B7S-14.5-15	1,3-Dichlorobenzene	0.51	U*	0.51	UJ	11
DG-B7S-14.5-15	1,3-Dichloropropane	0.51	U*	0.51	UJ	11
DG-B7S-14.5-15	1,4-Dichlorobenzene	0.50	U*	0.50	UJ	11
DG-B7S-14.5-15	2,2-Dichloropropane	1.4	U*	1.4	UJ	11
DG-B7S-14.5-15	2-Butanone (MEK)	15	U*	15	UJ	11
DG-B7S-14.5-15	2-Chlorotoluene	0.46	U*	0.46	UJ	11
DG-B7S-14.5-15	2-Hexanone	7.0	U*	7.0	UJ	11
DG-B7S-14.5-15	4-Chlorotoluene	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	4-Isopropyltoluene	1.8	U*	1.8	UJ	11
DG-B7S-14.5-15	4-Methyl-2-pentanone (MIBK)	7.0	U*	7.0	UJ	11
DG-B7S-14.5-15	Acetone	52	*	52	J+	11
DG-B7S-14.5-15	Benzene	0.46	U*	0.46	UJ	11
DG-B7S-14.5-15	Bromobenzene	0.55	U*	0.55	UJ	11
DG-B7S-14.5-15	Bromoform	1.4	U*	1.4	UJ	11
DG-B7S-14.5-15	Bromomethane	0.55	U*	0.55	UJ	11
DG-B7S-14.5-15	Carbon disulfide	1.4	U*	1.4	UJ	11
DG-B7S-14.5-15	Carbon tetrachloride	0.44	U*	0.44	UJ	11
DG-B7S-14.5-15	Chlorobenzene	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	Chlorobromomethane	0.51	U*	0.51	UJ	11
DG-B7S-14.5-15	Chlorodibromomethane	0.50	U*	0.50	UJ	11
DG-B7S-14.5-15	Chloroethane	0.39	U*	0.39	UJ	11
DG-B7S-14.5-15	Chloroform	0.46	U*	0.46	UJ	11
DG-B7S-14.5-15	Chloromethane	0.55	U*	0.55	UJ	11
DG-B7S-14.5-15	cis-1,2-Dichloroethene	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	cis-1,3-Dichloropropene	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	Dibromomethane	0.60	U*	0.60	UJ	11
DG-B7S-14.5-15	Dichlorobromomethane	0.51	U*	0.51	UJ	11
DG-B7S-14.5-15	Dichlorodifluoromethane	0.55	U*	0.55	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B7S-14.5-15	Ethylbenzene	0.53	U*	0.53	UJ	11
DG-B7S-14.5-15	Ethylene Dibromide	1.0	U*	1.0	UJ	11
DG-B7S-14.5-15	Gasoline Range Organics (GRO)-C4-C12	70	U*	70	UJ	11
DG-B7S-14.5-15	Hexachlorobutadiene	0.63	U*	0.63	UJ	11
DG-B7S-14.5-15	Isopropylbenzene	0.48	U*	0.48	UJ	11
DG-B7S-14.5-15	Methyl tert-butyl ether	0.84	U*	0.84	UJ	11
DG-B7S-14.5-15	Methylene Chloride	3.9	U*	3.9	UJ	11
DG-B7S-14.5-15	Naphthalene	1.1	U*	1.1	UJ	11
DG-B7S-14.5-15	n-Butylbenzene	0.70	U*	0.70	UJ	11
DG-B7S-14.5-15	N-Propylbenzene	0.46	U*	0.46	UJ	11
DG-B7S-14.5-15	sec-Butylbenzene	0.51	U*	0.51	UJ	11
DG-B7S-14.5-15	Styrene	0.44	U*	0.44	UJ	11
DG-B7S-14.5-15	tert-Butylbenzene	0.51	U*	0.51	UJ	11
DG-B7S-14.5-15	Tetrachloroethene	0.47	U*	0.47	UJ	11
DG-B7S-14.5-15	Toluene	0.50	U*	0.50	UJ	11
DG-B7S-14.5-15	trans-1,2-Dichloroethene	0.53	U*	0.53	UJ	11
DG-B7S-14.5-15	trans-1,3-Dichloropropene	0.47	U*	0.47	UJ	11
DG-B7S-14.5-15	Trichloroethene	0.44	U*	0.44	UJ	11
DG-B7S-14.5-15	Trichlorofluoromethane	0.39	U*	0.39	UJ	11
DG-B7S-14.5-15	Vinyl acetate	3.5	U*	3.5	UJ	11
DG-B7S-14.5-15	Vinyl chloride	0.51	U*	0.51	UJ	11

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250405, 250407 and 250452). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six LCS/LCSD pairs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pairs in batches 250405 and 250452 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The carbon disulfide and 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250407 were high and outside the laboratory specified acceptance criteria. Therefore, the estimated carbon disulfide concentration in sample DG-A7S-10-10.5 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A7S-10-10.5	Carbon disulfide	3.0	J *	3.0	J	5

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
* - Laboratory flag indicating the LCS or LCSD recovery was outside acceptance limits.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

One field duplicate sample, DUP-05 (from job 720-88238-1), was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-A7S-10-10.5, with the following exceptions.

Vinyl chloride was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-A7S-10-10.5 and not detected in field duplicate DUP-05 (job 720-88238-1), resulting in a non-calculable RPD. Therefore, the estimated vinyl chloride concentration in sample DG-A7S-10-10.5 was J qualified as estimated.

Acetone was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-A7S-10-10.5 and reported at a concentration greater than the RL in field duplicate DUP-05 (job 720-88238-1), resulting in a non-calculable RPD. Therefore, the estimated acetone concentration in sample DG-A7S-10-10.5 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A7S-10-10.5	Acetone	33	J	33	J	7
DG-A7S-10-10.5	Vinyl chloride	1.1	J	1.1	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250376). PAHs were not detected in the method blank above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

One field duplicate sample, DUP-05 (from job 720-88238-1), was collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-A7S-10-10.5, with the following exceptions.

Chrysene was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-05 (job 720-88238-1) and at a concentration greater than the RL in sample DG-A7S-10-10.5, resulting in a non-calculable RPD. Therefore, the chrysene concentration in sample DG-A7S-10-10.5 was J qualified as estimated.

Naphthalene was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-05 (job 720-88238-1) and not detected in sample DG-A7S-10-10.5, resulting in a non-calculable RPD. Therefore, the non-detect naphthalene result in sample DG-A7S-10-10.5 was UJ qualified as estimated less than the MDL.

The benzo[b]fluoranthene and fluoranthene RPD results for field duplicate pair DG-A7S-10-10.5/DUP-05 (job 720-88238-1) were greater than 50%. Therefore, the concentrations of these compounds in sample DG-A7S-10-10.5 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A7S-10-10.5	Benzo[b]fluoranthene	15	NA	2.1	J	7
DG-A7S-10-10.5	Chrysene	8.0	NA	1.4	J	7
DG-A7S-10-10.5	Fluoranthene	11	NA	1.4	J	7
DG-A7S-10-10.5	Naphthalene	3.4	U	3.4	UJ	7

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
NA - Not applicable

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250393 and 250843). Organochlorine pesticides were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

A batch MS/MSD pair was reported in batch 250393. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

MS/MSD were not reported in batch 250843. An LCS/LCSD pair were reported and used to assess precision and accuracy.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS and one LCS/LCSD pair were reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

One field duplicate sample, DUP-05 (from job 720-88238-1), was collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-A7S-10-10.5.

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the Aroclor 1254 percent difference (%D) for the continuing calibration verification (CCV) associated with analytical batch 343339 was high and outside the laboratory specified acceptance criteria, with a high bias. Since Aroclor 2154 was not detected in the associated samples, no qualifications were applied to the data.

The narrative indicated that due to the presence of multiple aroclors in sample DG-A7S-0-5-1 and the contribution between aroclors that the chromatographic pattern in the sample did not directly

match the laboratory's PCB standards. Therefore, the Aroclor-1254 and Aroclor-1260 concentrations in sample DG-A7S-0-5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A7S-0-5-1	Aroclor-1254	32	J	32	J	13
DG-A7S-0-5-1	Aroclor-1260	42	J	42	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 343099). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

One field duplicate sample, DUP-05 (from job 720-88238-1), was collected with the sample set and analyzed for PCBs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicate and the original sample, DG-A7S-10-10.5.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total

number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250382). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There was no surrogate recovery (0%) in sample DG-A7S-0-5-1. Since this sample was analyzed at a 1:10 dilution, no qualifications were applied to the data.

5.7 Field Duplicate

One field duplicate sample, DUP-05 (from job 720-88238-1), was collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-A7S-10-10.5.

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250365, 250385 and 250470). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Antimony and barium were detected in the method blank in batch 250365 at estimated concentrations greater than the MDLs and less than the RLs. Therefore, the estimated antimony concentrations in samples DG-B4S-3.5-4 and DG-A7S-0-5-1 were U qualified as not detected at the RLs. However, since the barium concentrations in the associated samples were greater than the RL no qualifications were applied to the barium data.

Chromium was detected in the method blank in batch 250385 at an estimated concentration greater than the MDL and less than the RL. Since the chromium concentrations in the associated samples were greater than the RL, no qualifications were applied to the data.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B4S-3.5-4	Antimony	750	J B	1100	U	3
DG-A7S-0-5-1	Antimony	720	J B	1900	U	3

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-B7S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The antimony and lead recoveries were low and outside the laboratory specified acceptance criteria. However, the antimony and lead recoveries in the post digestion spike (PDS) were high

and outside the laboratory specified acceptance criteria. Therefore, the antimony and lead concentrations in sample DG-B7S-3.5-4 were J qualified as estimated.

The beryllium, chromium, copper, nickel, silver, vanadium and zinc recoveries were high and outside the laboratory specified acceptance criteria. The PDS recoveries for these compounds were also high and outside the laboratory specified acceptance criteria. Therefore, the chromium, copper, nickel, vanadium and zinc concentrations in sample DG-B7S-3.5-4 were J+ qualified as estimated with a high bias. However, since beryllium and silver were not detected in sample DG-B7S-3.5-4, no qualifications were applied to the non-detect beryllium and silver results.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B7S-3.5-4	Antimony	1400	J F1	1400	J	4
DG-B7S-3.5-4	Chromium	45000	F1	45000	J+	4
DG-B7S-3.5-4	Copper	31000	F1	31000	J+	4
DG-B7S-3.5-4	Lead	100000	F1 F2	100000	J	4
DG-B7S-3.5-4	Nickel	60000	F1	60000	J+	4
DG-B7S-3.5-4	Vanadium	26000	F1	26000	J+	4
DG-B7S-3.5-4	Zinc	86000	F1	86000	J+	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD RPD was outside the acceptance criteria.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

Batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated that one serial dilution, using sample DG-B7S-3.5-4, was analyzed. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, chromium, cobalt, lead, nickel and vanadium RPD results were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-B7S-3.5-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B7S-3.5-4	Barium	90000	NA	90000	J	8
DG-B7S-3.5-4	Chromium	45000	F1	45000	J	8
DG-B7S-3.5-4	Cobalt	9100	NA	9100	J	8
DG-B7S-3.5-4	Lead	100000	F1 F2	100000	J	8
DG-B7S-3.5-4	Nickel	60000	F1	60000	J	8
DG-B7S-3.5-4	Vanadium	26000	F1	26000	J	8

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
F2 - Laboratory flag indicating the MS/MSD RPD was outside the acceptance criteria.
NA - Not applicable.

6.7 Field Duplicate

Two field duplicate samples, DUP-05 and DUP-11 (720-88238-1), were collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 and DG-B4S-0.5-1, respectively, with the following exceptions.

Copper, molybdenum and selenium were reported at concentrations greater than the MDLs in sample DG-A7S-10-10.5 and not detected in field duplicate DUP-05 (job 720-88238-1), resulting in non-calculable RPDs. Therefore, the copper, molybdenum and selenium concentrations in sample DG-A7S-10-10.5 were J qualified as estimated.

The nickel, vanadium and zinc RPDs for field duplicate pair DG-A7S-10-10.5/DUP-05 (job 720-88238-1) were greater than 50%. Therefore, the concentrations of these compounds in sample DG-A7S-10-10.5 were J qualified as estimated.

Antimony was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-11 (job 720-88238-1) and at a concentration greater than the RL in sample DG-B4S-0.5-1, resulting in a non-calculable RPD. Therefore, the antimony concentration in sample DG-B4S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B4S-0.5-1	Antimony	1500	B	1500	J	7
DG-A7S-10-10.5	Molybdenum	510	NA	510	J	7
DG-A7S-10-10.5	Nickel	12000	NA	12000	J	7
DG-A7S-10-10.5	Selenium	680	J	680	J	7
DG-A7S-10-10.5	Zinc	13000	NA	13000	J	7
DG-A7S-10-10.5	Copper	4200	NA	4200	J	7
DG-A7S-10-10.5	Vanadium	24000	NA	24000	J	7

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250521). Mercury was not detected in the method blank above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-B7S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Two field duplicate samples, DUP-05 and DUP-11 (job 720-88238-1), were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated

between the field duplicates and the original samples, DG-A7S-10-10.5 and DG-B4S-0.5-1, respectively.

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	4 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88238-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of five field duplicate soil samples, collected 23 August 2018 and 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88238-1	DUP-11
720-88238-2	DUP-05
720-88238-3	DUP-15

Laboratory ID	Client ID
720-88238-4	DUP-25
720-88238-5	DUP-14

The samples were received at TA Pleasanton, California at 3.2°C and at TA Canton, Ohio at 1.4°C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

Field duplicate samples DUP-05, DUP-11, DUP-14, DUP-15 and DUP-25 were reported in this job, 720-88238-1; however, the following parent samples were reported in the following jobs: DG-A7S-10-10.5 (job 720-88237-1), DG-B4S-0.5-1 (job 720-88237-1), DG-I7S-3.5-4 (job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively.

The collection times were not listed on the COC for field duplicate samples. The laboratory assigned collection times of 0:00.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DUP-25 was low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated compounds in sample DUP-25 were UJ qualified as estimated less than the method detection limits (MDLs).

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-25	1,1,2,2-Tetrachloroethane	0.75	U*	0.75	UJ	11
DUP-25	1,2,3-Trichlorobenzene	0.74	U*	0.74	UJ	11
DUP-25	1,2,3-Trichloropropane	0.77	U*	0.77	UJ	11
DUP-25	1,2,4-Trichlorobenzene	0.71	U*	0.71	UJ	11
DUP-25	1,2,4-Trimethylbenzene	1.6	U*	1.6	UJ	11
DUP-25	1,2-Dibromo-3-Chloropropane	1.7	U*	1.7	UJ	11
DUP-25	1,2-Dichlorobenzene	0.68	U*	0.68	UJ	11
DUP-25	1,3,5-Trimethylbenzene	0.65	U*	0.65	UJ	11
DUP-25	1,3-Dichlorobenzene	0.72	U*	0.72	UJ	11
DUP-25	1,4-Dichlorobenzene	0.71	U*	0.71	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-25	2-Chlorotoluene	0.65	U*	0.65	UJ	11
DUP-25	4-Chlorotoluene	0.68	U*	0.68	UJ	11
DUP-25	4-Isopropyltoluene	2.5	U*	2.5	UJ	11
DUP-25	Bromobenzene	0.79	U*	0.79	UJ	11
DUP-25	Hexachlorobutadiene	0.90	U*	0.90	UJ	11
DUP-25	Naphthalene	1.5	U*	1.5	UJ	11
DUP-25	n-Butylbenzene	1.0	U*	1.0	UJ	11
DUP-25	N-Propylbenzene	0.66	U*	0.66	UJ	11
DUP-25	sec-Butylbenzene	0.72	U*	0.72	UJ	11
DUP-25	tert-Butylbenzene	0.73	U*	0.73	UJ	11

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250405, 250452 and 250528). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six LCS/LCSD pairs were reported. The recovery and relative percent

difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pairs in batches 250405 and 250452 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250528 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Four field duplicate samples, DUP-05, DUP-14, DUP-15 and DUP-25, were collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 (job 720-88237-1), DG-I7S-3.5-4 (job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively, with the following exceptions.

Vinyl chloride was reported at an estimated concentration greater than the MDL and less than the reporting limit (RL) in sample DG-A7S-10-10.5 (job 720-88237-1) and not detected in field duplicate DUP-05, resulting in a non-calculable RPD. Therefore, the non-detect vinyl chloride result in field duplicate DUP-05 was UJ qualified as estimated less than the MDL.

Acetone was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-A7S-10-10-5 (from job 720-88237-1) and reported at a concentration greater than the RL in field duplicate DUP-05, resulting in a non-calculable RPD. Therefore, the acetone concentration in in field duplicate DUP-05 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-05	Acetone	52	NA	28	J	7
DUP-05	Vinyl chloride	0.54	U	0.54	UJ	7

µg/kg - Microgram per kilogram
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250376). PAHs were not detected in the method blank above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

Four field duplicate samples, DUP-05, DUP-14, DUP-15 and DUP-25, were collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 (job 720-88237-1), DG-I7S-3.5-4

(job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively, with the following exceptions.

Chrysene was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-05 and at a concentration greater than the RL in sample DG-A7S-10-10-5 (job 720-88237-1), resulting in a non-calculable RPD. Therefore, the estimated chrysene concentration in field duplicate DUP-05 was J qualified as estimated.

Naphthalene was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-05 and not detected in sample DG-A7S-10-10-5 (job 720-88237-1), resulting in a non-calculable RPD. Therefore, the estimated naphthalene concentration in field duplicate DUP-05 was J qualified as estimated.

The benzo[b]fluoranthene and fluoranthene RPDs for field duplicate pair DG-A7S-10-10-5/DUP-05 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-05 were J qualified as estimated.

2-Methylnaphthalene, dibenz(a,h)anthracene, fluorene and naphthalene were reported at concentrations greater than the MDLs in field duplicate DUP-14 and not detected in sample DG-I7S-3.5-4 (job 720-88239-1), resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in field duplicate DUP-14 were J qualified as estimated.

Acenaphthylene, anthracene and indeno[1,2,3-cd]pyrene were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-I7S-3.5-4 (job 720-88239-1) and at concentrations greater than the RLs in field duplicate DUP-14, resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in field duplicate DUP-14 were J qualified as estimated.

The benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene RPDs for field duplicate pair DG-I7S-3.5-4/DUP-14 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-14 were J qualified as estimated.

2-Methylnaphthalene, acenaphthylene, benzo[a]anthracene, benzo[g,h,i]perylene, benzo[k]fluoranthene, indeno[1,2,3-cd]pyrene and naphthalene were reported at concentrations greater than the MDLs in sample DG-C7S-0.5-1 (job 720-88239-1) and not detected in field duplicate DUP-15, resulting in non-calculable RPDs. Therefore, the non-detect results of these compounds in field duplicate DUP-15 were UJ qualified as estimated less than the MDLs.

Anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene were reported at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-15 and at concentrations greater than the RLs in sample DG-C7S-0.5-1 (job 720-88239-1), resulting in non-calculable RPDs. Therefore, the estimated concentrations of these compounds in field duplicate DUP-15 were J qualified as estimated.

The acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, fluoranthene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene and pyrene RPDs for field duplicate pair DG-B10S-0.5-1/DUP-25 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-25 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-05	Benzo[b]fluoranthene	7.2	NA	7.2	J	7
DUP-05	Chrysene	4.2	J	4.2	J	7
DUP-05	Fluoranthene	6.0	NA	6.0	J	7
DUP-05	Naphthalene	4.3	J	4.3	J	7
DUP-14	2-Methylnaphthalene	29	NA	29	J	7
DUP-14	Acenaphthylene	76	NA	76	J	7
DUP-14	Anthracene	31	NA	31	J	7
DUP-14	Benzo[a]anthracene	150	NA	150	J	7
DUP-14	Benzo[a]pyrene	260	NA	260	J	7
DUP-14	Benzo[b]fluoranthene	340	NA	340	J	7
DUP-14	Benzo[g,h,i]perylene	97	NA	97	J	7
DUP-14	Benzo[k]fluoranthene	160	NA	160	J	7
DUP-14	Chrysene	220	NA	220	J	7
DUP-14	Dibenz(a,h)anthracene	24	NA	24	J	7
DUP-14	Fluoranthene	270	NA	270	J	7
DUP-14	Fluorene	9.1	J	9.1	J	7
DUP-14	Indeno[1,2,3-cd]pyrene	90	NA	90	J	7
DUP-14	Naphthalene	59	NA	59	J	7
DUP-14	Phenanthrene	210	NA	210	J	7
DUP-14	Pyrene	510	NA	510	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-15	2-Methylnaphthalene	4.7	U	4.7	UJ	7
DUP-15	Acenaphthylene	2.3	U	2.3	UJ	7
DUP-15	Anthracene	2.2	J	2.2	J	7
DUP-15	Benzo[a]anthracene	1.4	U	1.4	UJ	7
DUP-15	Benzo[a]pyrene	2.1	J	2.1	J	7
DUP-15	Benzo[b]fluoranthene	2.5	J	2.5	J	7
DUP-15	Benzo[g,h,i]perylene	4.1	U	4.1	UJ	7
DUP-15	Benzo[k]fluoranthene	2.0	U	2.0	UJ	7
DUP-15	Chrysene	1.8	J	1.8	J	7
DUP-15	Fluoranthene	2.9	J	2.9	J	7
DUP-15	Indeno[1,2,3-cd]pyrene	4.0	U	4.0	UJ	7
DUP-15	Naphthalene	3.3	U	3.3	UJ	7
DUP-15	Phenanthrene	3.1	J	3.1	J	7
DUP-15	Pyrene	2.7	J	2.7	J	7
DUP-25	Acenaphthylene	89	NA	89	J	7
DUP-25	Anthracene	430	NA	430	J	7
DUP-25	Benzo[a]anthracene	110	NA	110	J	7
DUP-25	Benzo[a]pyrene	220	NA	220	J	7
DUP-25	Benzo[b]fluoranthene	210	NA	210	J	7
DUP-25	Benzo[g,h,i]perylene	280	NA	280	J	7
DUP-25	Benzo[k]fluoranthene	91	NA	91	J	7
DUP-25	Fluoranthene	120	NA	120	J	7
DUP-25	Indeno[1,2,3-cd]pyrene	170	NA	170	J	7
DUP-25	Naphthalene	62	NA	62	J	7
DUP-25	Phenanthrene	130	NA	130	J	7
DUP-25	Pyrene	220	NA	220	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPD between the primary and confirmation columns was greater than 40% for cis-chlordane in sample DUP-25. Therefore, the cis-chlordane concentration in sample DUP-25 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-25	trans-Chlordane	8.4	p	8.4	J	13

µg/kg - Microgram per kilogram
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250393). Organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Four field duplicate samples, DUP-05, DUP-14, DUP-15 and DUP-25, were collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 (from job 720-88237-1), DG-I7S-3.5-4 (job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively, with the following exceptions.

Chlordane (technical), cis-Chlordane and trans-Chlordane were reported at concentrations greater than the MDLs in field duplicate DUP-25 and not detected in sample DG-B10S-0.5-1 (from job 720-88239-1), resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in field duplicate DUP-25 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-25	Chlordane (technical)	82	NA	82	J	7
DUP-25	cis-Chlordane	12	NA	12	J	7
DUP-25	trans-Chlordane	8.4	p	8.4	J	7

µg/kg - Microgram per kilogram
NA - Not applicable
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 343099). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

Four field duplicate samples, DUP-05, DUP-14, DUP-15 and DUP-25, were collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 (job 720-88237-1), DG-I7S-3.5-4 (job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250382). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There was no surrogate recovery (0%) in sample DUP-25. Since this sample was analyzed at a 1:5 dilution, no qualifications were applied to the data.

5.7 Field Duplicate

Four field duplicate samples, DUP-05, DUP-14, DUP-15 and DUP-25, were collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 (job 720-88237-1), DG-I7S-3.5-4 (job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively, with the following exceptions.

The RPDs for field duplicate pairs DG-I7S-3.5-4/DUP-14, DG-C7S-0.5-1/DUP-15 and DG-B10S-0.5-1/DUP-25 were greater than 50%. Therefore, the DRO concentrations in field duplicates DUP-14, DUP-15 and DUP-25 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-14	Diesel Range Organics [C10-C28]	39000	NA	39000	J	7
DUP-15	Diesel Range Organics [C10-C28]	13000	NA	13000	J	7
DUP-25	Diesel Range Organics [C10-C28]	570000	NA	570000	J	7

µg/kg - Microgram per kilogram
NA - Not applicable

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250470). Metals were not detected in the method blank above the MDLs.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Field Duplicate

Five field duplicate samples, DUP-05, DUP-11, DUP-14, DUP-15 and DUP-25, were collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 (job 720-88237-1), DG-B4S-0.5-1 (job 720-88237-1), DG-I7S-3.5-4 (job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively, with the following exceptions.

Copper, molybdenum and selenium were reported at concentrations greater than the MDLs in sample DG-A7S-10-10-5 (job 720-88237-1) and not detected in field duplicate DUP-05, resulting in non-calculable RPDs. Therefore, the non-detect copper, molybdenum and selenium results in field duplicate DUP-05 were UJ qualified as estimated less than the MDLs.

The nickel, vanadium and zinc RPDs for field duplicate pair DG-A7S-10-10-5/DUP-05 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-05 were J qualified as estimated.

Antimony was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-11 and at a concentration greater than the RL in sample DG-B4S-0.5-1 (job 720-88237-1), resulting in a non-calculable RPD. Therefore, the estimated antimony concentration in field duplicate DUP-11 was J qualified as estimated.

Molybdenum as reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-14 and not detected in sample DG-I7S-3.5-4 (job 720-88239-1), resulting in a non-calculable RPD. Therefore, the estimated molybdenum concentration in field duplicate DUP-14 was J qualified as estimated.

Cadmium was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-I7S-3.5-4 (job 720-88239-1) and at a concentration greater than the RL in field duplicate DUP-14, resulting in a non-calculable RPD. Therefore, the cadmium concentration in field duplicate DUP-14 was J qualified as estimated.

The arsenic RPD for field duplicate pair DG-I7S-3.5-4/DUP-14 was greater than 50%. Therefore, the arsenic concentration in field duplicate DUP-14 was J qualified as estimated.

The antimony, arsenic, barium, cadmium and lead RPDs for field duplicate pair DG-C7S-0.5-1 /DUP-15 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-15 were J qualified as estimated.

The barium, cadmium, lead, nickel and zinc RPDs for field duplicate pair DG-B10S-0.5-1/DUP-25 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-25 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-05	Copper	2500	U	2500	UJ	7
DUP-05	Molybdenum	220	U	220	UJ	7
DUP-05	Nickel	6500	NA	6500	J	7
DUP-05	Selenium	520	U	520	UJ	7
DUP-05	Vanadium	45000	NA	45000	J	7
DUP-05	Zinc	5900	NA	5900	J	7
DUP-11	Antimony	1100	J	1100	J	7
DUP-14	Arsenic	71000	NA	71000	J	7
DUP-14	Cadmium	340	NA	340	J	7
DUP-14	Molybdenum	270	J	270	J	7
DUP-15	Antimony	2800	NA	2800	J	7
DUP-15	Arsenic	5200	NA	5200	J	7
DUP-15	Barium	60000	NA	60000	J	7
DUP-15	Cadmium	980	NA	980	J	7
DUP-15	Lead	310000	NA	310000	J	7
DUP-25	Barium	370000	NA	370000	J	7
DUP-25	Cadmium	1400	NA	1400	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-25	Nickel	41000	NA	41000	J	7
DUP-25	Lead	13000000	NA	13000000	J	7
DUP-25	Zinc	450000	NA	450000	J	7

µg/kg - Microgram per kilogram.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.7 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250521). Mercury was not detected in the method blank above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Five field duplicate samples, DUP-05, DUP-11, DUP-14, DUP-15 and DUP-25, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-A7S-10-10.5 (job 720-88237-1), DG-B4S-0.5-1 (job 720-88237-1), DG-I7S-3.5-4 (job 720-88239-1), DG-C7S-0.5-1 (job 720-88239-1) and DG-B10S-0.5-1 (job 720-88239-1), respectively, with the following exception.

The RPD for field duplicate pair DG-I7S-3.5-4/DUP-14 was greater than 50%. Therefore, the mercury concentration in field duplicate DUP-14 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-14	Mercury	210	NA	210	J	7

µg/kg - Microgram per kilogram
NA - Not applicable

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	4 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88239-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of twenty soil samples, collected 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B and 5030B/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to 1,4-dichlorobenzene-d4 internal standard recovery less than 20%, the non-detect 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromo-3-chloropropane, 1,2-dichlorobenzene, 1,3,5-, trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-chlorotoluene, 4-chlorotoluene, 4-isopropyltoluene, bromobenzene, hexachlorobutadiene, naphthalene, n-butylbenzene, N-propylbenzene, sec-butylbenzene and tert-butylbenzene results in sample DG-DE89-9.5-10 were R qualified as rejected. See section 1.1 below.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88239-1	DG-C7S-0.5-1
720-88239-2	DG-C7S-3.5-4
720-88239-3	DG-C7S-9.5-10
720-88239-4	DG-E7S-0.5-1
720-88239-5	DG-E7S-3.5-4
720-88239-6	DG-E7S-9.5-10
720-88239-7	DG-G7S-0.5-1
720-88239-8	DG-G7S-3.5-4
720-88239-9	DG-B10S-0.5-1
720-88239-10	DG-B10S-3.5-4

Laboratory ID	Client ID
720-88239-11	DG-I7S-0.5-1
720-88239-12	DG-I7S-3.5-4
720-88239-13	DG-M7S-0.5-1
720-88239-14	DG-M7S-3.5-4
720-88239-15	DG-B9S-0.5-1
720-88239-16	DG-B9S-3.5-4
720-88239-17	DG-DE89-0.5-1
720-88239-18	DG-DE89-3.5-4
720-88239-19	DG-DE89-9.5-10
720-88239-20	DG-B9S-9.5-10

The samples were received at TA Pleasanton, California at 1.0°C and at TA Canton, Ohio at 1.4°C and 17.8°C. PCB sample DG-B9S-9.5-10 was received outside the QAPP specified receipt temperature criteria; however, it was extracted within 14 days and analyzed within 40 days. Therefore, based on professional and technical judgement, no qualifications were applied to the data.

The laboratory received containers for sample DG-B9S-9.5-10 that were not listed on the chain of custody (COC). The client requested analysis of this sample for VOCs, PAHs, DRO, organochlorine pesticides, PCBs, metals, mercury and asbestos.

The laboratory received six Terra Core vials labeled DG-B9-05-1 and no Terra Core vials labeled DG-B9-3.5-4. Since the correct sample vials could not be identified, the bulk sample jars were used for the VOC analyses of these samples.

Six Terra Core vials were received at the laboratory for sample DG-C7S-0.5-1 instead of the three listed on the COC.

Field duplicate samples DUP-14, DUP-15 and DUP-25 were reported in job 720-88238-1; however, the following parent samples were reported in this job, 720-88239-1: DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively.

An email request from the client on 31 August 2018 included in the laboratory report requested that the organochlorine pesticides analyses of samples DG-DE89-0.5-1, DG-DE89-3.5-4, and DG-DW89-9.5-10 be canceled.

Incorrect error corrections were observed on the COCs, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B and 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates

- ✓ Trip Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives, with the following exceptions.

Due to 1,4-dichlorobenzene-d4 internal standard recovery less than 20% the non-detect 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromo-3-chloropropane, 1,2-dichlorobenzene, 1,3,5-, trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-chlorotoluene, 4-chlorotoluene, 4-isopropyltoluene, bromobenzene, hexachlorobutadiene, naphthalene, n-butylbenzene, N-propylbenzene, sec-butylbenzene and tert-butylbenzene results in sample DG-DE89-9.5-10 were R qualified as rejected.

The remaining results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 98.8%.

The narrative and Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DG-M7S-0.5-1 was low and outside the laboratory specified acceptance criteria. The chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for sample DG-B10S-0.5-1 were low and outside the laboratory specified acceptance criteria. The chlorobenzene-d5 internal standard recovery for sample DG-DE89-9.5-10 was low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated compounds in these samples were UJ qualified as estimated less than the method detection limits (MDLs).

The narrative and Internal Standard Recovery Report indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DG-DE89-9.5-10 was less than 20%. Therefore, the non-detect 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromo-3-chloropropane, 1,2-dichlorobenzene, 1,3,5-, trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-chlorotoluene, 4-chlorotoluene, 4-isopropyltoluene, bromobenzene, hexachlorobutadiene, naphthalene, n-butylbenzene, N-propylbenzene, sec-butylbenzene and tert-butylbenzene results in sample DG-DE89-9.5-10 were R qualified as rejected.

The narrative indicated that the 8-oz. jars were used for the 5030B/8260B VOC analysis of samples DG-B9-0.5-1, DG-B9-3.5-4, DG-C7S-9.5-10, DG-E7S-3.5-4 and DG-DE89-3.5-4 instead of the Terra Core collected samples; this is inconsistent with the QAPP specified method for extraction, USEPA method 5035. Therefore, based on professional and technical judgment, the non-detect VOC results in samples DG-B9-0.5-1, DG-B9-3.5-4 DG-C7S-9.5-10, DG-E7S-3.5-4 and DG-DE89-3.5-4 were UJ qualified as estimated less than the MDLs. The results are considered screening level results and should not be used to make project decisions based on the non-detect results.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B10S-0.5-1	1,1,1,2-Tetrachloroethane	0.71	U*	0.71	UJ	11
DG-B10S-0.5-1	1,1,2,2-Tetrachloroethane	0.70	U*	0.70	UJ	11
DG-B10S-0.5-1	1,2,3-Trichlorobenzene	0.69	U*	0.69	UJ	11
DG-B10S-0.5-1	1,2,3-Trichloropropane	0.72	U*	0.72	UJ	11
DG-B10S-0.5-1	1,2,4-Trichlorobenzene	0.66	U*	0.66	UJ	11
DG-B10S-0.5-1	1,2,4-Trimethylbenzene	1.5	U*	1.5	UJ	11
DG-B10S-0.5-1	1,2-Dibromo-3-Chloropropane	1.6	U*	1.6	UJ	11
DG-B10S-0.5-1	1,2-Dichlorobenzene	0.64	U*	0.64	UJ	11
DG-B10S-0.5-1	1,3,5-Trimethylbenzene	0.61	U*	0.61	UJ	11
DG-B10S-0.5-1	1,3-Dichlorobenzene	0.67	U*	0.67	UJ	11
DG-B10S-0.5-1	1,4-Dichlorobenzene	0.66	U*	0.66	UJ	11
DG-B10S-0.5-1	2-Chlorotoluene	0.61	U*	0.61	UJ	11
DG-B10S-0.5-1	4-Chlorotoluene	0.64	U*	0.64	UJ	11
DG-B10S-0.5-1	4-Isopropyltoluene	2.3	U*	2.3	UJ	11
DG-B10S-0.5-1	Bromobenzene	0.74	U*	0.74	UJ	11
DG-B10S-0.5-1	Bromoform	1.9	U*	1.9	UJ	11
DG-B10S-0.5-1	Chlorobenzene	0.65	U*	0.65	UJ	11
DG-B10S-0.5-1	Ethylbenzene	0.70	U*	0.70	UJ	11
DG-B10S-0.5-1	Hexachlorobutadiene	0.84	U*	0.84	UJ	11
DG-B10S-0.5-1	Isopropylbenzene	0.64	U*	0.64	UJ	11
DG-B10S-0.5-1	Naphthalene	1.4	U*	1.4	UJ	11
DG-B10S-0.5-1	n-Butylbenzene	0.94	U*	0.94	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B10S-0.5-1	N-Propylbenzene	0.62	U*	0.62	UJ	11
DG-B10S-0.5-1	sec-Butylbenzene	0.67	U*	0.67	UJ	11
DG-B10S-0.5-1	Styrene	0.59	U*	0.59	UJ	11
DG-B10S-0.5-1	tert-Butylbenzene	0.68	U*	0.68	UJ	11
DG-B10S-0.5-1	Toluene	0.66	U*	0.66	UJ	11
DG-DE89-9.5-10	1,1,1,2-Tetrachloroethane	0.55	U*	0.55	UJ	11
DG-DE89-9.5-10	1,1,2,2-Tetrachloroethane	0.55	U*	0.55	R	11
DG-DE89-9.5-10	1,2,3-Trichlorobenzene	0.54	U*	0.54	R	11
DG-DE89-9.5-10	1,2,3-Trichloropropane	0.56	U*	0.56	R	11
DG-DE89-9.5-10	1,2,4-Trichlorobenzene	0.52	U*	0.52	R	11
DG-DE89-9.5-10	1,2,4-Trimethylbenzene	1.2	U*	1.2	R	11
DG-DE89-9.5-10	1,2-Dibromo-3-Chloropropane	1.2	U*	1.2	R	11
DG-DE89-9.5-10	1,2-Dichlorobenzene	0.50	U*	0.50	R	11
DG-DE89-9.5-10	1,3,5-Trimethylbenzene	0.47	U*	0.47	R	11
DG-DE89-9.5-10	1,3-Dichlorobenzene	0.53	U*	0.53	R	11
DG-DE89-9.5-10	1,4-Dichlorobenzene	0.52	U*	0.52	R	11
DG-DE89-9.5-10	2-Chlorotoluene	0.47	U*	0.47	R	11
DG-DE89-9.5-10	4-Chlorotoluene	0.50	U*	0.50	R	11
DG-DE89-9.5-10	4-Isopropyltoluene	1.8	U*	1.8	R	11
DG-DE89-9.5-10	Bromobenzene	0.58	U*	0.58	R	11
DG-DE89-9.5-10	Bromoform	1.5	U*	1.5	UJ	11
DG-DE89-9.5-10	Chlorobenzene	0.50	U*	0.50	UJ	11
DG-DE89-9.5-10	Ethylbenzene	0.55	U*	0.55	UJ	11
DG-DE89-9.5-10	Hexachlorobutadiene	0.66	U*	0.66	R	11
DG-DE89-9.5-10	Isopropylbenzene	0.50	U*	0.50	UJ	11
DG-DE89-9.5-10	Naphthalene	1.1	U*	1.1	R	11
DG-DE89-9.5-10	n-Butylbenzene	0.73	U*	0.73	R	11
DG-DE89-9.5-10	N-Propylbenzene	0.48	U*	0.48	R	11
DG-DE89-9.5-10	sec-Butylbenzene	0.53	U*	0.53	R	11
DG-DE89-9.5-10	Styrene	0.46	U*	0.46	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-DE89-9.5-10	tert-Butylbenzene	0.53	U*	0.53	R	11
DG-DE89-9.5-10	Toluene	0.52	U*	0.52	UJ	11
DG-M7S-0.5-1	1,1,2,2-Tetrachloroethane	0.62	U*	0.62	UJ	11
DG-M7S-0.5-1	1,2,3-Trichlorobenzene	0.61	U*	0.61	UJ	11
DG-M7S-0.5-1	1,2,3-Trichloropropane	0.64	U*	0.64	UJ	11
DG-M7S-0.5-1	1,2,4-Trichlorobenzene	0.59	U*	0.59	UJ	11
DG-M7S-0.5-1	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-M7S-0.5-1	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-M7S-0.5-1	1,2-Dichlorobenzene	0.56	U*	0.56	UJ	11
DG-M7S-0.5-1	1,3,5-Trimethylbenzene	0.54	U*	0.54	UJ	11
DG-M7S-0.5-1	1,3-Dichlorobenzene	0.60	U*	0.60	UJ	11
DG-M7S-0.5-1	1,4-Dichlorobenzene	0.59	U*	0.59	UJ	11
DG-M7S-0.5-1	2-Chlorotoluene	0.54	U*	0.54	UJ	11
DG-M7S-0.5-1	4-Chlorotoluene	0.56	U*	0.56	UJ	11
DG-M7S-0.5-1	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-M7S-0.5-1	Bromobenzene	0.65	U*	0.65	UJ	11
DG-M7S-0.5-1	Hexachlorobutadiene	0.75	U*	0.75	UJ	11
DG-M7S-0.5-1	Naphthalene	1.2	U*	1.2	UJ	11
DG-M7S-0.5-1	n-Butylbenzene	0.83	U*	0.83	UJ	11
DG-M7S-0.5-1	N-Propylbenzene	0.55	U*	0.55	UJ	11
DG-M7S-0.5-1	sec-Butylbenzene	0.60	U*	0.60	UJ	11
DG-M7S-0.5-1	tert-Butylbenzene	0.60	U*	0.60	UJ	11
DG-B9S-0.5-1	1,1,1,2-Tetrachloroethane	0.72	U	0.72	UJ	1
DG-B9S-0.5-1	1,1,1-Trichloroethane	0.58	U	0.58	UJ	1
DG-B9S-0.5-1	1,1,2,2-Tetrachloroethane	0.71	U	0.71	UJ	1
DG-B9S-0.5-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U	2.0	UJ	1
DG-B9S-0.5-1	1,1,2-Trichloroethane	0.67	U	0.67	UJ	1
DG-B9S-0.5-1	1,1-Dichloroethane	0.65	U	0.65	UJ	1
DG-B9S-0.5-1	1,1-Dichloroethene	0.59	U	0.59	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B9S-0.5-1	1,1-Dichloropropene	0.66	U	0.66	UJ	1
DG-B9S-0.5-1	1,2,3-Trichlorobenzene	0.70	U	0.70	UJ	1
DG-B9S-0.5-1	1,2,3-Trichloropropane	0.73	U	0.73	UJ	1
DG-B9S-0.5-1	1,2,4-Trichlorobenzene	0.68	U	0.68	UJ	1
DG-B9S-0.5-1	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-B9S-0.5-1	1,2-Dibromo-3-Chloropropane	1.6	U	1.6	UJ	1
DG-B9S-0.5-1	1,2-Dichlorobenzene	0.65	U	0.65	UJ	1
DG-B9S-0.5-1	1,2-Dichloroethane	0.72	U	0.72	UJ	1
DG-B9S-0.5-1	1,2-Dichloropropane	0.60	U	0.60	UJ	1
DG-B9S-0.5-1	1,3,5-Trimethylbenzene	0.62	U	0.62	UJ	1
DG-B9S-0.5-1	1,3-Dichlorobenzene	0.69	U	0.69	UJ	1
DG-B9S-0.5-1	1,3-Dichloropropane	0.70	U	0.70	UJ	1
DG-B9S-0.5-1	1,4-Dichlorobenzene	0.68	U	0.68	UJ	1
DG-B9S-0.5-1	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-B9S-0.5-1	2-Butanone (MEK)	20	U	20	UJ	1
DG-B9S-0.5-1	2-Chlorotoluene	0.62	U	0.62	UJ	1
DG-B9S-0.5-1	2-Hexanone	9.5	U	9.5	UJ	1
DG-B9S-0.5-1	4-Chlorotoluene	0.65	U	0.65	UJ	1
DG-B9S-0.5-1	4-Isopropyltoluene	2.4	U	2.4	UJ	1
DG-B9S-0.5-1	4-Methyl-2-pentanone (MIBK)	9.5	U	9.5	UJ	1
DG-B9S-0.5-1	Acetone	36	U	36	UJ	1
DG-B9S-0.5-1	Benzene	0.62	U	0.62	UJ	1
DG-B9S-0.5-1	Bromobenzene	0.75	U	0.75	UJ	1
DG-B9S-0.5-1	Bromoform	1.9	U	1.9	UJ	1
DG-B9S-0.5-1	Bromomethane	0.75	U	0.75	UJ	1
DG-B9S-0.5-1	GRO C4-C10	95	U	95	UJ	1
DG-B9S-0.5-1	Carbon disulfide	1.9	U	1.9	UJ	1
DG-B9S-0.5-1	Carbon tetrachloride	0.59	U	0.59	UJ	1
DG-B9S-0.5-1	Chlorobenzene	0.66	U	0.66	UJ	1
DG-B9S-0.5-1	Chlorobromomethane	0.69	U	0.69	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B9S-0.5-1	Chlorodibromomethane	0.68	U	0.68	UJ	1
DG-B9S-0.5-1	Chloroethane	0.53	U	0.53	UJ	1
DG-B9S-0.5-1	Chloroform	0.63	U	0.63	UJ	1
DG-B9S-0.5-1	Chloromethane	0.75	U	0.75	UJ	1
DG-B9S-0.5-1	cis-1,2-Dichloroethene	0.65	U	0.65	UJ	1
DG-B9S-0.5-1	cis-1,3-Dichloropropene	0.66	U	0.66	UJ	1
DG-B9S-0.5-1	Dibromomethane	0.82	U	0.82	UJ	1
DG-B9S-0.5-1	Dichlorobromomethane	0.69	U	0.69	UJ	1
DG-B9S-0.5-1	Dichlorodifluoromethane	0.75	U	0.75	UJ	1
DG-B9S-0.5-1	Ethylbenzene	0.71	U	0.71	UJ	1
DG-B9S-0.5-1	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-B9S-0.5-1	GRO C4-C12	95	U	95	UJ	1
DG-B9S-0.5-1	Hexachlorobutadiene	0.86	U	0.86	UJ	1
DG-B9S-0.5-1	Isopropylbenzene	0.65	U	0.65	UJ	1
DG-B9S-0.5-1	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DG-B9S-0.5-1	Methylene Chloride	5.3	U	5.3	UJ	1
DG-B9S-0.5-1	Naphthalene	1.4	U	1.4	UJ	1
DG-B9S-0.5-1	n-Butylbenzene	0.95	U	0.95	UJ	1
DG-B9S-0.5-1	N-Propylbenzene	0.63	U	0.63	UJ	1
DG-B9S-0.5-1	sec-Butylbenzene	0.69	U	0.69	UJ	1
DG-B9S-0.5-1	Styrene	0.60	U	0.60	UJ	1
DG-B9S-0.5-1	tert-Butylbenzene	0.70	U	0.70	UJ	1
DG-B9S-0.5-1	Tetrachloroethene	0.64	U	0.64	UJ	1
DG-B9S-0.5-1	Toluene	0.68	U	0.68	UJ	1
DG-B9S-0.5-1	trans-1,2-Dichloroethene	0.71	U	0.71	UJ	1
DG-B9S-0.5-1	trans-1,3-Dichloropropene	0.64	U	0.64	UJ	1
DG-B9S-0.5-1	Trichloroethene	0.60	U	0.60	UJ	1
DG-B9S-0.5-1	Trichlorofluoromethane	0.53	U	0.53	UJ	1
DG-B9S-0.5-1	Vinyl acetate	4.8	U	4.8	UJ	1
DG-B9S-0.5-1	Vinyl chloride	0.70	U	0.70	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B9S-0.5-1	Xylenes, Total	1.2	U	1.2	UJ	1
DG-B9S-3.5-4	1,1,1,2-Tetrachloroethane	0.75	U	0.75	UJ	1
DG-B9S-3.5-4	1,1,1-Trichloroethane	0.60	U	0.60	UJ	1
DG-B9S-3.5-4	1,1,2,2-Tetrachloroethane	0.74	U	0.74	UJ	1
DG-B9S-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U	2.0	UJ	1
DG-B9S-3.5-4	1,1,2-Trichloroethane	0.69	U	0.69	UJ	1
DG-B9S-3.5-4	1,1-Dichloroethane	0.67	U	0.67	UJ	1
DG-B9S-3.5-4	1,1-Dichloroethene	0.61	U	0.61	UJ	1
DG-B9S-3.5-4	1,1-Dichloropropene	0.68	U	0.68	UJ	1
DG-B9S-3.5-4	1,2,3-Trichlorobenzene	0.73	U	0.73	UJ	1
DG-B9S-3.5-4	1,2,3-Trichloropropane	0.75	U	0.75	UJ	1
DG-B9S-3.5-4	1,2,4-Trichlorobenzene	0.70	U	0.70	UJ	1
DG-B9S-3.5-4	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-B9S-3.5-4	1,2-Dibromo-3-Chloropropane	1.7	U	1.7	UJ	1
DG-B9S-3.5-4	1,2-Dichlorobenzene	0.67	U	0.67	UJ	1
DG-B9S-3.5-4	1,2-Dichloroethane	0.75	U	0.75	UJ	1
DG-B9S-3.5-4	1,2-Dichloropropane	0.62	U	0.62	UJ	1
DG-B9S-3.5-4	1,3,5-Trimethylbenzene	0.64	U	0.64	UJ	1
DG-B9S-3.5-4	1,3-Dichlorobenzene	0.71	U	0.71	UJ	1
DG-B9S-3.5-4	1,3-Dichloropropane	0.72	U	0.72	UJ	1
DG-B9S-3.5-4	1,4-Dichlorobenzene	0.70	U	0.70	UJ	1
DG-B9S-3.5-4	2,2-Dichloropropane	2.0	U	2.0	UJ	1
DG-B9S-3.5-4	2-Butanone (MEK)	21	U	21	UJ	1
DG-B9S-3.5-4	2-Chlorotoluene	0.64	U	0.64	UJ	1
DG-B9S-3.5-4	2-Hexanone	9.8	U	9.8	UJ	1
DG-B9S-3.5-4	4-Chlorotoluene	0.67	U	0.67	UJ	1
DG-B9S-3.5-4	4-Isopropyltoluene	2.5	U	2.5	UJ	1
DG-B9S-3.5-4	4-Methyl-2-pentanone (MIBK)	9.8	U	9.8	UJ	1
DG-B9S-3.5-4	Acetone	37	U	37	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B9S-3.5-4	Benzene	0.64	U	0.64	UJ	1
DG-B9S-3.5-4	Bromobenzene	0.77	U	0.77	UJ	1
DG-B9S-3.5-4	Bromoform	2.0	U	2.0	UJ	1
DG-B9S-3.5-4	Bromomethane	0.77	U	0.77	UJ	1
DG-B9S-3.5-4	GRO C4-C10	98	U	98	UJ	1
DG-B9S-3.5-4	Carbon disulfide	2.0	U	2.0	UJ	1
DG-B9S-3.5-4	Carbon tetrachloride	0.61	U	0.61	UJ	1
DG-B9S-3.5-4	Chlorobenzene	0.68	U	0.68	UJ	1
DG-B9S-3.5-4	Chlorobromomethane	0.71	U	0.71	UJ	1
DG-B9S-3.5-4	Chlorodibromomethane	0.70	U	0.70	UJ	1
DG-B9S-3.5-4	Chloroethane	0.55	U	0.55	UJ	1
DG-B9S-3.5-4	Chloroform	0.65	U	0.65	UJ	1
DG-B9S-3.5-4	Chloromethane	0.77	U	0.77	UJ	1
DG-B9S-3.5-4	cis-1,2-Dichloroethene	0.67	U	0.67	UJ	1
DG-B9S-3.5-4	cis-1,3-Dichloropropene	0.68	U	0.68	UJ	1
DG-B9S-3.5-4	Dibromomethane	0.84	U	0.84	UJ	1
DG-B9S-3.5-4	Dichlorobromomethane	0.71	U	0.71	UJ	1
DG-B9S-3.5-4	Dichlorodifluoromethane	0.77	U	0.77	UJ	1
DG-B9S-3.5-4	Ethylbenzene	0.74	U	0.74	UJ	1
DG-B9S-3.5-4	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-B9S-3.5-4	GRO C4-C12	98	U	98	UJ	1
DG-B9S-3.5-4	Hexachlorobutadiene	0.88	U	0.88	UJ	1
DG-B9S-3.5-4	Isopropylbenzene	0.67	U	0.67	UJ	1
DG-B9S-3.5-4	Methyl tert-butyl ether	1.2	U	1.2	UJ	1
DG-B9S-3.5-4	Methylene Chloride	5.5	U	5.5	UJ	1
DG-B9S-3.5-4	Naphthalene	1.5	U	1.5	UJ	1
DG-B9S-3.5-4	n-Butylbenzene	0.98	U	0.98	UJ	1
DG-B9S-3.5-4	N-Propylbenzene	0.65	U	0.65	UJ	1
DG-B9S-3.5-4	sec-Butylbenzene	0.71	U	0.71	UJ	1
DG-B9S-3.5-4	Styrene	0.62	U	0.62	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-B9S-3.5-4	tert-Butylbenzene	0.72	U	0.72	UJ	1
DG-B9S-3.5-4	Tetrachloroethene	0.66	U	0.66	UJ	1
DG-B9S-3.5-4	Toluene	0.70	U	0.70	UJ	1
DG-B9S-3.5-4	trans-1,2-Dichloroethene	0.74	U	0.74	UJ	1
DG-B9S-3.5-4	trans-1,3-Dichloropropene	0.66	U	0.66	UJ	1
DG-B9S-3.5-4	Trichloroethene	0.62	U	0.62	UJ	1
DG-B9S-3.5-4	Trichlorofluoromethane	0.55	U	0.55	UJ	1
DG-B9S-3.5-4	Vinyl acetate	4.9	U	4.9	UJ	1
DG-B9S-3.5-4	Vinyl chloride	0.72	U	0.72	UJ	1
DG-B9S-3.5-4	Xylenes, Total	1.2	U	1.2	UJ	1
DG-DE89-3.5-4	1,1,1,2-Tetrachloroethane	0.71	U	0.71	UJ	1
DG-DE89-3.5-4	1,1,1-Trichloroethane	0.57	U	0.57	UJ	1
DG-DE89-3.5-4	1,1,2,2-Tetrachloroethane	0.70	U	0.70	UJ	1
DG-DE89-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	1.9	U	1.9	UJ	1
DG-DE89-3.5-4	1,1,2-Trichloroethane	0.65	U	0.65	UJ	1
DG-DE89-3.5-4	1,1-Dichloroethane	0.63	U	0.63	UJ	1
DG-DE89-3.5-4	1,1-Dichloroethene	0.58	U	0.58	UJ	1
DG-DE89-3.5-4	1,1-Dichloropropene	0.64	U	0.64	UJ	1
DG-DE89-3.5-4	1,2,3-Trichlorobenzene	0.69	U	0.69	UJ	1
DG-DE89-3.5-4	1,2,3-Trichloropropane	0.71	U	0.71	UJ	1
DG-DE89-3.5-4	1,2,4-Trichlorobenzene	0.66	U	0.66	UJ	1
DG-DE89-3.5-4	1,2,4-Trimethylbenzene	1.5	U	1.5	UJ	1
DG-DE89-3.5-4	1,2-Dibromo-3-Chloropropane	1.6	U	1.6	UJ	1
DG-DE89-3.5-4	1,2-Dichlorobenzene	0.63	U	0.63	UJ	1
DG-DE89-3.5-4	1,2-Dichloroethane	0.71	U	0.71	UJ	1
DG-DE89-3.5-4	1,2-Dichloropropane	0.58	U	0.58	UJ	1
DG-DE89-3.5-4	1,3,5-Trimethylbenzene	0.60	U	0.60	UJ	1
DG-DE89-3.5-4	1,3-Dichlorobenzene	0.67	U	0.67	UJ	1
DG-DE89-3.5-4	1,3-Dichloropropane	0.68	U	0.68	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-DE89-3.5-4	1,4-Dichlorobenzene	0.66	U	0.66	UJ	1
DG-DE89-3.5-4	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-DE89-3.5-4	2-Butanone (MEK)	19	U	19	UJ	1
DG-DE89-3.5-4	2-Chlorotoluene	0.60	U	0.60	UJ	1
DG-DE89-3.5-4	2-Hexanone	9.3	U	9.3	UJ	1
DG-DE89-3.5-4	4-Chlorotoluene	0.63	U	0.63	UJ	1
DG-DE89-3.5-4	4-Isopropyltoluene	2.3	U	2.3	UJ	1
DG-DE89-3.5-4	4-Methyl-2-pentanone (MIBK)	9.3	U	9.3	UJ	1
DG-DE89-3.5-4	Acetone	35	U	35	UJ	1
DG-DE89-3.5-4	Benzene	0.60	U	0.60	UJ	1
DG-DE89-3.5-4	Bromobenzene	0.73	U	0.73	UJ	1
DG-DE89-3.5-4	Bromoform	1.9	U	1.9	UJ	1
DG-DE89-3.5-4	Bromomethane	0.73	U	0.73	UJ	1
DG-DE89-3.5-4	Carbon disulfide	1.9	U	1.9	UJ	1
DG-DE89-3.5-4	Carbon tetrachloride	0.58	U	0.58	UJ	1
DG-DE89-3.5-4	Chlorobenzene	0.64	U	0.64	UJ	1
DG-DE89-3.5-4	Chlorobromomethane	0.67	U	0.67	UJ	1
DG-DE89-3.5-4	Chlorodibromomethane	0.66	U	0.66	UJ	1
DG-DE89-3.5-4	Chloroethane	0.52	U	0.52	UJ	1
DG-DE89-3.5-4	Chloroform	0.61	U	0.61	UJ	1
DG-DE89-3.5-4	Chloromethane	0.73	U	0.73	UJ	1
DG-DE89-3.5-4	cis-1,2-Dichloroethene	0.63	U	0.63	UJ	1
DG-DE89-3.5-4	cis-1,3-Dichloropropene	0.64	U	0.64	UJ	1
DG-DE89-3.5-4	Dibromomethane	0.80	U	0.80	UJ	1
DG-DE89-3.5-4	Dichlorobromomethane	0.67	U	0.67	UJ	1
DG-DE89-3.5-4	Dichlorodifluoromethane	0.73	U	0.73	UJ	1
DG-DE89-3.5-4	Ethylbenzene	0.70	U	0.70	UJ	1
DG-DE89-3.5-4	Ethylene Dibromide	1.3	U	1.3	UJ	1
DG-DE89-3.5-4	GRO C4-C12	93	U	93	UJ	1
DG-DE89-3.5-4	Hexachlorobutadiene	0.83	U	0.83	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-DE89-3.5-4	Isopropylbenzene	0.63	U	0.63	UJ	1
DG-DE89-3.5-4	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DG-DE89-3.5-4	Methylene Chloride	5.2	U	5.2	UJ	1
DG-DE89-3.5-4	Naphthalene	1.4	U	1.4	UJ	1
DG-DE89-3.5-4	n-Butylbenzene	0.93	U	0.93	UJ	1
DG-DE89-3.5-4	N-Propylbenzene	0.61	U	0.61	UJ	1
DG-DE89-3.5-4	sec-Butylbenzene	0.67	U	0.67	UJ	1
DG-DE89-3.5-4	Styrene	0.58	U	0.58	UJ	1
DG-DE89-3.5-4	tert-Butylbenzene	0.68	U	0.68	UJ	1
DG-DE89-3.5-4	Tetrachloroethene	0.62	U	0.62	UJ	1
DG-DE89-3.5-4	Toluene	0.66	U	0.66	UJ	1
DG-DE89-3.5-4	trans-1,2-Dichloroethene	0.70	U	0.70	UJ	1
DG-DE89-3.5-4	trans-1,3-Dichloropropene	0.62	U	0.62	UJ	1
DG-DE89-3.5-4	Trichloroethene	0.58	U	0.58	UJ	1
DG-DE89-3.5-4	Trichlorofluoromethane	0.52	U	0.52	UJ	1
DG-DE89-3.5-4	Vinyl acetate	4.6	U	4.6	UJ	1
DG-DE89-3.5-4	Vinyl chloride	0.68	U	0.68	UJ	1
DG-DE89-3.5-4	Xylenes, Total	1.1	U	1.1	UJ	1
DG-C7S-9.5-10	1,1,1,2-Tetrachloroethane	0.72	U	0.72	UJ	1
DG-C7S-9.5-10	1,1,1-Trichloroethane	0.58	U	0.58	UJ	1
DG-C7S-9.5-10	1,1,2,2-Tetrachloroethane	0.71	U	0.71	UJ	1
DG-C7S-9.5-10	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U F1	2.0	UJ	1
DG-C7S-9.5-10	1,1,2-Trichloroethane	0.66	U	0.66	UJ	1
DG-C7S-9.5-10	1,1-Dichloroethane	0.64	U	0.64	UJ	1
DG-C7S-9.5-10	1,1-Dichloroethene	0.58	U	0.58	UJ	1
DG-C7S-9.5-10	1,1-Dichloropropene	0.65	U	0.65	UJ	1
DG-C7S-9.5-10	1,2,3-Trichlorobenzene	0.70	U	0.70	UJ	1
DG-C7S-9.5-10	1,2,3-Trichloropropane	0.73	U	0.73	UJ	1
DG-C7S-9.5-10	1,2,4-Trichlorobenzene	0.67	U	0.67	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-C7S-9.5-10	1,2,4-Trimethylbenzene	1.5	U	1.5	UJ	1
DG-C7S-9.5-10	1,2-Dibromo-3-Chloropropane	1.6	U	1.6	UJ	1
DG-C7S-9.5-10	1,2-Dichlorobenzene	0.64	U	0.64	UJ	1
DG-C7S-9.5-10	1,2-Dichloroethane	0.72	U	0.72	UJ	1
DG-C7S-9.5-10	1,2-Dichloropropane	0.59	U	0.59	UJ	1
DG-C7S-9.5-10	1,3,5-Trimethylbenzene	0.61	U	0.61	UJ	1
DG-C7S-9.5-10	1,3-Dichlorobenzene	0.68	U	0.68	UJ	1
DG-C7S-9.5-10	1,3-Dichloropropane	0.69	U	0.69	UJ	1
DG-C7S-9.5-10	1,4-Dichlorobenzene	0.67	U	0.67	UJ	1
DG-C7S-9.5-10	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-C7S-9.5-10	2-Butanone (MEK)	20	U	20	UJ	1
DG-C7S-9.5-10	2-Chlorotoluene	0.61	U	0.61	UJ	1
DG-C7S-9.5-10	2-Hexanone	9.4	U	9.4	UJ	1
DG-C7S-9.5-10	4-Chlorotoluene	0.64	U	0.64	UJ	1
DG-C7S-9.5-10	4-Isopropyltoluene	2.4	U	2.4	UJ	1
DG-C7S-9.5-10	4-Methyl-2-pentanone (MIBK)	9.4	U	9.4	UJ	1
DG-C7S-9.5-10	Acetone	36	U	36	UJ	1
DG-C7S-9.5-10	Benzene	0.61	U	0.61	UJ	1
DG-C7S-9.5-10	Bromobenzene	0.75	U	0.75	UJ	1
DG-C7S-9.5-10	Bromoform	1.9	U	1.9	UJ	1
DG-C7S-9.5-10	Bromomethane	0.75	U	0.75	UJ	1
DG-C7S-9.5-10	Carbon disulfide	1.9	U	1.9	UJ	1
DG-C7S-9.5-10	Carbon tetrachloride	0.58	U	0.58	UJ	1
DG-C7S-9.5-10	Chlorobenzene	0.65	U	0.65	UJ	1
DG-C7S-9.5-10	Chlorobromomethane	0.68	U	0.68	UJ	1
DG-C7S-9.5-10	Chlorodibromomethane	0.67	U	0.67	UJ	1
DG-C7S-9.5-10	Chloroethane	0.53	U	0.53	UJ	1
DG-C7S-9.5-10	Chloroform	0.62	U	0.62	UJ	1
DG-C7S-9.5-10	Chloromethane	0.75	U	0.75	UJ	1
DG-C7S-9.5-10	cis-1,2-Dichloroethene	0.64	U	0.64	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-C7S-9.5-10	cis-1,3-Dichloropropene	0.65	U	0.65	UJ	1
DG-C7S-9.5-10	Dibromomethane	0.81	U	0.81	UJ	1
DG-C7S-9.5-10	Dichlorobromomethane	0.68	U	0.68	UJ	1
DG-C7S-9.5-10	Dichlorodifluoromethane	0.75	U F1	0.75	UJ	1
DG-C7S-9.5-10	Ethylbenzene	0.71	U	0.71	UJ	1
DG-C7S-9.5-10	Ethylene Dibromide	1.3	U	1.3	UJ	1
DG-C7S-9.5-10	GRO C4-C12	94	U	94	UJ	1
DG-C7S-9.5-10	Hexachlorobutadiene	0.85	U	0.85	UJ	1
DG-C7S-9.5-10	Isopropylbenzene	0.64	U	0.64	UJ	1
DG-C7S-9.5-10	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DG-C7S-9.5-10	Methylene Chloride	5.3	U	5.3	UJ	1
DG-C7S-9.5-10	Naphthalene	1.4	U	1.4	UJ	1
DG-C7S-9.5-10	n-Butylbenzene	0.94	U	0.94	UJ	1
DG-C7S-9.5-10	N-Propylbenzene	0.62	U	0.62	UJ	1
DG-C7S-9.5-10	sec-Butylbenzene	0.68	U	0.68	UJ	1
DG-C7S-9.5-10	Styrene	0.59	U	0.59	UJ	1
DG-C7S-9.5-10	tert-Butylbenzene	0.69	U	0.69	UJ	1
DG-C7S-9.5-10	Tetrachloroethene	0.63	U	0.63	UJ	1
DG-C7S-9.5-10	Toluene	0.67	U	0.67	UJ	1
DG-C7S-9.5-10	trans-1,2-Dichloroethene	0.71	U	0.71	UJ	1
DG-C7S-9.5-10	trans-1,3-Dichloropropene	0.63	U	0.63	UJ	1
DG-C7S-9.5-10	Trichloroethene	0.59	U	0.59	UJ	1
DG-C7S-9.5-10	Trichlorofluoromethane	0.53	U	0.53	UJ	1
DG-C7S-9.5-10	Vinyl acetate	4.7	U	4.7	UJ	1
DG-C7S-9.5-10	Vinyl chloride	0.69	U	0.69	UJ	1
DG-C7S-9.5-10	Xylenes, Total	1.2	U	1.2	UJ	1
DG-E7S-3.5-4	1,1,1,2-Tetrachloroethane	0.72	U	0.72	UJ	1
DG-E7S-3.5-4	1,1,1-Trichloroethane	0.58	U	0.58	UJ	1
DG-E7S-3.5-4	1,1,2,2-Tetrachloroethane	0.71	U	0.71	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-E7S-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U	2.0	UJ	1
DG-E7S-3.5-4	1,1,2-Trichloroethane	0.66	U	0.66	UJ	1
DG-E7S-3.5-4	1,1-Dichloroethane	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	1,1-Dichloroethene	0.59	U	0.59	UJ	1
DG-E7S-3.5-4	1,1-Dichloropropene	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	1,2,3-Trichlorobenzene	0.70	U	0.70	UJ	1
DG-E7S-3.5-4	1,2,3-Trichloropropane	0.73	U	0.73	UJ	1
DG-E7S-3.5-4	1,2,4-Trichlorobenzene	0.67	U	0.67	UJ	1
DG-E7S-3.5-4	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-E7S-3.5-4	1,2-Dibromo-3-Chloropropane	1.6	U	1.6	UJ	1
DG-E7S-3.5-4	1,2-Dichlorobenzene	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	1,2-Dichloroethane	0.72	U	0.72	UJ	1
DG-E7S-3.5-4	1,2-Dichloropropane	0.60	U	0.60	UJ	1
DG-E7S-3.5-4	1,3,5-Trimethylbenzene	0.62	U	0.62	UJ	1
DG-E7S-3.5-4	1,3-Dichlorobenzene	0.68	U	0.68	UJ	1
DG-E7S-3.5-4	1,3-Dichloropropane	0.69	U	0.69	UJ	1
DG-E7S-3.5-4	1,4-Dichlorobenzene	0.67	U	0.67	UJ	1
DG-E7S-3.5-4	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-E7S-3.5-4	2-Butanone (MEK)	20	U	20	UJ	1
DG-E7S-3.5-4	2-Chlorotoluene	0.62	U	0.62	UJ	1
DG-E7S-3.5-4	2-Hexanone	9.5	U	9.5	UJ	1
DG-E7S-3.5-4	4-Chlorotoluene	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	4-Isopropyltoluene	2.4	U	2.4	UJ	1
DG-E7S-3.5-4	4-Methyl-2-pentanone (MIBK)	9.5	U	9.5	UJ	1
DG-E7S-3.5-4	Acetone	36	U	36	UJ	1
DG-E7S-3.5-4	Benzene	0.62	U	0.62	UJ	1
DG-E7S-3.5-4	Bromobenzene	0.75	U	0.75	UJ	1
DG-E7S-3.5-4	Bromoform	1.9	U	1.9	UJ	1
DG-E7S-3.5-4	Bromomethane	0.75	U	0.75	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-E7S-3.5-4	Carbon disulfide	1.9	U	1.9	UJ	1
DG-E7S-3.5-4	Carbon tetrachloride	0.59	U	0.59	UJ	1
DG-E7S-3.5-4	Chlorobenzene	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	Chlorobromomethane	0.68	U	0.68	UJ	1
DG-E7S-3.5-4	Chlorodibromomethane	0.67	U	0.67	UJ	1
DG-E7S-3.5-4	Chloroethane	0.53	U	0.53	UJ	1
DG-E7S-3.5-4	Chloroform	0.63	U	0.63	UJ	1
DG-E7S-3.5-4	Chloromethane	0.75	U	0.75	UJ	1
DG-E7S-3.5-4	cis-1,2-Dichloroethene	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	cis-1,3-Dichloropropene	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	Dibromomethane	0.82	U	0.82	UJ	1
DG-E7S-3.5-4	Dichlorobromomethane	0.68	U	0.68	UJ	1
DG-E7S-3.5-4	Dichlorodifluoromethane	0.75	U	0.75	UJ	1
DG-E7S-3.5-4	Ethylbenzene	0.71	U	0.71	UJ	1
DG-E7S-3.5-4	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-E7S-3.5-4	GRO C4-C12	95	U	95	UJ	1
DG-E7S-3.5-4	Hexachlorobutadiene	0.85	U	0.85	UJ	1
DG-E7S-3.5-4	Isopropylbenzene	0.65	U	0.65	UJ	1
DG-E7S-3.5-4	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DG-E7S-3.5-4	Methylene Chloride	5.3	U	5.3	UJ	1
DG-E7S-3.5-4	Naphthalene	1.4	U	1.4	UJ	1
DG-E7S-3.5-4	n-Butylbenzene	0.95	U	0.95	UJ	1
DG-E7S-3.5-4	N-Propylbenzene	0.63	U	0.63	UJ	1
DG-E7S-3.5-4	sec-Butylbenzene	0.68	U	0.68	UJ	1
DG-E7S-3.5-4	Styrene	0.60	U	0.60	UJ	1
DG-E7S-3.5-4	tert-Butylbenzene	0.69	U	0.69	UJ	1
DG-E7S-3.5-4	Tetrachloroethene	0.64	U	0.64	UJ	1
DG-E7S-3.5-4	Toluene	0.67	U	0.67	UJ	1
DG-E7S-3.5-4	trans-1,2-Dichloroethene	0.71	U	0.71	UJ	1
DG-E7S-3.5-4	trans-1,3-Dichloropropene	0.64	U	0.64	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-E7S-3.5-4	Trichloroethene	0.60	U	0.60	UJ	1
DG-E7S-3.5-4	Trichlorofluoromethane	0.53	U	0.53	UJ	1
DG-E7S-3.5-4	Vinyl acetate	4.7	U	4.7	UJ	1
DG-E7S-3.5-4	Vinyl chloride	0.69	U	0.69	UJ	1
DG-E7S-3.5-4	Xylenes, Total	1.2	U	1.2	UJ	1

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the matrix spike (MS) and/or MS duplicate (MSD) recovery was outside acceptable limits.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four method blanks were reported (batches 250528, 250532, 250555 and 250755). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate

One sample set specific MS/MSD pair was reported, using sample DG-C7S-9.5-10. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1,2-trichloro-1,2,2-trifluoroethane and dichlorodifluoromethane recoveries were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-C7S-9.5-10, no qualifications were applied to the data.

MS/MSD pairs were not reported in batches 250528, 250532 and 250555. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy in these batches.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Eight LCS/LCSD pairs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250555 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

One or both of the carbon disulfide and 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250532 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

One or both of the 1,1-dichloroethene recoveries in the LCS/LCSD pairs in batches 250528 and 250755 were high and outside the laboratory specified acceptance criteria. Since 1,1-dichloroethene was not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Three field duplicate samples, DUP-14, DUP-15 and DUP-25 (all from work order 720-88238-1), were collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250520, 250580 and 250853). PAHs were not detected in the method blanks above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). Batch MS/MSD pair were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

Three field duplicate samples, DUP-14, DUP-15 and DUP-25 (all from work order 720-88238-1), were collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively, with the following exceptions.

2-Methylnaphthalene, dibenz(a,h)anthracene, fluorene and naphthalene were reported at concentrations greater than the MDLs in field duplicate DUP-14 (job 720-88238-1) and not detected in sample DG-I7S-3.5-4, resulting in non-calculable RPDs. Therefore, the non-detect results of these compounds in sample DG-I7S-3.5-4 were UJ qualified as estimated less than the MDLs.

Acenaphthylene, anthracene and indeno[1,2,3-cd]pyrene were reported at estimated concentrations greater than the MDLs and less than the reporting limits (RLs) in sample DG-I7S-3.5-4 and at concentrations greater than the RLs in field duplicate DUP-14 (job 720-88238-1), resulting in non-calculable RPDs. Therefore, the estimated concentrations of these compounds in sample DG-I7S-3.5-4 were J qualified as estimated.

The benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene RPDs for field duplicate pair DG-I7S-3.5-4/DUP-14 (job 720-88238-1) were greater than 50%. Therefore, the concentrations of these compounds in sample DG-I7S-3.5-4 were J qualified as estimated.

2-Methylnaphthalene, acenaphthylene, benzo[a]anthracene, benzo[g,h,i]perylene, benzo[k]fluoranthene, indeno[1,2,3-cd]pyrene and naphthalene were reported at concentrations greater than the MDLs in sample DG-C7S-0.5-1 and not detected in field duplicate DUP-15 (job 720-88238-1), resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in sample DG-C7S-0.5-1 were J qualified as estimated.

Anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene were reported at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-15 (job 720-88238-1) and at concentrations greater than the RLs in sample DG-C7S-0.5-1, resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in sample DG-C7S-0.5-1 were J qualified as estimated.

The acenaphthylene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, fluoranthene, indeno[1,2,3-cd]pyrene, naphthalene, phenanthrene and pyrene RPDs for field duplicate pair DG-B10S-0.5-1/DUP-25 were greater than 50%. Therefore, the concentrations of these compounds in sample DG-B10S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B10S-0.5-1	Acenaphthylene	29	NA	29	J	7
DG-B10S-0.5-1	Anthracene	44	NA	44	J	7
DG-B10S-0.5-1	Benzo[a]anthracene	45	NA	45	J	7
DG-B10S-0.5-1	Benzo[a]pyrene	45	NA	45	J	7
DG-B10S-0.5-1	Benzo[b]fluoranthene	66	NA	66	J	7
DG-B10S-0.5-1	Benzo[g,h,i]perylene	28	NA	28	J	7
DG-B10S-0.5-1	Benzo[k]fluoranthene	32	NA	32	J	7
DG-B10S-0.5-1	Fluoranthene	59	NA	59	J	7
DG-B10S-0.5-1	Indeno[1,2,3-cd]pyrene	19	NA	19	J	7
DG-B10S-0.5-1	Naphthalene	22	NA	22	J	7
DG-B10S-0.5-1	Phenanthrene	67	NA	67	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B10S-0.5-1	Pyrene	81	NA	81	J	7
DG-C7S-0.5-1	2-Methylnaphthalene	12	NA	12	J	7
DG-C7S-0.5-1	Acenaphthylene	5.6	NA	5.6	J	7
DG-C7S-0.5-1	Anthracene	12	NA	12	J	7
DG-C7S-0.5-1	Benzo[a]anthracene	12	NA	12	J	7
DG-C7S-0.5-1	Benzo[a]pyrene	15	NA	15	J	7
DG-C7S-0.5-1	Benzo[b]fluoranthene	29	NA	29	J	7
DG-C7S-0.5-1	Benzo[g,h,i]perylene	13	NA	13	J	7
DG-C7S-0.5-1	Benzo[k]fluoranthene	7.3	NA	7.3	J	7
DG-C7S-0.5-1	Chrysene	20	NA	20	J	7
DG-C7S-0.5-1	Fluoranthene	22	NA	22	J	7
DG-C7S-0.5-1	Indeno[1,2,3-cd]pyrene	7.8	NA	7.8	J	7
DG-C7S-0.5-1	Naphthalene	8.0	NA	8.0	J	7
DG-C7S-0.5-1	Phenanthrene	20	NA	20	J	7
DG-C7S-0.5-1	Pyrene	31	NA	31	J	7
DG-I7S-3.5-4	2-Methylnaphthalene	4.8	U	4.8	UJ	7
DG-I7S-3.5-4	Acenaphthylene	3.3	J	3.3	J	7
DG-I7S-3.5-4	Anthracene	3.3	J	3.3	J	7
DG-I7S-3.5-4	Benzo[a]anthracene	6.1	NA	6.1	J	7
DG-I7S-3.5-4	Benzo[a]pyrene	9.3	NA	9.3	J	7
DG-I7S-3.5-4	Benzo[b]fluoranthene	11	NA	11	J	7
DG-I7S-3.5-4	Benzo[g,h,i]perylene	5.2	NA	5.2	J	7
DG-I7S-3.5-4	Benzo[k]fluoranthene	5.0	NA	5.0	J	7
DG-I7S-3.5-4	Chrysene	6.7	NA	6.7	J	7
DG-I7S-3.5-4	Dibenz(a,h)anthracene	3.4	U	3.4	UJ	7
DG-I7S-3.5-4	Fluoranthene	7.9	NA	7.9	J	7
DG-I7S-3.5-4	Fluorene	2.1	U	2.1	UJ	7
DG-I7S-3.5-4	Indeno[1,2,3-cd]pyrene	4.6	J	4.6	J	7
DG-I7S-3.5-4	Naphthalene	3.4	U	3.4	UJ	7
DG-I7S-3.5-4	Phenanthrene	5.4	NA	5.4	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I7S-3.5-4	Pyrene	11	NA	11	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the

ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPD between the primary and confirmation columns was greater than 40% for 4,4'-DDD in sample DG-I7S-0.5-1. Therefore, the 4,4'-DDD concentration in sample DG-I7S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I7S-0.5-1	4,4'-DDD	0.65	J p	0.65	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250393 and 250531). Organochlorine pesticides were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-M7S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The aldrin, delta-BHC, endrin aldehyde and methoxychlor RPDs in the MS/MSD pair were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-M7S-0.5-1, no qualifications were applied to the data.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Three field duplicate samples, DUP-14, DUP-15 and DUP-25 (job 720-88238-1), were collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively, with the following exceptions.

Chlordane (technical), cis-Chlordane and trans-Chlordane were reported at concentrations greater than the MDLs in field duplicate DUP-25 (job 720-88238-1) and not detected in sample DG-B10S-0.5-1, resulting in non-calculable RPDs. Therefore, the non-detect results of these compounds in sample DG-B10S-0.5-1 were UJ qualified as estimated less than the MDLs.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-B10S-0.5-1	Chlordane (technical)	3.1	U	3.1	UJ	7
DG-B10S-0.5-1	cis-Chlordane	0.39	U	0.39	UJ	7
DG-B10S-0.5-1	trans-Chlordane	0.45	U	0.45	UJ	7

µg/kg - Microgram per kilogram
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C /8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set 100%.

The narrative indicated that the Aroclor 1242 percent difference (%D) for the continuing calibration verification (CCV) associated with sample DG-B9S-9.5-10 was high and outside the laboratory specified acceptance criteria with high bias. Since Aroclor 1242 was not detected in sample DG-B9S-9.5-10, no qualifications were applied to the data.

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 343096 and 343472). PCBs were not detected in the method blanks above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

The decachlorobiphenyl recovery in sample DG-G7S-0.5-1 was low and outside the laboratory specified acceptance criteria. Since the tetrachloro-m-xylene recovery was acceptable, no qualifications were applied to the data.

The decachlorobiphenyl and tetrachloro-m-xylene recoveries in sample DG-G7S-3.5-4 were high and outside the laboratory specified acceptance criteria. Since PCBs were not detected in sample DG-G7S-3.5-4, no qualifications were applied to the data.

4.7 Field Duplicate

Three field duplicate samples, DUP-14, DUP-15 and DUP-25 (all from work order 720-88238-1), were collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively.

4.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250382, 250461 and 250498). DRO was not detected in the method blanks above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two sample set specific MS/MSD pairs were reported, using samples DG-G7S-0.5-1 and DG-I7S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

There were no surrogate recoveries (0%) in samples DG-M7S-0.5-1, DG-B9S-0.5-1 and DG-DE89-3.5-4. Since the samples were analyzed at dilutions, no qualifications were applied to the data.

5.7 Field Duplicate

Three field duplicate samples, DUP-14, DUP-15 and DUP-25 (job 720-88238-1), were collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was not demonstrated between the field duplicates and the original samples, DG-I7S-3.5-4, DG-C7S-0.5-

1 and DG-B10S-0.5-1, respectively. Therefore, the DRO concentrations in samples DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C7S-0.5-1	Diesel Range Organics [C10-C28]	130000	NA	130000	J	7
DG-I7S-3.5-4	Diesel Range Organics [C10-C28]	10000	NA	10000	J	7
DG-B10S-0.5-1	Diesel Range Organics [C10-C28]	100000	NA	100000	J	7

µg/kg - Microgram per kilogram
NA - Not applicable

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Serial Dilution
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250365, 250470 and 250513). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Antimony and barium were reported at estimated concentrations greater than the MDLs and less than the RLs in the method blank in batch 250365. Therefore, the estimated antimony concentrations in samples DG-I7S-0.5-1, DG-M7S-0.5-1, DG-M7S-3.5-4, DG-B9S-3.5-4 and DG-DE89-0.5-1 were U qualified as not detected at the RLs. However, since the barium concentrations in the associated samples were greater than the RL, no qualifications were applied to the barium data.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I7S-0.5-1	Antimony	440	J B	1200	U	3
DG-M7S-0.5-1	Antimony	820	J B	1800	U	3
DG-M7S-3.5-4	Antimony	1000	J B	1700	U	3
DG-B9S-3.5-4	Antimony	1600	J B	1800	U	3
DG-DE89-0.5-1	Antimony	570	J B	1300	U	3

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Additionally, batch post digestion spike results were reported in the narrative. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

Batch serial dilution results were reported in the narrative. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.7 Field Duplicate

Three field duplicate samples, DUP-14, DUP-15 and DUP-25 (job 720-88238-1), were collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively, with the following exceptions.

Molybdenum was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-14 (job 720-88238-1) and not detected in sample DG-I7S-3.5-4, resulting in a non-calculable RPD. Therefore, the non-detect molybdenum result in sample DG-I7S-3.5-4 was UJ qualified as estimated less than the MDL.

Cadmium was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-I7S-3.5-4 and at a concentration greater than the RL in field duplicate DUP-14 (job 720-88238-1), resulting in a non-calculable RPD. Therefore, the estimated cadmium concentration in sample DG-I7S-3.5-4 was J qualified as estimated.

The arsenic RPD for field duplicate pair DG-I7S-3.5-4/DUP-14 was greater than 50%. Therefore, the arsenic concentration in sample DG-I7S-3.5-4 was J qualified as estimated.

The antimony, arsenic, barium, cadmium and lead RPDs for field duplicate pair DG-C7S-0.5-1/DUP-15 (job 720-88238-1) were greater than 50%. Therefore, the concentrations of these compounds in sample DG-C7S-0.5-1 were J qualified as estimated.

The barium, cadmium, lead, nickel and zinc RPDs for field duplicate pair DG-B10S-0.5-1/DUP-25 (from job 720-88238-1) were greater than 50%. Therefore, the concentrations of these compounds in sample DG-B10S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C7S-0.5-1	Antimony	24000	NA	24000	J	7
DG-C7S-0.5-1	Arsenic	9400	NA	9400	J	7
DG-C7S-0.5-1	Barium	120000	NA	120000	J	7
DG-C7S-0.5-1	Cadmium	560	NA	560	J	7
DG-C7S-0.5-1	Lead	910000	NA	910000	J	7
DG-I7S-3.5-4	Arsenic	21000	NA	21000	J	7
DG-I7S-3.5-4	Cadmium	200	J	200	J	7
DG-I7S-3.5-4	Molybdenum	150	U	150	UJ	7
DG-B10S-0.5-1	Barium	150000	NA	150000	J	7
DG-B10S-0.5-1	Cadmium	720	NA	720	J	7
DG-B10S-0.5-1	Lead	610000	NA	610000	J	7
DG-B10S-0.5-1	Nickel	72000	NA	72000	J	7
DG-B10S-0.5-1	Zinc	250000	NA	250000	J	7

µg/kg - Microgram per kilogram.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250416, 250521 and 250548). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Three field duplicate samples, DUP-14, DUP-15 and DUP-25 (all from work order 720-88238-1), were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-I7S-3.5-4, DG-C7S-0.5-1 and DG-B10S-0.5-1, respectively, with the following exception.

The RPD for field duplicate pair DG-I7S-3.5-4/DUP-14 was greater than 50%. Therefore, the mercury concentration in sample DG-I7S-3.5-4 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I7S-3.5-4	Mercury	50	NA	50	J	7

µg/kg - Microgram per kilogram
NA - Not applicable

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	4 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88240-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of sixteen soil samples and four field duplicate samples, collected 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B and 5030B/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88240-1	DG-K7S-0.5-1
720-88240-2	DG-K7S-3.5-4
720-88240-3	DG-L13S-0.5-1
720-88240-4	DG-L13S-3.5-4
720-88240-5	DG-K13S-0.5-1
720-88240-6	DG-K13S-3.5-4
720-88240-7	DG-M14S-0.5-1
720-88240-8	DG-M14S-3.5-4
720-88240-9	DG-J12S-0.5-1
720-88240-10	DG-J12S-3.5-4

Laboratory ID	Client ID
720-88240-11	DG-K12S-0.5-1
720-88240-12	DG-K12S-3.5-4
720-88240-13	DG-I12S-0.5-1
720-88240-14	DG-I12S-3.5-4
720-88240-15	DG-H12S-0.5-1
720-88240-16	DG-H12S-3.5-4
720-88240-17	DUP-33
720-88240-18	DUP-34
720-88240-19	DUP-36
720-88240-20	DUP-13

The samples were received at TA Pleasanton, California at 4.4^{o}C and at TA Canton, Ohio at 1.4^{o}C and 0.8^{o}C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

The sample collection times for field duplicate samples were not recorded on the chain of custody (COC). The laboratory assigned collection times of time 0:00.

The laboratory received containers for a sample DUP-13 that were not listed on the COC. The client requested analysis of this sample for VOCs, PAHs, DRO, organochlorine pesticides, PCBs, metals, mercury and asbestos via email.

The COC listed sample DG-L13S-3.5-1; however, the sample containers listed sample ID DG-L13S-3.5-4. The laboratory assigned sample ID DG-L13S-3.5-4 to be consistent with the other project samples.

The laboratory received 7 containers for sample DUP-36; however, the COC only requested metals and mercury for this sample. On 27 August 2018 the client requested analysis for VOCs, PAHs, DRO, organochlorine pesticides, PCBs, metals, mercury and asbestos for sample DUP-36.

The following samples were listed on the COC for job 720-88240-1 and job 720-88262-1: DUP-33, DUP-34 and DUP-36. The samples were included in job 720-88240-1 and not in job 720-88262-1.

Incorrect error corrections were observed on the COCs, instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B and 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DUP-36 was low and outside the laboratory specified acceptance criteria. The chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for samples DG-K7S-0.5-1 and DG-L13S-3.5-4 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated analytes in these samples were UJ qualified as estimated less than the method detection limits (MDLs).

The lab chronicle indicated that the sample aliquots taken from 8-oz. jars were used for the 5030B/8260B VOC analyses of samples DG-L13S-0.5-1 and DUP-36 instead of the Terra Core collected samples; this is inconsistent with the QAPP specified method for extraction, USEPA method 5035. Therefore, based on professional and technical judgment, the non-detect VOC results in samples DG-L13S-0.5-1 and DUP-36 were UJ qualified as estimated less than the MDLs and the VOC concentrations were J qualified as estimated. The results are considered screening level results and should not be used to make project decisions based on the non-detect results.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K7S-0.5-1	1,1,1,2-Tetrachloroethane	0.66	U*	0.66	UJ	11
DG-K7S-0.5-1	1,1,2,2-Tetrachloroethane	0.65	U*	0.65	UJ	11
DG-K7S-0.5-1	1,2,3-Trichlorobenzene	0.64	U*	0.64	UJ	11
DG-K7S-0.5-1	1,2,3-Trichloropropane	0.67	U*	0.67	UJ	11
DG-K7S-0.5-1	1,2,4-Trichlorobenzene	0.62	U*	0.62	UJ	11
DG-K7S-0.5-1	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-K7S-0.5-1	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	11
DG-K7S-0.5-1	1,2-Dichlorobenzene	0.59	U*	0.59	UJ	11
DG-K7S-0.5-1	1,3,5-Trimethylbenzene	0.57	U*	0.57	UJ	11
DG-K7S-0.5-1	1,3-Dichlorobenzene	0.63	U*	0.63	UJ	11
DG-K7S-0.5-1	1,4-Dichlorobenzene	0.62	U*	0.62	UJ	11
DG-K7S-0.5-1	2-Chlorotoluene	0.57	U*	0.57	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-K7S-0.5-1	4-Chlorotoluene	0.59	U*	0.59	UJ	11
DG-K7S-0.5-1	4-Isopropyltoluene	2.2	U*	2.2	UJ	11
DG-K7S-0.5-1	Bromobenzene	0.69	U*	0.69	UJ	11
DG-K7S-0.5-1	Bromoform	1.7	U*	1.7	UJ	11
DG-K7S-0.5-1	Chlorobenzene	0.60	U*	0.60	UJ	11
DG-K7S-0.5-1	Ethylbenzene	0.65	U*	0.65	UJ	11
DG-K7S-0.5-1	Hexachlorobutadiene	0.78	U*	0.78	UJ	11
DG-K7S-0.5-1	Isopropylbenzene	0.59	U*	0.59	UJ	11
DG-K7S-0.5-1	Naphthalene	1.3	U*	1.3	UJ	11
DG-K7S-0.5-1	n-Butylbenzene	0.87	U*	0.87	UJ	11
DG-K7S-0.5-1	N-Propylbenzene	0.57	U*	0.57	UJ	11
DG-K7S-0.5-1	sec-Butylbenzene	0.63	U*	0.63	UJ	11
DG-K7S-0.5-1	Styrene	0.55	U*	0.55	UJ	11
DG-K7S-0.5-1	tert-Butylbenzene	0.64	U*	0.64	UJ	11
DG-K7S-0.5-1	Toluene	0.62	U*	0.62	UJ	11
DG-L13S-0.5-1	1,1,1,2-Tetrachloroethane	0.75	U	0.75	UJ	1
DG-L13S-0.5-1	1,1,1-Trichloroethane	0.61	U	0.61	UJ	1
DG-L13S-0.5-1	1,1,2,2-Tetrachloroethane	0.74	U	0.74	UJ	1
DG-L13S-0.5-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.1	U*	2.1	UJ	1
DG-L13S-0.5-1	1,1,2-Trichloroethane	0.69	U	0.69	UJ	1
DG-L13S-0.5-1	1,1-Dichloroethane	0.67	U	0.67	UJ	1
DG-L13S-0.5-1	1,1-Dichloroethene	0.62	U*	0.62	UJ	1
DG-L13S-0.5-1	1,1-Dichloropropene	0.68	U	0.68	UJ	1
DG-L13S-0.5-1	1,2,3-Trichlorobenzene	0.73	U	0.73	UJ	1
DG-L13S-0.5-1	1,2,3-Trichloropropane	0.76	U	0.76	UJ	1
DG-L13S-0.5-1	1,2,4-Trichlorobenzene	0.70	U	0.70	UJ	1
DG-L13S-0.5-1	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-L13S-0.5-1	1,2-Dibromo-3-Chloropropane	1.7	U	1.7	UJ	1
DG-L13S-0.5-1	1,2-Dichlorobenzene	0.67	U	0.67	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-L13S-0.5-1	1,2-Dichloroethane	0.75	U	0.75	UJ	1
DG-L13S-0.5-1	1,2-Dichloropropane	0.62	U	0.62	UJ	1
DG-L13S-0.5-1	1,3,5-Trimethylbenzene	0.64	U	0.64	UJ	1
DG-L13S-0.5-1	1,3-Dichlorobenzene	0.71	U	0.71	UJ	1
DG-L13S-0.5-1	1,3-Dichloropropane	0.72	U	0.72	UJ	1
DG-L13S-0.5-1	1,4-Dichlorobenzene	0.70	U	0.70	UJ	1
DG-L13S-0.5-1	2,2-Dichloropropane	2.0	U	2.0	UJ	1
DG-L13S-0.5-1	2-Butanone (MEK)	21	U	21	UJ	1
DG-L13S-0.5-1	2-Chlorotoluene	0.64	U	0.64	UJ	1
DG-L13S-0.5-1	2-Hexanone	9.9	U	9.9	UJ	1
DG-L13S-0.5-1	4-Chlorotoluene	0.67	U	0.67	UJ	1
DG-L13S-0.5-1	4-Isopropyltoluene	2.5	U	2.5	UJ	1
DG-L13S-0.5-1	4-Methyl-2-pentanone (MIBK)	9.9	U	9.9	UJ	1
DG-L13S-0.5-1	Acetone	38	U	38	UJ	1
DG-L13S-0.5-1	Benzene	0.64	U	0.64	UJ	1
DG-L13S-0.5-1	Bromobenzene	0.78	U	0.78	UJ	1
DG-L13S-0.5-1	Bromoform	2.0	U	2.0	UJ	1
DG-L13S-0.5-1	Bromomethane	0.78	U	0.78	UJ	1
DG-L13S-0.5-1	Gasoline range organics (GRO) C4-C10	99	U	99	UJ	1
DG-L13S-0.5-1	Carbon disulfide	2.0	U*	2.0	UJ	1
DG-L13S-0.5-1	Carbon tetrachloride	0.62	U	0.62	UJ	1
DG-L13S-0.5-1	Chlorobenzene	0.68	U	0.68	UJ	1
DG-L13S-0.5-1	Chlorobromomethane	0.71	U	0.71	UJ	1
DG-L13S-0.5-1	Chlorodibromomethane	0.70	U	0.70	UJ	1
DG-L13S-0.5-1	Chloroethane	0.56	U	0.56	UJ	1
DG-L13S-0.5-1	Chloroform	0.65	U	0.65	UJ	1
DG-L13S-0.5-1	Chloromethane	0.78	U	0.78	UJ	1
DG-L13S-0.5-1	cis-1,2-Dichloroethene	0.67	U	0.67	UJ	1
DG-L13S-0.5-1	cis-1,3-Dichloropropene	0.68	U	0.68	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-L13S-0.5-1	Dibromomethane	0.85	U	0.85	UJ	1
DG-L13S-0.5-1	Dichlorobromomethane	0.71	U	0.71	UJ	1
DG-L13S-0.5-1	Dichlorodifluoromethane	0.78	U	0.78	UJ	1
DG-L13S-0.5-1	Ethylbenzene	0.74	U	0.74	UJ	1
DG-L13S-0.5-1	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-L13S-0.5-1	GRO C4-C12	99	U	99	UJ	1
DG-L13S-0.5-1	Hexachlorobutadiene	0.89	U	0.89	UJ	1
DG-L13S-0.5-1	Isopropylbenzene	0.67	U	0.67	UJ	1
DG-L13S-0.5-1	Methyl tert-butyl ether	1.2	U	1.2	UJ	1
DG-L13S-0.5-1	Methylene Chloride	5.6	U	5.6	UJ	1
DG-L13S-0.5-1	Naphthalene	1.5	U	1.5	UJ	1
DG-L13S-0.5-1	n-Butylbenzene	0.99	U	0.99	UJ	1
DG-L13S-0.5-1	N-Propylbenzene	0.65	U	0.65	UJ	1
DG-L13S-0.5-1	sec-Butylbenzene	0.71	U	0.71	UJ	1
DG-L13S-0.5-1	Styrene	0.62	U	0.62	UJ	1
DG-L13S-0.5-1	tert-Butylbenzene	0.72	U	0.72	UJ	1
DG-L13S-0.5-1	Tetrachloroethene	0.66	U	0.66	UJ	1
DG-L13S-0.5-1	Toluene	0.70	U	0.70	UJ	1
DG-L13S-0.5-1	trans-1,2-Dichloroethene	0.74	U	0.74	UJ	1
DG-L13S-0.5-1	trans-1,3-Dichloropropene	0.66	U	0.66	UJ	1
DG-L13S-0.5-1	Trichloroethene	0.62	U	0.62	UJ	1
DG-L13S-0.5-1	Trichlorofluoromethane	0.56	U	0.56	UJ	1
DG-L13S-0.5-1	Vinyl acetate	5.0	U	5.0	UJ	1
DG-L13S-0.5-1	Vinyl chloride	0.72	U	0.72	UJ	1
DG-L13S-0.5-1	Xylenes, Total	1.2	U	1.2	UJ	1
DG-L13S-3.5-4	1,1,1,2-Tetrachloroethane	0.63	U*	0.63	UJ	11
DG-L13S-3.5-4	1,1,2,2-Tetrachloroethane	0.62	U*	0.62	UJ	11
DG-L13S-3.5-4	1,2,3-Trichlorobenzene	0.62	U*	0.62	UJ	11
DG-L13S-3.5-4	1,2,3-Trichloropropane	0.64	U*	0.64	UJ	11
DG-L13S-3.5-4	1,2,4-Trichlorobenzene	0.59	U*	0.59	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-L13S-3.5-4	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-L13S-3.5-4	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-L13S-3.5-4	1,2-Dichlorobenzene	0.57	U*	0.57	UJ	11
DG-L13S-3.5-4	1,3,5-Trimethylbenzene	0.54	U*	0.54	UJ	11
DG-L13S-3.5-4	1,3-Dichlorobenzene	0.60	U*	0.60	UJ	11
DG-L13S-3.5-4	1,4-Dichlorobenzene	0.59	U*	0.59	UJ	11
DG-L13S-3.5-4	2-Chlorotoluene	0.54	U*	0.54	UJ	11
DG-L13S-3.5-4	4-Chlorotoluene	0.57	U*	0.57	UJ	11
DG-L13S-3.5-4	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-L13S-3.5-4	Bromobenzene	0.66	U*	0.66	UJ	11
DG-L13S-3.5-4	Bromoform	1.7	U*	1.7	UJ	11
DG-L13S-3.5-4	Chlorobenzene	0.57	U*	0.57	UJ	11
DG-L13S-3.5-4	Ethylbenzene	0.62	U*	0.62	UJ	11
DG-L13S-3.5-4	Hexachlorobutadiene	0.75	U*	0.75	UJ	11
DG-L13S-3.5-4	Isopropylbenzene	0.57	U*	0.57	UJ	11
DG-L13S-3.5-4	Naphthalene	1.2	U*	1.2	UJ	11
DG-L13S-3.5-4	n-Butylbenzene	0.83	U*	0.83	UJ	11
DG-L13S-3.5-4	N-Propylbenzene	0.55	U*	0.55	UJ	11
DG-L13S-3.5-4	sec-Butylbenzene	0.60	U*	0.60	UJ	11
DG-L13S-3.5-4	Styrene	0.52	U*	0.52	UJ	11
DG-L13S-3.5-4	tert-Butylbenzene	0.61	U*	0.61	UJ	11
DG-L13S-3.5-4	Toluene	0.59	U*	0.59	UJ	11
DUP-36	1,1,1,2-Tetrachloroethane	0.69	U	0.69	UJ	1
DUP-36	1,1,1-Trichloroethane	0.56	U	0.56	UJ	1
DUP-36	1,1,2,2-Tetrachloroethane	0.68	U*	0.68	UJ	1, 11
DUP-36	1,1,2-Trichloro-1,2,2-trifluoroethane	1.9	U	1.9	UJ	1
DUP-36	1,1,2-Trichloroethane	0.64	U	0.64	UJ	1
DUP-36	1,1-Dichloroethane	0.62	U	0.62	UJ	1
DUP-36	1,1-Dichloroethene	0.56	U*	0.56	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-36	1,1-Dichloropropene	0.63	U	0.63	UJ	1
DUP-36	1,2,3-Trichlorobenzene	0.67	U*	0.67	UJ	1, 11
DUP-36	1,2,3-Trichloropropane	0.70	U*	0.70	UJ	1, 11
DUP-36	1,2,4-Trichlorobenzene	0.65	U*	0.65	UJ	1, 11
DUP-36	1,2,4-Trimethylbenzene	1.5	U*	1.5	UJ	1, 11
DUP-36	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	1, 11
DUP-36	1,2-Dichlorobenzene	0.62	U*	0.62	UJ	1, 11
DUP-36	1,2-Dichloroethane	0.69	U	0.69	UJ	1
DUP-36	1,2-Dichloropropane	0.57	U	0.57	UJ	1
DUP-36	1,3,5-Trimethylbenzene	0.59	U*	0.59	UJ	1, 11
DUP-36	1,3-Dichlorobenzene	0.66	U*	0.66	UJ	1, 11
DUP-36	1,3-Dichloropropane	0.66	U	0.66	UJ	1
DUP-36	1,4-Dichlorobenzene	0.65	U*	0.65	UJ	1, 11
DUP-36	2,2-Dichloropropane	1.8	U	1.8	UJ	1
DUP-36	2-Butanone (MEK)	19	U	19	UJ	1
DUP-36	2-Chlorotoluene	0.59	U*	0.59	UJ	1, 11
DUP-36	2-Hexanone	9.1	U	9.1	UJ	1
DUP-36	4-Chlorotoluene	0.62	U*	0.62	UJ	1, 11
DUP-36	4-Isopropyltoluene	2.3	U*	2.3	UJ	1, 11
DUP-36	4-Methyl-2-pentanone (MIBK)	9.1	U	9.1	UJ	1
DUP-36	Acetone	50	NA	50	J	1
DUP-36	Benzene	0.59	U	0.59	UJ	1
DUP-36	Bromobenzene	0.72	U*	0.72	UJ	1, 11
DUP-36	Bromoform	1.8	U	1.8	UJ	1
DUP-36	Bromomethane	0.72	U	0.72	UJ	1
DUP-36	Carbon disulfide	1.8	U*	1.8	UJ	1
DUP-36	Carbon tetrachloride	0.56	U	0.56	UJ	1
DUP-36	Chlorobenzene	0.63	U	0.63	UJ	1
DUP-36	Chlorobromomethane	0.66	U	0.66	UJ	1
DUP-36	Chlorodibromomethane	0.65	U	0.65	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-36	Chloroethane	0.51	U	0.51	UJ	1
DUP-36	Chloroform	0.60	U	0.60	UJ	1
DUP-36	Chloromethane	0.72	U	0.72	UJ	1
DUP-36	cis-1,2-Dichloroethene	0.62	U	0.62	UJ	1
DUP-36	cis-1,3-Dichloropropene	0.63	U	0.63	UJ	1
DUP-36	Dibromomethane	0.78	U	0.78	UJ	1
DUP-36	Dichlorobromomethane	0.66	U	0.66	UJ	1
DUP-36	Dichlorodifluoromethane	0.72	U	0.72	UJ	1
DUP-36	Ethylbenzene	0.68	U	0.68	UJ	1
DUP-36	Ethylene Dibromide	1.3	U	1.3	UJ	1
DUP-36	GRO C4-C12	180	J	180	J	1
DUP-36	Hexachlorobutadiene	0.82	U*	0.82	UJ	1, 11
DUP-36	Isopropylbenzene	0.62	U	0.62	UJ	1
DUP-36	Methyl tert-butyl ether	1.1	U	1.1	UJ	1
DUP-36	Methylene Chloride	5.1	U	5.1	UJ	1
DUP-36	Naphthalene	1.4	U*	1.4	UJ	1, 11
DUP-36	n-Butylbenzene	0.91	U*	0.91	UJ	1, 11
DUP-36	N-Propylbenzene	0.60	U*	0.60	UJ	1, 11
DUP-36	sec-Butylbenzene	0.66	U*	0.66	UJ	1, 11
DUP-36	Styrene	0.57	U	0.57	UJ	1
DUP-36	tert-Butylbenzene	0.66	U*	0.66	UJ	1, 11
DUP-36	Tetrachloroethene	0.66	U	0.66	UJ	1
DUP-36	Toluene	0.65	U	0.65	UJ	1
DUP-36	trans-1,2-Dichloroethene	0.68	U	0.68	UJ	1
DUP-36	trans-1,3-Dichloropropene	0.61	U	0.61	UJ	1
DUP-36	Trichloroethene	0.57	U	0.57	UJ	1
DUP-36	Trichlorofluoromethane	0.51	U	0.51	UJ	1
DUP-36	Vinyl acetate	4.5	U	4.5	UJ	1
DUP-36	Vinyl chloride	0.66	U	0.66	UJ	1
DUP-36	Xylenes, Total	1.1	U	1.1	UJ	1

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the reporting limit (RL) and greater than the MDL.
NA - Not applicable.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding time for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

As noted above, samples DG-L13S-0.5-1 and DUP-36 were analyzed from an 8-oz. jar instead of the QAPP specified Terra Core samplers; the samples were prepared four and eleven days, respectively, after collection. Since the VOC results for samples DG-L13S-0.5-1 and DUP-36 were qualified due to analysis from an 8-oz. jar, no additional qualifications were applied to the data.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five method blanks were reported (batches 250532, 250555, 250622, 250726 and 250755). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Batch MS/MSD pairs were reported in batches 250726 and 250755. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batches 250532, 250555 and 250622. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy in these batches.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Nine LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250555 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

One or both of the carbon disulfide and 1,1-dichloroethene recoveries in the LCS/LCSD pairs in batches 250532 and 250622 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

One or both of the carbon disulfide, 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250726 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Two field duplicate samples, DUP-13 and DUP-36, were collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-K7S-3.5-4 and DG-L13S-3.5-4, respectively, with the following exceptions.

1,3,5-Trimethylbenzene, 4-isopropyltoluene, n-butylbenzene, N-propylbenzene, sec-butylbenzene, tert-butylbenzene and toluene were reported at concentrations greater than the MDLs in field duplicate DUP-13 and not detected in sample DG-K7S-3.5-4, resulting in non-calculable RPDs. Therefore, the non-detect results of these compounds in sample DG-K7S-3.5-4 were UJ qualified as estimated less than the MDLs and the concentrations in field duplicate DUP-13 were J qualified as estimated.

Acetone and GRO were reported at concentrations greater than the MDLs in field duplicate DUP-36 and not detected in sample DG-L13S-3.5-4, resulting in non-calculable RPDs. Therefore, the

non-detect results of these compounds in sample DG-L13S-3.5-4 were UJ qualified as estimated less than the MDLs and the concentrations in field duplicate DUP-36 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K7S-3.5-4	1,3,5-Trimethylbenzene	0.46	U	NC	0.46	UJ	7
DUP-13	1,3,5-Trimethylbenzene	0.59	J		0.59	J	7
DG-K7S-3.5-4	4-Isopropyltoluene	1.8	U	NC	1.8	UJ	7
DUP-13	4-Isopropyltoluene	5.0	NA		5.0	J	7
DG-K7S-3.5-4	n-Butylbenzene	0.71	U	NC	0.71	UJ	7
DUP-13	n-Butylbenzene	0.73	J		0.73	J	7
DG-K7S-3.5-4	N-Propylbenzene	0.47	U	NC	0.47	UJ	7
DUP-13	N-Propylbenzene	0.63	J		0.63	J	7
DG-K7S-3.5-4	sec-Butylbenzene	0.51	U	NC	0.51	UJ	7
DUP-13	sec-Butylbenzene	0.80	J		0.80	J	7
DG-K7S-3.5-4	tert-Butylbenzene	0.52	U	NC	0.52	UJ	7
DUP-13	tert-Butylbenzene	0.67	J		0.67	J	7
DG-K7S-3.5-4	Toluene	0.51	U	NC	0.51	UJ	7
DUP-13	Toluene	0.52	J		0.52	J	7
DG-L13S-3.5-4	Acetone	32	U	NC	32	UJ	7
DUP-36	Acetone	50	NA		50	J	7
DG-L13S-3.5-4	GRO C4-C12	83	U	NC	83	UJ	7
DUP-36	GRO C4-C12	180	J		180	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250487 and 250853). PAHs were not detected in the method blanks above the MDLs, with the following exceptions.

Fluoranthene and phenanthrene were reported at estimated concentrations greater than the MDL and less than the RL in the method blank in batch 250487. Therefore, the estimated fluoranthene and phenanthrene concentrations in samples DG-K7S-0.5-1, DG-K7S-3.5-4 and DG-L13S-0.5-1 were U qualified as not detected at the RLs.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K7S-0.5-1	Fluoranthene	57	J B	190	U	3
DG-K7S-0.5-1	Phenanthrene	71	J B	190	U	3
DG-K7S-3.5-4	Fluoranthene	3.1	J B	4.9	U	3
DG-K7S-3.5-4	Phenanthrene	3.5	J B	4.9	U	3
DG-L13S-0.5-1	Fluoranthene	32	J B	50	U	3
DG-L13S-0.5-1	Phenanthrene	19	J B	50	U	3

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-L13S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The benzo[g,h,i]perylene, dibenz(a,h)anthracene and indeno[1,2,3-cd]pyrene recoveries were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect dibenz(a,h)anthracene and indeno[1,2,3-cd]pyrene results in sample DG-L13S-0.5-1 were UJ qualified as estimated less than the MDLs and the benzo[g,h,i]perylene concentration was J qualified as estimated.

The benzo[k]fluoranthene recovery in the MS was high and outside the laboratory specified acceptance criteria. Therefore, the estimated benzo[k]fluoranthene concentration in sample DG-L13S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L13S-0.5-1	Benzo[g,h,i]perylene	50	F1	50	J	4
DG-L13S-0.5-1	Benzo[k]fluoranthene	28	J F1	28	J	4
DG-L13S-0.5-1	Dibenz(a,h)anthracene	35	U F1	35	UJ	4
DG-L13S-0.5-1	Indeno[1,2,3-cd]pyrene	42	U F1	42	UJ	4

µg/kg - Microgram per kilogram.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses, with the following exception.

There were no surrogate recoveries (0%) in samples DG-A7S-0-5-1 DG-L13S-3.5-4 and DUP-36. Since the samples were analyzed at dilutions, no qualifications were applied to the data.

2.7 Field Duplicate

Two field duplicate samples, DUP-13 and DUP-36, were collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-K7S-3.5-4 and DG-L13S-3.5-4, respectively, with the following exceptions.

Acenaphthylene, benzo[a]anthracene and benzo[k]fluoranthene were reported at concentrations greater than the MDLs in field duplicate DUP-13 and not detected in sample DG-K7S-3.5-4, resulting in non-calculable RPDs. Therefore, the non-detect results of these compounds in sample DG-K7S-3.5-4 were UJ qualified as estimated less than the MDLs and the concentrations in field duplicate DUP-13 were J qualified as estimated.

Benzo[a]pyrene, benzo[b]fluoranthene, chrysene and pyrene were reported at concentrations greater than the RLs in field duplicate DUP-13 and at estimated concentrations greater than the MDLs and less than the RLs in sample DG-K7S-3.5-4, resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in field duplicate DUP-13 and the estimated concentrations in sample DG-K7S-3.5-4 were J qualified as estimated.

Fluoranthene and phenanthrene were reported at concentrations greater than the RLs in field duplicate DUP-13 and at estimated concentrations greater than the MDLs and less than the RLs in sample DG-K7S-3.5-4, resulting in non-calculable RPDs. However, the estimated fluoranthene and phenanthrene concentrations in sample DG-K7S-3.5-4 were U qualified as not detected at the RLs due to method blank contamination. Therefore, the U qualified non-detect results of these compounds in sample DG-K7S-3.5-4 were UJ qualified as estimated less than the RLs and the concentrations in field duplicate DUP-13 were J qualified as estimated.

Acenaphthene, benzo[a]anthracene, benzo[k]fluoranthene, fluorene and phenanthrene were reported at concentrations greater than the MDLs in sample DG-L13S-3.5-4 and not detected in field duplicate DUP-36, resulting in non-calculable RPDs. Therefore, the non-detect results of these compounds in field duplicate DUP-36 were UJ qualified as estimated less than the MDLs and the concentrations in sample DG-L13S-3.5-4 were J qualified as estimated.

Anthracene, benzo[a]pyrene, benzo[b]fluoranthene, chrysene and fluoranthene were reported at concentrations greater than the RLs in sample DG-L13S-3.5-4 and at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-36, resulting in non-calculable RPDs. Therefore, the concentrations of these compounds in DG-L13S-3.5-4 and the estimated concentrations in field duplicate DUP-36 were J qualified as estimated.

The pyrene RPD result for field duplicate DG-L13S-3.5-4/DUP-36 was greater than 50%. Therefore, the pyrene concentrations in field duplicate pair DG-L13S-3.5-4/DUP-36 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L13S-3.5-4	Acenaphthene	150	NA	NC	150	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-36	Acenaphthene	110	U		110	UJ	7
DG-L13S-3.5-4	Anthracene	310	NA	NC	310	J	7
DUP-36	Anthracene	82	J		82	J	7
DG-L13S-3.5-4	Benzo[a]anthracene	300	NA	NC	300	J	7
DUP-36	Benzo[a]anthracene	58	U		58	UJ	7
DG-L13S-3.5-4	Benzo[a]pyrene	280	NA	NC	280	J	7
DUP-36	Benzo[a]pyrene	150	J		150	J	7
DG-L13S-3.5-4	Benzo[b]fluoranthene	250	NA	NC	250	J	7
DUP-36	Benzo[b]fluoranthene	120	J		120	J	7
DG-L13S-3.5-4	Benzo[k]fluoranthene	100	NA	NC	100	J	7
DUP-36	Benzo[k]fluoranthene	81	U		81	UJ	7
DG-L13S-3.5-4	Chrysene	460	NA	NC	460	J	7
DUP-36	Chrysene	96	J		96	J	7
DG-L13S-3.5-4	Fluoranthene	390	NA	NC	390	J	7
DUP-36	Fluoranthene	100	J		100	J	7
DG-L13S-3.5-4	Fluorene	160	NA	NC	160	J	7
DUP-36	Fluorene	85	U		85	UJ	7
DG-L13S-3.5-4	Phenanthrene	140	NA	NC	140	J	7
DUP-36	Phenanthrene	69	U		69	UJ	7
DG-L13S-3.5-4	Pyrene	990	NA	107	990	J	7
DUP-36	Pyrene	300	NA		300	J	7
DG-K7S-3.5-4	Acenaphthylene	2.4	U	NC	2.4	UJ	7
DUP-13	Acenaphthylene	2.7	J		2.7	J	7
DG-K7S-3.5-4	Benzo[a]anthracene	1.5	U	NC	1.5	UJ	7
DUP-13	Benzo[a]anthracene	5.0	NA		5.0	J	7
DG-K7S-3.5-4	Benzo[a]pyrene	2.4	J	NC	2.4	J	7
DUP-13	Benzo[a]pyrene	6.1	NA		6.1	J	7
DG-K7S-3.5-4	Benzo[b]fluoranthene	3.6	J	NC	3.6	J	7
DUP-13	Benzo[b]fluoranthene	6.6	NA		6.6	J	7
DG-K7S-3.5-4	Benzo[k]fluoranthene	2.1	U	NC	2.1	UJ	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-13	Benzo[k]fluoranthene	3.3	J		3.3	J	7
DG-K7S-3.5-4	Chrysene	2.4	J	NC	2.4	J	7
DUP-13	Chrysene	4.9	NA		4.9	J	7
DG-K7S-3.5-4	Fluoranthene	3.1	J B	NC	4.9	UJ	7
DUP-13	Fluoranthene	7.0	B		7.0	J	7
DG-K7S-3.5-4	Phenanthrene	3.5	J B	NC	4.9	UJ	7
DUP-13	Phenanthrene	6.6	B		6.6	J	7
DG-K7S-3.5-4	Pyrene	3.8	J	NC	3.8	J	7
DUP-13	Pyrene	9.6	NA		9.6	J	7

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment

- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPD between the primary and confirmation columns was greater than 40% for cis-Chlordane in sample DG-L13S-0.5-1. Therefore, the cis-Chlordane concentration in sample DG-L13S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L13S-0.5-1	cis-Chlordane	3.5	J p	3.5	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250479). Organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-L13S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The delta-BHC and dieldrin RPDs were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in sample DG-L13S-0.5-1, no qualifications were applied to the data.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Two field duplicate samples, DUP-13 and DUP-36, were collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-K7S-3.5-4 and DG-L13S-3.5-4, respectively.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C /8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the Aroclor 1254 percent difference (%D) for the continuing calibration verification (CCV) associated with analytical batch 343339 was high and outside the laboratory specified acceptance criteria with high bias. Since Aroclor 1254 was not detected in the associated samples, no qualifications were applied to the data.

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 343099 and 343154). PCBs were not detected in the method blanks above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

One sample set specific MS/MSD pair was reported in batch 343099, using sample DG-L13S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria

MS/MSD pairs were not reported in batch 343154. LCS/LCSD pairs were used to assess precision and accuracy.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

The decachlorobiphenyl recoveries in samples DG-L13S-0.5-1, DG-L13S-3.5-4 and DUP-36 were high and outside the laboratory specified acceptance criteria. Since the tetrachloro-m-xylene recoveries were acceptance, no qualifications were applied to the data.

4.7 Field Duplicate

Two field duplicate samples, DUP-13 and DUP-36, were collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-K7S-3.5-4 and DG-L13S-3.5-4, respectively.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250461). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-L13S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

There were no surrogate recoveries (0%) in samples G-K7S-0.5-1, DG-L13S-0.5-1, DG-L13S-0.5-1, DG-L13S-0.5-1, DG-L13S-3.5-4 and DUP-36. Since the samples were analyzed at dilutions, no qualifications were applied to the data.

5.7 Field Duplicate

Two field duplicate samples, DUP-13 and DUP-36, were collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was not demonstrated between the field duplicates and the original samples, DG-K7S-3.5-4 and DG-L13S-3.5-4, respectively. Therefore, the DRO concentrations in duplicate pairs DG-K7S-3.5-4/DUP-13 and DG-L13S-3.5-4/DUP-36 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K7S-3.5-4	DRO [C10-C28]	15000	NA	108	15000	J	7
DUP-13	DRO [C10-C28]	50000	NA		50000	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L13S-3.5-4	DRO [C10-C28]	7000000	NA	104	7000000	J	7
DUP-36	DRO [C10-C28]	2200000	NA		2200000	J	7

µg/kg - Microgram per kilogram
NA - Not applicable

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilution
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the internal standard recoveries for the interference check solution AB were outside the laboratory specified acceptance criteria. Since the analyte recoveries were acceptance, no qualifications were applied to the data.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250385 and 250470). Metals were not detected in the method blanks above the MDLs, with the following exception.

Chromium was reported at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 250385. Since chromium in the associated samples was reported at concentrations greater than the RL, no qualifications were applied to the data.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-L13S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The silver recoveries in the MS/MSD pair and post digestion spike (PDS) were high and outside the laboratory specified acceptance criteria. Since silver was not detected in sample DG-L13S-0.5-1, no qualification was applied to the data.

The chromium, copper and vanadium recoveries in the MS/MSD pair and the PDS were high and outside the laboratory specified acceptance criteria. Therefore, the chromium, copper and

vanadium concentrations in sample DG-L13S-0.5-1 were J+ qualified as estimated with a high bias.

The antimony recoveries in the MS/MSD pair were low and outside the laboratory specified acceptance criteria. However, the PDS antimony recovery was acceptable. Therefore, the estimated antimony concentration in sample DG-L13S-0.5-1 was J qualified as estimated.

The lead, nickel and zinc recoveries in the MS/MSD pair were high and outside the laboratory specified acceptance criteria. However, the PDS recoveries for these compounds were acceptable. Therefore, the concentrations of these compounds in sample DG-L13S-0.5-1 were J qualified as estimated.

The arsenic and barium recovery and RPD results were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-L13S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L13S-0.5-1	Antimony	1400	J F1	1400	J	4
DG-L13S-0.5-1	Arsenic	38000	F2 F1	38000	J	4
DG-L13S-0.5-1	Barium	90000	F2 F1	90000	J	4
DG-L13S-0.5-1	Chromium	51000	F1 B	51000	J+	4
DG-L13S-0.5-1	Copper	55000	F1	55000	J+	4
DG-L13S-0.5-1	Lead	120000	F1	120000	J	4
DG-L13S-0.5-1	Nickel	52000	F1	52000	J	4
DG-L13S-0.5-1	Vanadium	43000	F1	43000	J+	4
DG-L13S-0.5-1	Zinc	130000	F2 F1	130000	J	4

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
F2 - Laboratory flag indicating the MS/MSD RPD was outside the acceptance criteria.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

A batch MS/MSD pair and PDS were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated that one serial dilution, using sample DG-L13S-0.5-1, was analyzed. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The arsenic, barium, cobalt, chromium, nickel, lead, vanadium and zinc RPD results were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-L13S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L13S-0.5-1	Arsenic	38000	F2 F1	38000	J	8
DG-L13S-0.5-1	Barium	90000	F2 F1	90000	J	8
DG-L13S-0.5-1	Chromium	51000	F1 B	51000	J	8
DG-L13S-0.5-1	Cobalt	9500	NA	9500	J	8
DG-L13S-0.5-1	Lead	120000	F1	120000	J	8
DG-L13S-0.5-1	Nickel	52000	F1	52000	J	8
DG-L13S-0.5-1	Vanadium	43000	F1	43000	J	8
DG-L13S-0.5-1	Zinc	130000	F2 F1	130000	J	8

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
F2 - Laboratory flag indicating the MS/MSD RPD was outside the acceptance criteria.
NA - Not applicable

A batch serial dilution was also reported in the narrative. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.7 Field Duplicate

Four field duplicate samples, DUP-13, DUP-33, DUP-34 and DUP-36, were collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$50%) was demonstrated between

the field duplicates and the original samples, DG-K7S-3.5-4, DG-I12S-3.5-4, DG-K12S-0.5-1 and DG-L13S-3.5-4, respectively, with the following exceptions.

Arsenic, beryllium, molybdenum, selenium, silver and thallium were reported at concentrations greater than the MDLs in one of the samples in field duplicate pair DG-K7S-3.5-4/DUP-13 and not detected in the other, resulting in non-calculable RPDs. Therefore, the non-detect results for these compounds in field duplicate pair DG-K7S-3.5-4/DUP-13 were UJ qualified as estimated less than the MDLs and the concentrations were J qualified as estimated.

Antimony, beryllium, cadmium, silver and thallium were reported at concentrations greater than the MDLs in one of the samples in field duplicate pair DG-I12S-3.5-4/DUP-33 and not detected in the other, resulting in non-calculable RPDs. Therefore, the non-detect results for these compounds in field duplicate pair DG-I12S-3.5-4/DUP-33 were UJ qualified as estimated less than the MDLs and the concentrations were J qualified as estimated.

The arsenic, barium, chromium, cobalt, copper, lead, nickel and vanadium RPD results for field duplicate pair DG-I12S-3.5-4/DUP-33 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate pair DG-I12S-3.5-4/DUP-33 were J qualified as estimated.

Beryllium, selenium, silver and thallium were reported at concentrations greater than the MDLs in one of the samples in field duplicate pair DG-K12S-0.5-1/DUP-34 and not detected in the other, resulting in non-calculable RPDs. Therefore, the non-detect results for these compounds in field duplicate pair DG-K12S-0.5-1/DUP-34 were UJ qualified as estimated less than the MDLs and the concentrations were J qualified as estimated.

Antimony was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-K12S-0.5-1 and at a concentration greater than the RL in field duplicate DUP-34, resulting in a non-calculable RPD. Therefore, the antimony concentrations in field duplicate pair DG-K12S-0.5-1/DUP-34 were J qualified as estimated.

Beryllium, cadmium, selenium, silver and thallium were reported at concentrations greater than the MDLs in one of the samples in field duplicate pair DG-L13S-3.5-4/DUP-36 and not detected in the other, resulting in non-calculable RPDs. Therefore, the non-detect results for these compounds in field duplicate pair DG-L13S-3.5-4/DUP-36 were UJ qualified as estimated less than the MDLs and the concentrations were J qualified as estimated.

Antimony was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-L13S-3.5-4 and at a concentration greater than the RL in field duplicate DUP-36,

resulting in a non-calculable RPD. Therefore, the antimony concentrations in field duplicate pair DG-L13S-3.5-4/DUP-36 were J qualified as estimated.

The arsenic, barium, chromium, cobalt, lead and nickel RPD results for field duplicate pair DG-L13S-3.5-4/DUP-36 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate pair DG-L13S-3.5-4/DUP-36 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K7S-3.5-4	Arsenic	210	U	NC	210	UJ	7
DUP-13	Arsenic	3200	NA		3200	J	7
DG-K7S-3.5-4	Beryllium	260	NA	NC	260	J	7
DUP-13	Beryllium	84	U		84	UJ	7
DG-K7S-3.5-4	Molybdenum	1300	NA	NC	1300	J	7
DUP-13	Molybdenum	170	U		170	UJ	7
DG-K7S-3.5-4	Selenium	860	J	NC	860	J	7
DUP-13	Selenium	390	U		390	UJ	7
DG-K7S-3.5-4	Silver	130	U	NC	130	UJ	7
DUP-13	Silver	450	J		450	J	7
DG-K7S-3.5-4	Thallium	360	U	NC	360	UJ	7
DUP-13	Thallium	2200	NA		2200	J	7
DG-I12S-3.5-4	Antimony	200	U	NC	200	UJ	7
DUP-33	Antimony	1400	NA		1400	J	7
DG-I12S-3.5-4	Arsenic	44000	NA	136	44000	J	7
DUP-33	Arsenic	230000	NA		230000	J	7
DG-I12S-3.5-4	Barium	63000	NA	62	63000	J	7
DUP-33	Barium	120000	NA		120000	J	7
DG-I12S-3.5-4	Beryllium	180	J	NC	180	J	7
DUP-33	Beryllium	85	U		85	UJ	7
DG-I12S-3.5-4	Cadmium	30	U	NC	30	UJ	7
DUP-33	Cadmium	96	J		96	J	7
DG-I12S-3.5-4	Chromium	50000	B	75	50000	J	7
DUP-33	Chromium	110000	NA		110000	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I12S-3.5-4	Cobalt	6800	NA	75	6800	J	7
DUP-33	Cobalt	15000	NA		15000	J	7
DG-I12S-3.5-4	Copper	14000	NA	53	14000	J	7
DUP-33	Copper	24000	NA		24000	J	7
DG-I12S-3.5-4	Lead	19000	NA	77	19000	J	7
DUP-33	Lead	43000	NA		43000	J	7
DG-I12S-3.5-4	Nickel	34000	NA	112	34000	J	7
DUP-33	Nickel	120000	NA		120000	J	7
DG-I12S-3.5-4	Silver	120	U	NC	120	UJ	7
DUP-33	Silver	230	J		230	J	7
DG-I12S-3.5-4	Thallium	350	U	NC	350	UJ	7
DUP-33	Thallium	880	J		880	J	7
DG-I12S-3.5-4	Vanadium	46000	NA	53	46000	J	7
DUP-33	Vanadium	79000	NA		79000	J	7
DG-K12S-0.5-1	Antimony	360	J	NC	360	J	7
DUP-34	Antimony	4400	NA		4400	J	7
DG-K12S-0.5-1	Beryllium	340	J	NC	340	J	7
DUP-34	Beryllium	110	U		110	UJ	7
DG-K12S-0.5-1	Selenium	2000	J	NC	2000	J	7
DUP-34	Selenium	500	U		500	UJ	7
DG-K12S-0.5-1	Silver	190	U	NC	190	UJ	7
DUP-34	Silver	1400	NA		1400	J	7
DG-K12S-0.5-1	Thallium	540	U	NC	540	UJ	7
DUP-34	Thallium	3900	NA		3900	J	7
DG-L13S-3.5-4	Antimony	590	J	NC	590	J	7
DUP-36	Antimony	5200	NA		5200	J	7
DG-L13S-3.5-4	Arsenic	33000	NA	60	33000	J	7
DUP-36	Arsenic	61000	NA		61000	J	7
DG-L13S-3.5-4	Barium	210000	NA	63	210000	J	7
DUP-36	Barium	110000	NA		110000	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L13S-3.5-4	Beryllium	520	NA	NC	520	J	7
DUP-36	Beryllium	90	U		90	UJ	7
DG-L13S-3.5-4	Cadmium	44	U	NC	44	UJ	7
DUP-36	Cadmium	52	J		52	J	7
DG-L13S-3.5-4	Chromium	180000	B	108	180000	J	7
DUP-36	Chromium	600000	NA		600000	J	7
DG-L13S-3.5-4	Cobalt	23000	NA	54	23000	J	7
DUP-36	Cobalt	40000	NA		40000	J	7
DG-L13S-3.5-4	Lead	11000	NA	133	11000	J	7
DUP-36	Lead	2200	NA		2200	J	7
DG-L13S-3.5-4	Nickel	140000	NA	88	140000	J	7
DUP-36	Nickel	360000	NA		360000	J	7
DG-L13S-3.5-4	Selenium	1500	J	NC	1500	J	7
DUP-36	Selenium	420	U		420	UJ	7
DG-L13S-3.5-4	Silver	180	U	NC	180	UJ	7
DUP-36	Silver	590	J		590	J	7
DG-L13S-3.5-4	Thallium	510	U	NC	510	UJ	7
DUP-36	Thallium	1800	NA		1800	J	7

µg/kg - Microgram per kilogram.
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250541). Mercury was not detected in the method blank above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using

sample DG-L13S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Four field duplicate samples, DUP-13, DUP-33, DUP-34 and DUP-36, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-K7S-3.5-4, DG-I12S-3.5-4, DG-K12S-0.5-1 and DG-L13S-3.5-4, respectively.

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	5 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88241-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of six soil samples, collected 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88241-1	DG-F9S-0.5-1
720-88241-2	DG-F9S-3.5-4
720-88241-3	DG-F9S-9.5-10

Laboratory ID	Client ID
720-88241-4	DG-D9S-0.5-1
720-88241-5	DG-D9S-3.5-4
720-88241-6	DG-D9S-9.5-10

The samples were received at TA Pleasanton, California at 1.4^{o}C and at TA Canton, Ohio at 1.4^{o}C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank

- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recoveries for samples DG-F9S-3.5-4 and DG-D9S-3.5-4 were low and outside the laboratory specified acceptance criteria. The chlorobenzene-d5 and 1,4-dichlorobenzene-d4 internal standard recoveries for sample DG-F9S-9.5-10 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated analytes in these samples were UJ qualified as estimated less than the method detection limits (MDLs).

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-D9S-3.5-4	1,1,2,2-Tetrachloroethane	0.63	U*	0.63	UJ	11
DG-D9S-3.5-4	1,2,3-Trichlorobenzene	0.62	U*	0.62	UJ	11
DG-D9S-3.5-4	1,2,3-Trichloropropane	0.65	U*	0.65	UJ	11
DG-D9S-3.5-4	1,2,4-Trichlorobenzene	0.60	U*	0.60	UJ	11
DG-D9S-3.5-4	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-D9S-3.5-4	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-D9S-3.5-4	1,2-Dichlorobenzene	0.57	U*	0.57	UJ	11
DG-D9S-3.5-4	1,3,5-Trimethylbenzene	0.55	U*	0.55	UJ	11
DG-D9S-3.5-4	1,3-Dichlorobenzene	0.61	U*	0.61	UJ	11
DG-D9S-3.5-4	1,4-Dichlorobenzene	0.60	U*	0.60	UJ	11
DG-D9S-3.5-4	2-Chlorotoluene	0.55	U*	0.55	UJ	11
DG-D9S-3.5-4	4-Chlorotoluene	0.57	U*	0.57	UJ	11
DG-D9S-3.5-4	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-D9S-3.5-4	Bromobenzene	0.66	U*	0.66	UJ	11
DG-D9S-3.5-4	Hexachlorobutadiene	0.76	U*	0.76	UJ	11
DG-D9S-3.5-4	Naphthalene	1.3	U*	1.3	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-D9S-3.5-4	n-Butylbenzene	0.84	U*	0.84	UJ	11
DG-D9S-3.5-4	N-Propylbenzene	0.55	U*	0.55	UJ	11
DG-D9S-3.5-4	sec-Butylbenzene	0.61	U*	0.61	UJ	11
DG-D9S-3.5-4	tert-Butylbenzene	0.61	U*	0.61	UJ	11
DG-F9S-3.5-4	1,1,2,2-Tetrachloroethane	0.67	U*	0.67	UJ	11
DG-F9S-3.5-4	1,2,3-Trichlorobenzene	0.66	U*	0.66	UJ	11
DG-F9S-3.5-4	1,2,3-Trichloropropane	0.69	U*	0.69	UJ	11
DG-F9S-3.5-4	1,2,4-Trichlorobenzene	0.64	U*	0.64	UJ	11
DG-F9S-3.5-4	1,2,4-Trimethylbenzene	1.5	U*	1.5	UJ	11
DG-F9S-3.5-4	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	11
DG-F9S-3.5-4	1,2-Dichlorobenzene	0.61	U*	0.61	UJ	11
DG-F9S-3.5-4	1,3,5-Trimethylbenzene	0.58	U*	0.58	UJ	11
DG-F9S-3.5-4	1,3-Dichlorobenzene	0.65	U*	0.65	UJ	11
DG-F9S-3.5-4	1,4-Dichlorobenzene	0.64	U*	0.64	UJ	11
DG-F9S-3.5-4	2-Chlorotoluene	0.58	U*	0.58	UJ	11
DG-F9S-3.5-4	4-Chlorotoluene	0.61	U*	0.61	UJ	11
DG-F9S-3.5-4	4-Isopropyltoluene	2.2	U*	2.2	UJ	11
DG-F9S-3.5-4	Bromobenzene	0.71	U*	0.71	UJ	11
DG-F9S-3.5-4	Hexachlorobutadiene	0.81	U*	0.81	UJ	11
DG-F9S-3.5-4	Naphthalene	1.3	U*	1.3	UJ	11
DG-F9S-3.5-4	n-Butylbenzene	0.90	U*	0.90	UJ	11
DG-F9S-3.5-4	N-Propylbenzene	0.59	U*	0.59	UJ	11
DG-F9S-3.5-4	sec-Butylbenzene	0.65	U*	0.65	UJ	11
DG-F9S-3.5-4	tert-Butylbenzene	0.66	U*	0.66	UJ	11
DG-F9S-9.5-10	1,1,1,2-Tetrachloroethane	0.78	U*	0.78	UJ	11
DG-F9S-9.5-10	1,1,2,2-Tetrachloroethane	0.77	U*	0.77	UJ	11
DG-F9S-9.5-10	1,2,3-Trichlorobenzene	0.76	U*	0.76	UJ	11
DG-F9S-9.5-10	1,2,3-Trichloropropane	0.79	U*	0.79	UJ	11
DG-F9S-9.5-10	1,2,4-Trichlorobenzene	0.73	U*	0.73	UJ	11
DG-F9S-9.5-10	1,2,4-Trimethylbenzene	1.7	U*	1.7	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-F9S-9.5-10	1,2-Dibromo-3-Chloropropane	1.8	U*	1.8	UJ	11
DG-F9S-9.5-10	1,2-Dichlorobenzene	0.70	U*	0.70	UJ	11
DG-F9S-9.5-10	1,3,5-Trimethylbenzene	0.67	U*	0.67	UJ	11
DG-F9S-9.5-10	1,3-Dichlorobenzene	0.74	U*	0.74	UJ	11
DG-F9S-9.5-10	1,4-Dichlorobenzene	0.73	U*	0.73	UJ	11
DG-F9S-9.5-10	2-Chlorotoluene	0.67	U*	0.67	UJ	11
DG-F9S-9.5-10	4-Chlorotoluene	0.70	U*	0.70	UJ	11
DG-F9S-9.5-10	4-Isopropyltoluene	2.6	U*	2.6	UJ	11
DG-F9S-9.5-10	Bromobenzene	0.81	U*	0.81	UJ	11
DG-F9S-9.5-10	Bromoform	2.1	U*	2.1	UJ	11
DG-F9S-9.5-10	Chlorobenzene	0.71	U*	0.71	UJ	11
DG-F9S-9.5-10	Ethylbenzene	0.77	U*	0.77	UJ	11
DG-F9S-9.5-10	Hexachlorobutadiene	0.93	U*	0.93	UJ	11
DG-F9S-9.5-10	Isopropylbenzene	0.70	U*	0.70	UJ	11
DG-F9S-9.5-10	Naphthalene	1.5	U*	1.5	UJ	11
DG-F9S-9.5-10	n-Butylbenzene	1.0	U*	1.0	UJ	11
DG-F9S-9.5-10	N-Propylbenzene	0.68	U*	0.68	UJ	11
DG-F9S-9.5-10	sec-Butylbenzene	0.74	U*	0.74	UJ	11
DG-F9S-9.5-10	Styrene	0.65	U*	0.65	UJ	11
DG-F9S-9.5-10	tert-Butylbenzene	0.75	U*	0.75	UJ	11
DG-F9S-9.5-10	Toluene	0.73	U*	0.73	UJ	11

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250622 and 250645). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250645 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The carbon disulfide and 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250622 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Field duplicate samples were not reported with the sample set.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250487 and 250853). PAHs were not detected in the method blanks above the MDLs, with the following exceptions.

Fluoranthene and phenanthrene were reported at estimated concentrations greater than the MDLs and less than the reporting limits (RLs) in the method blank in batch 250487. Therefore, the estimated fluoranthene concentrations in samples DG-K7S-0.5-1 and DG-L13S-0.5-1 and the estimated phenanthrene concentration in sample DG-D9S-9.5-10 were U qualified as not detected at the RLs.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-F9S-3.5-4	Fluoranthene	2.2	J B	4.8	U	3
DG-D9S-9.5-10	Fluoranthene	1.5	J B	4.8	U	3
DG-D9S-9.5-10	Phenanthrene	3.0	J B	4.8	U	3

µg/kg - Microgram per kilogram
B - Laboratory flag indicating the analyte was detected in the sample and method blank.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-F9S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

Field duplicate samples were not reported with the sample set.

2.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPD between the primary and confirmation columns was greater than 40% for cis-chlordane in sample DG-D9S-0.5-1. Therefore, the estimated cis-chlordane concentration in sample DG-D9S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-D9S-0.5-1	cis-Chlordane	0.59	J p	0.59	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250479). Organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Field duplicate samples were not reported with the sample set.

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C /8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate

- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of solid samples are 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 343099). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

The decachlorobiphenyl recovery in sample DG-F9S-3.5-4 was low and outside the laboratory specified acceptance criteria. Since the tetrachloro-m-xylene recovery was acceptable, no qualifications were applied to the data.

4.7 Field Duplicate

Field duplicate samples were not reported with the sample set.

4.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250461). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

5.7 Field Duplicate

Field duplicate samples were not reported with the sample set.

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Serial Dilution
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250513). Metals were not detected in the method blank above the MDLs.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

Serial dilutions were not reported with the sample set.

6.7 Field Duplicate

Field duplicate samples were not reported with the sample set.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250548). Mercury was not detected in the method blank above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Field duplicate samples were not reported with the sample set.

7.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88255-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of ten groundwater samples, one field duplicate sample, one field blank and one trip blank, collected 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5030B/8260B
- 1,2,3-Trichloropropane by USEPA Methods 5030B/8260B using Selected Ion Monitoring (SIM)
- Diesel Range Organics (DRO) by USEPA Methods 3510C/8015B
- Dissolved Metals by USEPA Methods 3010A/6010B
- Dissolved Mercury by USEPA Method 7470A
- Hexavalent Chromium (Cr VI) by USEPA Method 7196A

USEPA methods 5030B/8260BSIM were performed at TA Irvine, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to holding time exceedances, the non-detect Cr VI results in samples DG-A7W, DG-B9W, DUP-14, DG-C7W, DG-E7W, DG-G7W, DG-I7W, DG-M7W, DG-F9W, DG-DE89W and DG-D9W were R qualified as rejected. See section 5.2 below.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88255-1	DG-A7W
720-88255-2	DG-C7W
720-88255-3	DG-E7W
720-88255-4	DG-G7W
720-88255-5	DG-I7W
720-88255-6	DG-M7W
720-88255-7	DG-F9W

Laboratory ID	Client ID
720-88255-8	DG-DE89W
720-88255-9	DG-D9W
720-88255-10	DG-B9W
720-88255-11	TB-4
720-88255-12	FB-4
720-88255-13	DUP-14

The samples were received by TA Pleasanton, California at 3.0°C and by TA Irvine, California at 2.4°C and 2.7°C, within the criteria of ≤6°C.

Incorrect error corrections were observed on the original chain of custody (COC) instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1,2,3-Trichloropropane by California Department of Health Services Division of Drinking Water and Environmental Management Sanitation and Radiation Laboratories Branch (SRL) Method Modified 524.2 was listed on the COC; however, the client later requested 1,2,3-trichloropropane by 8260B-SIM. 8260B-SIM was used to analyze the samples for 1,2,3-trichloropropane.

The COC did not specify whether the metals samples were total or dissolved. The client confirmed the metals samples were field filtered.

Sample collection times were not listed on the COC for TB-4, FB-4, and DUP-14. The laboratory assigned collection times of 00:00.

The year was not listed on the COC for the sample collection dates, and for the first sample transfer and the second sampling relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA methods 5030B/8260B and for 1,2,3-trichloropropane by EPA methods 5030B/8260B-SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for these analyses, for the data set is 100%.

It was noted in the case narrative that the recovery of 2,2-dichloropropane in the continuing calibration verification (CCV) in batch 250463 was high, outside the method specified acceptance criteria. Since the bias was high and 2,2-dichloropropane was not detected in the associated samples, no qualifications were applied to the data.

The narrative indicated that the samples were collected in properly preserved vials. However, the pH of sample DG-M7W was outside the required acceptance criteria, pH<2, when verified by the laboratory at analysis by EPA method 8260B. Since the sample was analyzed within the seven day holding time for samples with a pH >2, no qualifications were applied to the data.

The narrative indicated samples DG-G7W and DUP-14 for VOC analysis by EPA method 8260B and sample DG-G7W for 8260B SIM analysis were analyzed from vials with headspace. Therefore, based on professional and technical judgement, the non-detect VOC results in samples DG-G7W and DUP-14 were UJ qualified as estimated less than the method detection limits (MDLs), the nondetect 1,2,3-trichloropropane result in sample DG-G7W was UJ qualified as estimated less than the MDL and the VOC concentrations in samples DG-G7W and DUP-14 were J qualified as estimated.

The narrative indicated the gasoline range organics (GRO) concentration in sample DG-A7W was due to the presence of discrete peaks trichloroethane, cis-1,2-dichloroethene and trans-1,2-dichloroethene and the GRO concentration in sample DUP-14 was due to the presence of discrete peaks trichloroethane, cis-1,2-dichloroethene and vinyl chloride. Therefore, based on professional and technical judgement, the GRO concentrations in these two samples were J qualified as estimated.

Sample ID	**Analyte**	**Laboratory Result (µg/L)**	**Laboratory Flag**	**Validation Result (µg/L)**	**Validation Qualifier ****	**Reason code *****
DG-A7W	Gasoline Range Organics (GRO)-C4-C12	280	NA	280	J	13
DUP-14	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DUP-14	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DUP-14	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DUP-14	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U,*	0.091	UJ	1
DUP-14	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DUP-14	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DUP-14	1,1-Dichloroethene	0.20	U,*	0.20	UJ	1
DUP-14	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DUP-14	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DUP-14	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DUP-14	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DUP-14	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier **	Reason code ***
DUP-14	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DUP-14	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DUP-14	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DUP-14	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DUP-14	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DUP-14	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DUP-14	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DUP-14	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DUP-14	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DUP-14	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DUP-14	2-Chlorotoluene	0.2	U	0.2	UJ	1
DUP-14	2-Hexanone	3.0	U	3.0	UJ	1
DUP-14	4-Chlorotoluene	0.20	U	0.20	UJ	1
DUP-14	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DUP-14	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DUP-14	Acetone	20	U	20	UJ	1
DUP-14	Benzene	0.25	U	0.25	UJ	1
DUP-14	Bromobenzene	0.20	U	0.20	UJ	1
DUP-14	Bromoform	0.50	U	0.50	UJ	1
DUP-14	Bromomethane	0.49	U	0.49	UJ	1
DUP-14	Carbon disulfide	0.78	U,*	0.78	UJ	1
DUP-14	Carbon tetrachloride	0.11	U	0.11	UJ	1
DUP-14	Chlorobenzene	0.13	U	0.13	UJ	1
DUP-14	Chlorobromomethane	0.25	U,*	0.25	UJ	1
DUP-14	Chlorodibromomethane	0.10	U	0.10	UJ	1
DUP-14	Chloroethane	0.17	U	0.17	UJ	1
DUP-14	Chloroform	0.40	U	0.40	UJ	1
DUP-14	Chloromethane	0.19	U	0.19	UJ	1
DUP-14	cis-1,2-Dichloroethene	21	NA	21	J	1
DUP-14	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DUP-14	Dibromomethane	0.30	U	0.30	UJ	1
DUP-14	Dichlorobromomethane	0.20	U	0.20	UJ	1
DUP-14	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DUP-14	Ethylbenzene	0.13	U	0.13	UJ	1
DUP-14	Ethylene Dibromide	0.075	U	0.075	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier **	Reason code ***
DUP-14	Gasoline Range Organics (GRO)-C4-C12	30	J	30	J	1, 13
DUP-14	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DUP-14	Isopropylbenzene	0.20	U	0.20	UJ	1
DUP-14	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DUP-14	Methylene Chloride	1.5	U	1.5	UJ	1
DUP-14	Naphthalene	0.22	U	0.22	UJ	1
DUP-14	n-Butylbenzene	0.30	U	0.30	UJ	1
DUP-14	N-Propylbenzene	0.20	U	0.20	UJ	1
DUP-14	sec-Butylbenzene	0.17	U	0.17	UJ	1
DUP-14	Styrene	0.22	U	0.22	UJ	1
DUP-14	tert-Butylbenzene	0.20	U	0.20	UJ	1
DUP-14	Tetrachloroethene	0.20	U	0.20	UJ	1
DUP-14	Toluene	0.17	U	0.17	UJ	1
DUP-14	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DUP-14	Trichloroethene	5.9	NA	5.9	J	1
DUP-14	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DUP-14	Vinyl acetate	0.60	U	0.60	UJ	1
DUP-14	Vinyl chloride	16	NA	16	J	1
DUP-14	Xylenes, Total	0.40	U	0.40	UJ	1
DUP-14	trans-1,2-Dichloroethene	1.2	NA	1.2	J	1
DG-G7W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-G7W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-G7W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-G7W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U,*	0.091	UJ	1
DG-G7W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-G7W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-G7W	1,1-Dichloroethene	0.20	U,*	0.20	UJ	1
DG-G7W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-G7W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-G7W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-G7W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-G7W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier **	Reason code ***
DG-G7W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-G7W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-G7W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-G7W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-G7W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-G7W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-G7W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-G7W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-G7W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-G7W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-G7W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-G7W	2-Hexanone	3.0	U	3.0	UJ	1
DG-G7W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-G7W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-G7W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-G7W	Acetone	20	U	20	UJ	1
DG-G7W	Benzene	0.25	U	0.25	UJ	1
DG-G7W	Bromobenzene	0.20	U	0.20	UJ	1
DG-G7W	Bromoform	0.50	U	0.50	UJ	1
DG-G7W	Bromomethane	0.49	U	0.49	UJ	1
DG-G7W	Carbon disulfide	0.78	U,*	0.78	UJ	1
DG-G7W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-G7W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-G7W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-G7W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-G7W	Chloroethane	0.17	U	0.17	UJ	1
DG-G7W	Chloroform	0.40	U	0.40	UJ	1
DG-G7W	Chloromethane	0.19	U	0.19	UJ	1
DG-G7W	cis-1,2-Dichloroethene	23	NA	23	J	1
DG-G7W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-G7W	Dibromomethane	0.30	U	0.30	UJ	1
DG-G7W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-G7W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-G7W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-G7W	Ethylene Dibromide	0.075	U	0.075	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier **	Reason code ***
DG-G7W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-G7W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-G7W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-G7W	Methylene Chloride	1.5	U,*	1.5	UJ	1
DG-G7W	Naphthalene	0.22	U	0.22	UJ	1
DG-G7W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-G7W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-G7W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-G7W	Styrene	0.22	U	0.22	UJ	1
DG-G7W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-G7W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-G7W	Toluene	0.17	U	0.17	UJ	1
DG-G7W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-G7W	Trichloroethene	15	NA	15	J	1
DG-G7W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-G7W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-G7W	Vinyl chloride	4.6	NA	4.6	J	1
DG-G7W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-G7W	trans-1,2-Dichloroethene	1.9	NA	1.9	J	1
DG-G7W	1,2,3-Trichloropropane	0.0025	U	0.0025	UJ	1
DG-G7W	Gasoline Range Organics (GRO)-C4-C12	54	NA	54	J	1

µg/L - Microgram per liter.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the reporting limit (RL) and greater than the MDL.
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the laboratory control sample (LCS)/LCS duplicate (LCSD) recovery and/or relative percent difference (RPD) results are outside acceptance criteria.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding time for the VOC analysis of a preserved water sample for method 8260B-SIM or USEPA method 8260B is 14 days from sample collection to analysis. The holding time for VOC analysis of a sample with pH>2 is seven days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six method blanks were reported (8260B batches 250641, 250643, 250725, and 250832 and 8260B-SIM batches 496565 and 496818). VOCs were not detected in the method blanks above the MDLs, with the following exception.

Styrene was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 250725. Since styrene was not detected in the associated samples, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported for 8260 SIM, using sample DG-DE89W. The recovery and RPD results were within the laboratory specified acceptance criteria.

Five batch MS/MSD pairs were also reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Eight LCS/LCSD pairs and two LCSs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, carbon disulfide, methylene chloride, and trans-1,2-dichloroethene recoveries in the LCS/LCSD pair in batch 250641 and one or both of the 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, carbon disulfide, chlorobromomethane and trans-1,2-dichloroethene recoveries in the LCS/LCSD pair in batch 250725 were high and outside the laboratory specified acceptance criteria. Since these analytes were not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

One trip blank was submitted for USEPA method 8260B and 8260B SIM analysis, TB-4. VOCs were not detected in the trip blank above the MDLs.

1.8 Field Blank

One field blank was submitted for USEPA method 8260B and 8260B SIM analysis, FB-4. VOCs were not detected in the field blanks above the MDLs.

1.9 Field Duplicate

One field duplicate sample, DUP-14, was collected with the sample set. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, DG-I7W.

1.10 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 7.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates

- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

2.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250415). DRO was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. An LCS/LCSD pair was used to assess precision and accuracy.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

2.7 Field Blank

A field blank was collected with the sample set, but not analyzed for DRO.

2.8 Field Duplicate

One field duplicate sample, DUP-14, was collected with the sample set. Acceptable precision (RPD ≤30%) was demonstrated between the field duplicate and the original sample, DG-I7W.

2.9 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

2.10 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 DISSOLVED METALS

The samples were analyzed for dissolved metals per USEPA Methods 3010A/6010B (mercury evaluated separately in Section 4.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ⊗ Matrix Spike/Matrix Spike Duplicate
- ⊗ Serial Dilution
- ✓ Laboratory Control Sample
- ✓ Field Blank
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Deliverable Review

3.1 Overall Assessment

The dissolved metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding time for the metals analyses of a water sample is 180 days from collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250603 and 250673). Metals were not detected in the method blanks above the MDLs, with the following exception.

Silver was detected in the method blank in batch 250673 at an estimated concentration greater than the MDL and less than the RL. Since the associated sample results were greater than the RL or dissolved silver was not detected, no qualifications were applied to the data.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-A7W. The recovery and RPD results were within the laboratory specified acceptance criteria with the following exception.

The zinc MSD recovery was high, and outside the laboratory specified acceptance criteria. Therefore, the concentration of dissolved zinc in sample DG-A7W was J+ qualified as estimated with a high bias.

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-A7W	Zinc, dissolved	0.048	F1	0.048	J+	4

mg/L - Milligram per liter.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.

One batch MS/MSD pair was also reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

3.5 Serial Dilution

The narrative indicated that one serial dilution using sample DG-A7W was analyzed. The RPD results were within the laboratory specified acceptance criteria, with the following exception.

The barium RPD result was high and outside the laboratory specified acceptance criteria. Therefore, the dissolved barium concentration in sample DG-A7W was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-A7W	Barium, dissolved	0.15	NA	0.15	J	8

mg/L - Milligram per liter
NA - Not applicable

3.6 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.7 Field Blank

A field blank was collected with the sample set, but not analyzed for metals.

3.8 Field Duplicate

One field duplicate sample, DUP-14, was collected with the sample set. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, DG-DG-I7W, with the following exceptions.

Dissolved silver was detected at an estimated concentration greater than the RL in sample DG-I7W and not detected in field duplicate DUP-14, resulting in a non-calculable RPD. Therefore, the non-detect dissolved silver result in field duplicate DUP-14 was UJ qualified as estimated less than the MDL and the dissolved silver concentration in DG-I7W was J qualified as estimated.

Dissolved chromium and cobalt were detected in sample DG-I7W at concentrations greater than the RL and detected at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-14, resulting in a non-calculable RPD results. Therefore, the dissolved chromium and cobalt concentrations in field duplicate pair DG-I7W/DUP-14 were J qualified as estimated.

Dissolved lead was detected in field duplicate DUP-14 and not detected in sample DG-I7W, resulting in a non-calculable RPD result. Therefore, the non-detect dissolved lead result in sample DG-I7W was UJ qualified as estimated less than the MDL and the dissolved lead concentration in field duplicate DUP-14 was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	RPD %	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-I7W	Silver, dissolved	0.015	NA	NC	0.015	J	7
DUP-14	Silver, dissolved	0.0012	U		0.0012	UJ	7
DG-I7W	Chromium, dissolved	0.027	NA	NC	0.027	J	7
DUP-14	Chromium, dissolved	0.0015	J		0.0015	J	7
DG-I7W	Cobalt, dissolved	0.002	NA	NC	0.002	J	7
DUP-14	Cobalt, dissolved	0.0013	J		0.0013	J	7
DG-I7W	Lead, dissolved	0.0023	U	NC	0.0023	UJ	7
DUP-14	Lead, dissolved	0.0094	NA		0.0094	J	7

mg/L - Milligram per liter
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL
NA – not applicable

3.9 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 7.

3.10 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 DISSOLVED MERCURY

The samples were analyzed for dissolved mercury per USEPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Deliverable Review

4.1 Overall Assessment

The dissolved mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

4.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250432 and 250639). Mercury was not detected in the method blanks above the MDL.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-E7W. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exception.

The MS recovery was low and RPD was high, both outside the laboratory specified acceptance criteria. Therefore, the dissolved mercury concentration in sample DG-E7W was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-E7W	Mercury, dissolved	0.00025	F1, F2	0.00025	J	4

mg/L - Milligram per liter.
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria.
F2 – Laboratory flag indicating the RPD is outside the acceptance criteria.

One batch MS/MSD pair was also reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Field Blank

A field blank was collected with the sample set, but not analyzed for mercury.

4.7 Field Duplicate

One field duplicate sample, DUP-14, was collected with the sample set. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, DG-I7W.

4.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 HEXAVALENT CHROMIUM

The samples were analyzed for Cr VI per USEPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

Due to holding time exceedances, the non-detect Cr VI results in the samples were R qualified as rejected. Therefore, the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 0%.

5.2 Holding Times

The holding times for the Cr VI analysis of a water sample is 24 hours from sample collection to analysis. The holding times were not met for the sample analyses; the samples were analyzed 80 hours after collection. Therefore, based on professional and technical judgment, the non-detect Cr VI results in samples DG-A7W, DG-B9W, DUP-14, DG-C7W, DG-E7W, DG-G7W, DG-I7W, DG-M7W, DG-F9W, DG-DE89W and DG-D9W were R qualified as rejected.

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-A7W	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-B9W	Cr (VI)	0.0037	U,H	0.0037	R	2
DUP-14	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-C7W	Cr (VI)	0.0037	U,H	0.0037	R	2

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-E7W	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-G7W	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-I7W	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-M7W	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-F9W	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-DE89W	Cr (VI)	0.0037	U,H	0.0037	R	2
DG-D9W	Cr (VI)	0.0037	U,H	0.0037	R	2

Mg/L – Milligram per liter.
H - Laboratory flag indicating that the sample was prepared or analyzed outside the specified holding time.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250337). Cr VI was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-A7W. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.6 Field Blank

A field blank was collected with the sample set, but not analyzed for Cr VI.

5.7 Field Duplicate

One field duplicate sample, DUP-14, was collected with the sample set. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicate and the original sample, DG-I7W.

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

5.9 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Tony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level IV Data Deliverable, TestAmerica Work Order Number 720-88260-1, Revision 1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of three solid samples, collected 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional

Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88260-1	DG-F11S-3.5-4
720-88260-2	DG-H11S-0.5-1
720-88260-3	DG-H11S-3.5-4

The samples were received at TA Pleasanton, California at 2.8^{o}C, and at TA Canton, Ohio at 0.8^{o}C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not listed on the COC for the sample collection dates, and for the first sample transfer and the second sample relinquishing documentation.

It was noted in the case narrative the first sixteen samples listed on the COC were duplicated from a previous COC reported on job 720-88240. Only the last three samples were received with this COC. Samples; DG-F11S-3.5-4, DG-H11S-0.5-1.0 and DG-H11S-3.5-4.

The report was revised on 11/14/18 to change the units for the metals results and to correct the sample ID for DG-F11S-3.5-4. The revised report was identified as 720-88260-1, Revision 1.

1.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The sample was analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

1.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250580). PAHs were not detected in the method blank above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Field Duplicate

Field duplicates were not collected with the sample set.

1.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

1.9 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 ORGANOCHLORINE PESTICIDES

The sample was analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The concentration of cis-chlordane in sample DG-F11S-3.5-4 was flagged with a "p", indicating that the relative percent difference (RPD) between the primary and confirmation gas chromatography (GC) columns was >40%; the lower value was reported. Therefore, based on professional and technical judgment, the concentration of cis-chlordane in this sample was J qualified as estimated.

Sample ID	Compound	Laboratory Result (ug/Kg)	Laboratory Flag	Validation Result (ug/Kg)	Validation Qualifier *	Reason Code **
DG-F11S-3.5-4	cis-Chlordane	780	p	780	J	13

µg/kg - Microgram per kilogram
p - Laboratory flag indicating the %RPD between the primary and confirmation column is >40%
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report

2.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250531). The organochlorine pesticides were not detected in the method blank above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses, with the following exception.

The surrogates were diluted out of sample DG-F11S-3.5-4. Based on professional and technical judgment, no qualifications were applied to the data.

2.7 Field Duplicate

Field duplicates were not collected with the sample set.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 POLYCHLORINATED BIPHENYLS

The sample was analyzed for PCBs per USEPA Methods 3540C/8082.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank

- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the PCB analysis of solid samples are 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 343157). PCBs were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Field duplicates were not collected with the sample set.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 DIESEL RANGE ORGANICS

The sample was analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250566). DRO was not detected in the method blank above the MDL.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogates were diluted out of sample DG-F11S-3.5-4. Based on professional and technical judgment, no qualifications were applied to the data.

4.7 Field Duplicate

Field duplicates were not collected with the sample set.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 6.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250513). Metals were not detected in the method blank above the MDLs.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-H11S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The beryllium recovery was high and outside the laboratory specified acceptance criteria. Since beryllium was not detected in sample DG-H11S-0.5-1, no qualifications were applied to the data.

One or both of the recoveries of lead, silver, and zinc were high and outside the laboratory specified acceptance criteria. Since the post digestion spike (PDS) recoveries for these three metals were less than 125%, the concentrations of lead, silver and zinc in sample DG-H11S-0.5-1 were J qualified as estimated.

One or both of the recoveries of barium, copper and zinc were high and outside the laboratory specified acceptance criteria. Since the post digestion spike (PDS) recoveries for these three metals were greater than 125%, the concentrations of barium, copper and vanadium in sample DG-H11S-0.5-1 were J+ qualified as estimated with high biases.

The antimony recoveries were low and outside the laboratory specified acceptance criteria. The PDS recovery was within the laboratory specified acceptance criteria. Therefore, the estimated antimony concentration in sample DG-H11S-0.5-1 was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (mg/kg)	Laboratory Flag	Validation Result (mg/kg)	Validation Qualifier	Reason Code
DG-H11S-0.5-1	Antimony	1.2	J F1	1.2	J	4
DG-H11S-0.5-1	Barium	27	F1	27	J+	4
DG-H11S-0.5-1	Copper	120	F1	120	J+	4
DG-H11S-0.5-1	Lead	120	F1	120	J	4
DG-H11S-0.5-1	Silver	0.24	J F1	0.24	J	4
DG-H11S-0.5-1	Vanadium	120	F1	120	J+	4
DG-H11S-0.5-1	Zinc	100	F1	100	J	4

mg/kg - Milligram per kilogram

J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

5.6 Serial Dilution

The narrative indicated that one serial dilution was analyzed, using sample DG-H11S-0.5-1. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, cobalt, lead and vanadium RPDs were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of of barium, cobalt, lead in sample DG-H11S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (mg/kg)	Laboratory Flag	Validation Result (mg/kg)	Validation Qualifier	Reason Code
DG-H11S-0.5-1	Barium	27	F1	27	J	8
DG-H11S-0.5-1	Cobalt	17	NA	17	J	8
DG-H11S-0.5-1	Lead	120	F1	120	J	8

mg/kg - Milligram per kilogram
F1- Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
NA - Not applicable

5.7 Field Duplicate

Field duplicates were not collected with the sample set.

5.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level IV report at a minimum of 20%. No discrepancies were identified between the level IV report and the EDD.

6.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250614). Mercury

was detected in the method blank at an estimated concentration greater than the MDL and less than the RL. Since mercury was detected in the associated samples at concentrations greater than the RL, no qualifications were applied to the data.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Field Duplicate

Field duplicates were not collected with the sample set.

6.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

6.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88261-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of fifteen soil samples, including one matrix spike/matrix spike duplicate pair (MS/MSD) analyses, collected 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88261-1	DG-J11S-0.5-1
720-88261-2	DG-J11S-3.5-4
720-88261-3	DG-L11S-0.5-1
720-88261-4	DG-L11S-3.5-4
720-88261-5	DG-M10S-0.5-1
720-88261-6	DG-M10S-3.5-4
720-88261-7	DG-M9S-0.5-1
720-88261-8	DG-M9S-3.5-4

Laboratory ID	Client ID
720-88261-9	DG-K9S-0.5-1
720-88261-10	DG-K9S-3.5-4
720-88261-11	DG-I9S-0.5-1
720-88261-12	DG-E9S-0.5-1
720-88261-13	DG-E9S-3.5-4
720-88261-14	DG-I9S-3.5-4
720-88261-15	DG-F11S-0.5-1

The samples were received at TA Pleasanton, California at 5.0°C, and at TA Canton, Ohio at 0.8°C, within the criteria of ≤6°C. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not listed on the COC for the sample collection dates, and for the first sample transfer and the second sampling relinquishing documentation.

It was noted in the case narrative that sample DG-I9S-0.5-1 was received outside of the method 5035 specified holding time for freezing samples. The sample was analyzed from the methanol-preserved aliquot, which was preserved within the holding time. Refer to section 1.2.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

As noted above, the Terracore aliquot of sample of DG-I9S-0.5-1 was received outside of the holding time. The sample was analyzed from the methanol preserved aliquot within the 14 day holding time. Therefore, no qualifications were applied to the data.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250928). VOCs were not detected in the method blank above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

One or both of the 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, 1,1-dichloroethane and trans-1,2-dichloroethene recoveries in batch 250928 were high and outside the laboratory specified acceptance criteria. Since 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, 1,1-dichloroethane and trans-1,2-dichloroethene were not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples. This did not result in qualification of the data, but should be noted by the data user.

1.8 Field Duplicate

Field duplicates associated with this sample set were collected and reported in 720-88262-1, but not analyzed for VOCs.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results for sample DG-I9S-0.5-1 were reported due to the methanol sample extraction. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The sample was analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered to be usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250580). PAHs were not detected in the method blank above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

2.7 Field Duplicate

Field duplicates associated with this sample set were collected and reported in 720-88262-1, but not analyzed for PAHs.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results for sample DG-I9S-0.5-1 were reported due to dilution analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The sample was analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250531). The organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses, with the following exception.

The surrogates were diluted out of sample DG-I9S-0.5-1. Based on professional and technical judgment, no qualifications were applied to the data.

3.7 Field Duplicate

Field duplicates associated with this sample set were collected and reported in 720-88262-1, but not analyzed for organochlorine pesticides.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results for sample DG-I9S-0.5-1 were reported due to dilution analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C/8082.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment

- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding times for the PCB analysis of solid samples are 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 343157). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

Field duplicates associated with this sample set were collected and reported in 720-88262-1, but not analyzed for PCBs.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250566). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

5.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses, with the following exception.

The surrogates were diluted out of sample DG-I9S-0.5-1. Based on professional and technical judgment, no qualifications were applied to the data.

5.7 Field Duplicate

Field duplicates associated with this sample set were collected and reported in 720-88262-1, but not analyzed for DRO.

5.8 Sensitivity

The samples were reported to the MDL. An elevated non-detect result for sample DG-I9S-0.5-1 was reported due to dilution analyzed. The MDL met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the

number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

It was noted in the case narrative that the recoveries for the internal standards in the interference check standard ICSAB were outside the method specified acceptance criteria in batch 250879. Since the results in the ICSAB were within the method specified acceptance criteria and based on professional and technical judgement, no qualifications were applied to the data.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250633 and 250637). Metals were not detected in the method blanks above the MDLs.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-M9S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The copper recoveries were low and outside the laboratory specified acceptance criteria. Since the copper concentration in the sample was greater than four times the spike concentration, no qualifications were applied to the data.

One or both of the recoveries of the following metals were high and outside the laboratory specified acceptance criteria: silver, beryllium, barium, chromium, lead, vanadium and zinc. In addition, the RPDs for lead and vanadium were high and outside the laboratory specified acceptance criteria. Since the post digestion spike (PDS) recoveries for these metals were greater than 125%, except zinc which was less than 125%, the concentrations of barium and chromium in sample DG-M9S-0.5-1 were J+ qualified as estimated with a high bias. The estimated concentrations of beryllium and silver and the lead, vanadium and zinc concentrations were J qualified as estimated.

The antimony recoveries were low and outside the laboratory specified acceptance criteria. Since the post digestion spike (PDS) recovery for antimony was less than 125%, the antimony concentration in sample DG-M9S-0.5-1 was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier *	Reason Code **
DG-M9S-0.5-1	Antimony	4800	F1	4800	J	4
DG-M9S-0.5-1	Barium	77000	F1	77000	J+	4
DG-M9S-0.5-1	Beryllium	240	J F1	240	J	4
DG-M9S-0.5-1	Chromium	34000	F1	34000	J+	4
DG-M9S-0.5-1	Lead	120000	F1 F2	120000	J	4
DG-M9S-0.5-1	Silver	570	J F1	570	J	4
DG-M9S-0.5-1	Vanadium	44000	F1 F2	44000	J	4
DG-M9S-0.5-1	Zinc	83000	F1	83000	J	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
F2 – Laboratory flag indicating the RPD is outside the acceptance criteria
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report

One batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

The narrative indicated that one serial dilution was analyzed, using sample DG-M9S-0.5-1. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, chromium, cobalt, copper, lead, nickel, vanadium and arsenic RPDs were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of barium, chromium, cobalt, copper, lead, nickel, vanadium and arsenic in sample DG-M9S-0.5-1 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-M9S-0.5-1	Arsenic	25000	NA	25000	J	8
DG-M9S-0.5-1	Barium	77000	F1	77000	J	8
DG-M9S-0.5-1	Chromium	34000	F1	34000	J	8
DG-M9S-0.5-1	Cobalt	21000	NA	21000	J	8
DG-M9S-0.5-1	Copper	240000	NA	240000	J	8
DG-M9S-0.5-1	Lead	120000	F1 F2	120000	J	8
DG-M9S-0.5-1	Nickel	58000	NA	58000	J	8
DG-M9S-0.5-1	Vanadium	44000	F1 F2	44000	J	8

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
F2 – Laboratory flag indicating the RPD is outside the acceptance criteria
NA - Not applicable

6.7 Field Duplicate

Two field duplicate samples were collected with the samples in this sample set and reported in 720-88262-1, DUP-21 and DUP-29. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-M9S-3.5-4 and DG-M10S-0.5-1, respectively, with the following exceptions.

The RPDs for antimony, chromium and nickel in field duplicate pair DG-M10S-0.5-1/ DUP-29 were greater than 50%. Therefore, the concentrations of antimony, chromium and nickel in this field duplicate pair were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD %	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-M10S-0.5-1	Antimony	1800	NA	86	1800	J	7
DUP-29	Antimony	4500	NA		4500	J	7
DG-M10S-0.5-1	Chromium	26000	NA	54	26000	J	7
DUP-29	Chromium	45000	NA		45000	J	7
DG-M10S-0.5-1	Nickel	21000	NA	58	21000	J	7
DUP-29	Nickel	38000	NA		38000	J	7

µg/kg - Microgram per kilogram.
NA - Not applicable

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250621 and 250662). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-M9S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Two field duplicate samples were collected with the samples in this sample set and reported in 720-88262-1, DUP-21 and DUP-29. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-M9S-3.5-4 and DG-M10S-0.5-1, respectively.

7.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88262-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of two solid field duplicate samples, collected 24 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88262-1	DUP-29

Laboratory ID	Client ID
720-88262-2	DUP-21

The samples were received at TA Pleasanton, California at 1.9°C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not listed on the COC for the sample collection dates, and for the first sample transfer and the second sampling relinquishing documentation.

It was noted in the case narrative that samples DUP-13, DUP-36, DUP-34, and DUP-33 were listed on this COC. These field duplicate samples were reported in job 720-88240-1.

1.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Serial Dilation
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the

number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

It was noted in the case narrative that the recoveries for the internal standards in the interference check standard ICSAB were outside the method specified acceptance criteria in batch 250879. Since the results in the ICSAB were within the method specified acceptance criteria and based on professional and technical judgement, no qualifications were applied to the data.

1.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250633). Metals were not detected in the method blank above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Field Duplicate

Two field duplicate samples were reported, DUP-21 and DUP-29. Acceptable precision (relative percent difference, RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-M9S-3.5-4 and DG-M10S-0.5-1, respectively, with the following exceptions. Note: The original samples were reported in job 720-88261-1.

The RPDs were greater than 50% for antimony, chromium and nickel in field duplicate pair DG-M10S-0.5-1/DUP-29. Therefore, the concentrations of antimony, chromium and nickel in this field duplicate pair were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD %	Validation Result (µg/kg)	Validation Qualifier *	Reason Code **
DG-M10S-0.5-1	Antimony	1800	NA	86	1800	J	7
DUP-29	Antimony	4500	NA		4500	J	7
DG-M10S-0.5-1	Chromium	26000	NA	54	26000	J	7
DUP-29	Chromium	45000	NA		45000	J	7
DG-M10S-0.5-1	Nickel	21000	NA	58	21000	J	7
DUP-29	Nickel	38000	NA		38000	J	7

µg/kg - Microgram per kilogram
NA - Not applicable
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report

1.7 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

1.8 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample

- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250614). Mercury was detected in the method blank at an estimated concentration greater than the MDL and less than the reporting limit (RL). Since the associated sample results were greater than the RL, no qualifications were applied to the data based on professional and technical judgment.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Field Duplicate

Two field duplicate samples, DUP-21 and DUP-29, were reported. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-M9S-3.5-4 and DG-M10S-0.5-1, respectively. Note: The original samples were reported in job 720-88261-1.

2.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 6.

2.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	5 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88263-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of eighteen soil samples, collected 27 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B and 5030B/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives, with the following exceptions.

Due to 1,4-dichlorobenzene-d4 internal standard recovery less than 20%, the non-detect 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromo-3-chloropropane, 1,2-dichlorobenzene, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-chlorotoluene, 4-chlorotoluene, 4-isopropyltoluene, bromobenzene, hexachlorobutadiene, naphthalene, n-butylbenzene, n-propylbenzene, sec-butylbenzene and tert-butylbenzene results in sample DG-I11S-3.5-4 were R qualified as rejected. See section 1.1 below.

The remaining qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88263-1	DG-FG910S-0.5-1
720-88263-2	DG-F910S-3.5-4
720-88263-3	DG-H9S-0.5-1
720-88263-4	DG-H9S-3.5-4
720-88263-5	DG-H9S-9.5-10
720-88263-6	DG-L9S-0.5-1
720-88263-7	DG-L9S-3.5-4
720-88263-8	DG-M11S-0.5-1
720-88263-9	DG-M11S-3.5-4

Laboratory ID	Client ID
720-88263-10	DG-K11S-0.5-1
720-88263-11	DG-K11S-3.5-4
720-88263-12	DG-K11S-9.5-10
720-88263-13	DG-I11S-0.5-1
720-88263-14	DG-I11S-3.5-4
720-88263-15	DG-I11S-9.5-10
720-88263-16	DG-E11S-0.5-1
720-88263-17	DG-E11S-3.5-4
720-88263-18	DG-E11S-9.5-10

The samples were received at TA Pleasanton, California at 1.7°C and at TA Canton, Ohio at 0.8°C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The Terra Core vials for sample DG-L9S-3.5-4 were received empty at the laboratory. Therefore, the 8-oz. sample jar was used for the VOC analysis for sample DG-L9S-3.5-4. See section 1.1 below for qualifications.

The methanol Terra Core vial for sample DG-H9S-0.5-1 was received at the laboratory without a sample ID on the label. Since the methanol vial was received in the same bag as the deionized water vials, which were properly labeled, the laboratory assigned sample ID DG-H9S-0.5-1.

Field duplicate samples DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 were reported in job 720-88264-1; however, the following parent samples were reported in this job, 720-88263-1: DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B and 5030B/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives, with the following expectations.

Due to 1,4-dichlorobenzene-d4 internal standard recovery less than 20%, the non-detect 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,3-trichloropropane, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dibromo-3-chloropropane, 1,2-dichlorobenzene, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-chlorotoluene, 4-chlorotoluene, 4-isopropyltoluene, bromobenzene, hexachlorobutadiene, naphthalene, n-butylbenzene, n-propylbenzene, sec-butylbenzene and tert-butylbenzene results in sample DG-I11S-3.5-4 were R qualified as rejected.

The remaining results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 99.1%.

The narrative and Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4, chlorobenzene-d5 and fluorobenzene internal standard recoveries for samples DG-H9S-3.5-4 and DG-I11S-3.5-4 were low and outside the laboratory specified acceptance criteria. The 1,4-dichlorobenzene-d4 internal standard recoveries for samples DG-K11S-9.5-10, DG-I11S-0.5-1 and DG-M11S-3.5-4 were low and outside the laboratory specified acceptance criteria. The 1,4-dichlorobenzene-d4 and chlorobenzene-d5 internal standard recoveries for samples DG-I11S-9.5-10 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated analytes in these samples were UJ qualified as estimated less than the method detection limits (MDLs), the estimated concentrations were J qualified as estimated and the concentrations were J+ qualified as estimated with a high bias. Additionally, the 1,4-dichlorobenzene-d4 recovery in sample DG-I11S-9.5-10 was less than 20%; therefore, the non-detect results associated with 1,4-dichlorobenzene-d4 in sample DG-I11S-9.5-10 were R qualified as rejected.

The narrative indicated that the 8-oz. jar was used for the 5030B/8260B VOC analysis of sample DG-L9S-3.5-4 instead of the Terra Core collected sample; this is inconsistent with the QAPP specified method for extraction, USEPA method 5035. Therefore, based on professional and technical judgment, the non-detect VOC results in sample DG-L9S-3.5-4 were UJ qualified as estimated less than the MDLs. The results are considered screening level results and should not be used to make project decisions based on the non-detect results.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-H9S-3.5-4	1,1,1,2-Tetrachloroethane	0.59	U*	0.59	UJ	11
DG-H9S-3.5-4	1,1,1-Trichloroethane	0.47	U*	0.47	UJ	11
DG-H9S-3.5-4	1,1,2,2-Tetrachloroethane	0.58	U*	0.58	UJ	11
DG-H9S-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	1.6	U*	1.6	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-H9S-3.5-4	1,1,2-Trichloroethane	0.54	U*	0.54	UJ	11
DG-H9S-3.5-4	1,1-Dichloroethane	0.53	U*	0.53	UJ	11
DG-H9S-3.5-4	1,1-Dichloroethene	0.48	U*	0.48	UJ	11
DG-H9S-3.5-4	1,1-Dichloropropene	0.54	U*	0.54	UJ	11
DG-H9S-3.5-4	1,2,3-Trichlorobenzene	0.57	U*	0.57	UJ	11
DG-H9S-3.5-4	1,2,3-Trichloropropane	0.60	U*	0.60	UJ	11
DG-H9S-3.5-4	1,2,4-Trichlorobenzene	0.55	U*	0.55	UJ	11
DG-H9S-3.5-4	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DG-H9S-3.5-4	1,2-Dibromo-3-Chloropropane	1.3	U*	1.3	UJ	11
DG-H9S-3.5-4	1,2-Dichlorobenzene	0.53	U*	0.53	UJ	11
DG-H9S-3.5-4	1,2-Dichloroethane	0.59	U*	0.59	UJ	11
DG-H9S-3.5-4	1,2-Dichloropropane	0.49	U*	0.49	UJ	11
DG-H9S-3.5-4	1,3,5-Trimethylbenzene	0.50	U*	0.50	UJ	11
DG-H9S-3.5-4	1,3-Dichlorobenzene	0.56	U*	0.56	UJ	11
DG-H9S-3.5-4	1,3-Dichloropropane	0.57	U*	0.57	UJ	11
DG-H9S-3.5-4	1,4-Dichlorobenzene	0.55	U*	0.55	UJ	11
DG-H9S-3.5-4	2,2-Dichloropropane	1.6	U*	1.6	UJ	11
DG-H9S-3.5-4	2-Butanone (MEK)	16	U*	16	UJ	11
DG-H9S-3.5-4	2-Chlorotoluene	0.50	U*	0.50	UJ	11
DG-H9S-3.5-4	2-Hexanone	7.8	U*	7.8	UJ	11
DG-H9S-3.5-4	4-Chlorotoluene	0.53	U*	0.53	UJ	11
DG-H9S-3.5-4	4-Isopropyltoluene	1.9	U*	1.9	UJ	11
DG-H9S-3.5-4	4-Methyl-2-pentanone (MIBK)	7.8	U*	7.8	UJ	11
DG-H9S-3.5-4	Acetone	30	U*	30	UJ	11
DG-H9S-3.5-4	Benzene	0.50	U*	0.50	UJ	11
DG-H9S-3.5-4	Bromobenzene	0.61	U*	0.61	UJ	11
DG-H9S-3.5-4	Bromoform	1.6	U*	1.6	UJ	11
DG-H9S-3.5-4	Bromomethane	0.61	U*	0.61	UJ	11
DG-H9S-3.5-4	Carbon disulfide	1.6	U*	1.6	UJ	11
DG-H9S-3.5-4	Carbon tetrachloride	0.48	U*	0.48	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-H9S-3.5-4	Chlorobenzene	0.54	U*	0.54	UJ	11
DG-H9S-3.5-4	Chlorobromomethane	0.56	U*	0.56	UJ	11
DG-H9S-3.5-4	Chlorodibromomethane	0.55	U*	0.55	UJ	11
DG-H9S-3.5-4	Chloroethane	0.44	U*	0.44	UJ	11
DG-H9S-3.5-4	Chloroform	0.51	U*	0.51	UJ	11
DG-H9S-3.5-4	Chloromethane	0.61	U*	0.61	UJ	11
DG-H9S-3.5-4	cis-1,2-Dichloroethene	0.53	U*	0.53	UJ	11
DG-H9S-3.5-4	cis-1,3-Dichloropropene	0.54	U*	0.54	UJ	11
DG-H9S-3.5-4	Dibromomethane	0.67	U*	0.67	UJ	11
DG-H9S-3.5-4	Dichlorobromomethane	0.56	U*	0.56	UJ	11
DG-H9S-3.5-4	Dichlorodifluoromethane	0.61	U*	0.61	UJ	11
DG-H9S-3.5-4	Ethylbenzene	0.58	U*	0.58	UJ	11
DG-H9S-3.5-4	Ethylene Dibromide	1.1	U*	1.1	UJ	11
DG-H9S-3.5-4	Gasoline Range Organics (GRO)-C4-C12	78	U*	78	UJ	11
DG-H9S-3.5-4	Hexachlorobutadiene	0.70	U*	0.70	UJ	11
DG-H9S-3.5-4	Isopropylbenzene	0.53	U*	0.53	UJ	11
DG-H9S-3.5-4	Methyl tert-butyl ether	0.93	U*	0.93	UJ	11
DG-H9S-3.5-4	Methylene Chloride	4.4	U*	4.4	UJ	11
DG-H9S-3.5-4	Naphthalene	1.2	U*	1.2	UJ	11
DG-H9S-3.5-4	n-Butylbenzene	0.78	U*	0.78	UJ	11
DG-H9S-3.5-4	N-Propylbenzene	0.51	U*	0.51	UJ	11
DG-H9S-3.5-4	sec-Butylbenzene	0.56	U*	0.56	UJ	11
DG-H9S-3.5-4	Styrene	0.49	U*	0.49	UJ	11
DG-H9S-3.5-4	tert-Butylbenzene	0.57	U*	0.57	UJ	11
DG-H9S-3.5-4	Tetrachloroethene	0.52	U*	0.52	UJ	11
DG-H9S-3.5-4	Toluene	0.55	U*	0.55	UJ	11
DG-H9S-3.5-4	trans-1,2-Dichloroethene	0.58	U*	0.58	UJ	11
DG-H9S-3.5-4	trans-1,3-Dichloropropene	0.52	U*	0.52	UJ	11
DG-H9S-3.5-4	Trichloroethene	0.49	U*	0.49	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-H9S-3.5-4	Trichlorofluoromethane	0.44	U*	0.44	UJ	11
DG-H9S-3.5-4	Vinyl acetate	3.9	U*	3.9	UJ	11
DG-H9S-3.5-4	Vinyl chloride	0.57	U*	0.57	UJ	11
DG-I11S-0.5-1	1,1,2,2-Tetrachloroethane	0.64	U*	0.64	UJ	11
DG-I11S-0.5-1	1,2,3-Trichlorobenzene	0.64	U*	0.64	UJ	11
DG-I11S-0.5-1	1,2,3-Trichloropropane	0.66	U*	0.66	UJ	11
DG-I11S-0.5-1	1,2,4-Trichlorobenzene	0.61	U*	0.61	UJ	11
DG-I11S-0.5-1	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-I11S-0.5-1	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	UJ	11
DG-I11S-0.5-1	1,2-Dichlorobenzene	0.58	U*	0.58	UJ	11
DG-I11S-0.5-1	1,3,5-Trimethylbenzene	0.56	U*	0.56	UJ	11
DG-I11S-0.5-1	1,3-Dichlorobenzene	0.62	U*	0.62	UJ	11
DG-I11S-0.5-1	1,4-Dichlorobenzene	0.61	U*	0.61	UJ	11
DG-I11S-0.5-1	2-Chlorotoluene	0.56	U*	0.56	UJ	11
DG-I11S-0.5-1	4-Chlorotoluene	0.58	U*	0.58	UJ	11
DG-I11S-0.5-1	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-I11S-0.5-1	Bromobenzene	0.68	U*	0.68	UJ	11
DG-I11S-0.5-1	Hexachlorobutadiene	0.77	U*	0.77	UJ	11
DG-I11S-0.5-1	Naphthalene	1.3	U*	1.3	UJ	11
DG-I11S-0.5-1	n-Butylbenzene	0.86	U*	0.86	UJ	11
DG-I11S-0.5-1	N-Propylbenzene	0.57	U*	0.57	UJ	11
DG-I11S-0.5-1	sec-Butylbenzene	0.62	U*	0.62	UJ	11
DG-I11S-0.5-1	tert-Butylbenzene	0.63	U*	0.63	UJ	11
DG-I11S-3.5-4	1,1,1,2-Tetrachloroethane	0.67	U*	0.67	UJ	11
DG-I11S-3.5-4	1,1,1-Trichloroethane	0.54	U*	0.54	UJ	11
DG-I11S-3.5-4	1,1,2,2-Tetrachloroethane	0.66	U*	0.66	R	11
DG-I11S-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	1.8	U*	1.8	UJ	11
DG-I11S-3.5-4	1,1,2-Trichloroethane	0.62	U*	0.62	UJ	11
DG-I11S-3.5-4	1,1-Dichloroethane	0.60	U*	0.60	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-I11S-3.5-4	1,1-Dichloroethene	0.55	U*	0.55	UJ	11
DG-I11S-3.5-4	1,1-Dichloropropene	0.61	U*	0.61	UJ	11
DG-I11S-3.5-4	1,2,3-Trichlorobenzene	0.65	U*	0.65	R	11
DG-I11S-3.5-4	1,2,3-Trichloropropane	0.68	U*	0.68	R	11
DG-I11S-3.5-4	1,2,4-Trichlorobenzene	0.62	U*	0.62	R	11
DG-I11S-3.5-4	1,2,4-Trimethylbenzene	1.4	U*	1.4	R	11
DG-I11S-3.5-4	1,2-Dibromo-3-Chloropropane	1.5	U*	1.5	R	11
DG-I11S-3.5-4	1,2-Dichlorobenzene	0.60	U*	0.60	R	11
DG-I11S-3.5-4	1,2-Dichloroethane	0.67	U*	0.67	UJ	11
DG-I11S-3.5-4	1,2-Dichloropropane	0.55	U*	0.55	UJ	11
DG-I11S-3.5-4	1,3,5-Trimethylbenzene	0.57	U*	0.57	R	11
DG-I11S-3.5-4	1,3-Dichlorobenzene	0.63	U*	0.63	R	11
DG-I11S-3.5-4	1,3-Dichloropropane	0.64	U*	0.64	UJ	11
DG-I11S-3.5-4	1,4-Dichlorobenzene	0.62	U*	0.62	R	11
DG-I11S-3.5-4	2,2-Dichloropropane	1.8	U*	1.8	UJ	11
DG-I11S-3.5-4	2-Butanone (MEK)	18	U*	18	UJ	11
DG-I11S-3.5-4	2-Chlorotoluene	0.57	U*	0.57	R	11
DG-I11S-3.5-4	2-Hexanone	8.8	U*	8.8	UJ	11
DG-I11S-3.5-4	4-Chlorotoluene	0.60	U*	0.60	R	11
DG-I11S-3.5-4	4-Isopropyltoluene	2.2	U*	2.2	R	11
DG-I11S-3.5-4	4-Methyl-2-pentanone (MIBK)	8.8	U*	8.8	UJ	11
DG-I11S-3.5-4	Acetone	33	U*	33	UJ	11
DG-I11S-3.5-4	Benzene	0.57	U*	0.57	UJ	11
DG-I11S-3.5-4	Bromobenzene	0.69	U*	0.69	R	11
DG-I11S-3.5-4	Bromoform	1.8	U*	1.8	UJ	11
DG-I11S-3.5-4	Bromomethane	0.69	U*	0.69	UJ	11
DG-I11S-3.5-4	Carbon disulfide	1.8	U*	1.8	UJ	11
DG-I11S-3.5-4	Carbon tetrachloride	0.55	U*	0.55	UJ	11
DG-I11S-3.5-4	Chlorobenzene	0.61	U*	0.61	UJ	11
DG-I11S-3.5-4	Chlorobromomethane	0.63	U*	0.63	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-I11S-3.5-4	Chlorodibromomethane	0.62	U*	0.62	UJ	11
DG-I11S-3.5-4	Chloroethane	0.49	U*	0.49	UJ	11
DG-I11S-3.5-4	Chloroform	0.58	U*	0.58	UJ	11
DG-I11S-3.5-4	Chloromethane	0.69	U*	0.69	UJ	11
DG-I11S-3.5-4	cis-1,2-Dichloroethene	0.60	U*	0.60	UJ	11
DG-I11S-3.5-4	cis-1,3-Dichloropropene	0.61	U*	0.61	UJ	11
DG-I11S-3.5-4	Dibromomethane	0.76	U*	0.76	UJ	11
DG-I11S-3.5-4	Dichlorobromomethane	0.63	U*	0.63	UJ	11
DG-I11S-3.5-4	Dichlorodifluoromethane	0.69	U*	0.69	UJ	11
DG-I11S-3.5-4	Ethylbenzene	0.66	U*	0.66	UJ	11
DG-I11S-3.5-4	Ethylene Dibromide	1.3	U*	1.3	UJ	11
DG-I11S-3.5-4	Gasoline Range Organics (GRO)-C4-C12	88	U*	88	UJ	11
DG-I11S-3.5-4	Hexachlorobutadiene	0.79	U*	0.79	R	11
DG-I11S-3.5-4	Isopropylbenzene	0.60	U*	0.60	UJ	11
DG-I11S-3.5-4	Methyl tert-butyl ether	1.1	U*	1.1	UJ	11
DG-I11S-3.5-4	Methylene Chloride	4.9	U*	4.9	UJ	11
DG-I11S-3.5-4	Naphthalene	1.3	U*	1.3	R	11
DG-I11S-3.5-4	n-Butylbenzene	0.88	U*	0.88	R	11
DG-I11S-3.5-4	N-Propylbenzene	0.58	U*	0.58	R	11
DG-I11S-3.5-4	sec-Butylbenzene	0.63	U*	0.63	R	11
DG-I11S-3.5-4	Styrene	0.55	U*	0.55	UJ	11
DG-I11S-3.5-4	tert-Butylbenzene	0.64	U*	0.64	R	11
DG-I11S-3.5-4	Tetrachloroethene	0.59	U*	0.59	UJ	11
DG-I11S-3.5-4	Toluene	0.62	U*	0.62	UJ	11
DG-I11S-3.5-4	trans-1,2-Dichloroethene	0.66	U*	0.66	UJ	11
DG-I11S-3.5-4	trans-1,3-Dichloropropene	0.59	U*	0.59	UJ	11
DG-I11S-3.5-4	Trichloroethene	0.55	U*	0.55	UJ	11
DG-I11S-3.5-4	Trichlorofluoromethane	0.49	U*	0.49	UJ	11
DG-I11S-3.5-4	Vinyl acetate	4.4	U*	4.4	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-I11S-3.5-4	Vinyl chloride	0.64	U*	0.64	UJ	11
DG-I11S-9.5-10	1,1,1,2-Tetrachloroethane	0.95	U*	0.95	UJ	11
DG-I11S-9.5-10	1,1,1-Trichloroethane	0.76	U*	0.76	UJ	11
DG-I11S-9.5-10	1,1,2,2-Tetrachloroethane	0.94	U*	0.94	UJ	11
DG-I11S-9.5-10	1,1,2-Trichloro-1,2,2-trifluoroethane	2.6	U*	2.6	UJ	11
DG-I11S-9.5-10	1,1,2-Trichloroethane	0.87	U*	0.87	UJ	11
DG-I11S-9.5-10	1,1-Dichloroethane	0.85	U*	0.85	UJ	11
DG-I11S-9.5-10	1,1-Dichloroethene	0.77	U*	0.77	UJ	11
DG-I11S-9.5-10	1,1-Dichloropropene	0.86	U*	0.86	UJ	11
DG-I11S-9.5-10	1,2,3-Trichlorobenzene	0.92	U*	0.92	UJ	11
DG-I11S-9.5-10	1,2,3-Trichloropropane	0.96	U*	0.96	UJ	11
DG-I11S-9.5-10	1,2,4-Trichlorobenzene	0.89	U*	0.89	UJ	11
DG-I11S-9.5-10	1,2,4-Trimethylbenzene	2.0	U*	2.0	UJ	11
DG-I11S-9.5-10	1,2-Dibromo-3-Chloropropane	2.1	U*	2.1	UJ	11
DG-I11S-9.5-10	1,2-Dichlorobenzene	0.85	U*	0.85	UJ	11
DG-I11S-9.5-10	1,2-Dichloroethane	0.95	U*	0.95	UJ	11
DG-I11S-9.5-10	1,2-Dichloropropane	0.79	U*	0.79	UJ	11
DG-I11S-9.5-10	1,3,5-Trimethylbenzene	0.81	U*	0.81	UJ	11
DG-I11S-9.5-10	1,3-Dichlorobenzene	0.90	U*	0.90	UJ	11
DG-I11S-9.5-10	1,3-Dichloropropane	0.91	U*	0.91	UJ	11
DG-I11S-9.5-10	1,4-Dichlorobenzene	0.89	U*	0.89	UJ	11
DG-I11S-9.5-10	2,2-Dichloropropane	2.5	U*	2.5	UJ	11
DG-I11S-9.5-10	2-Butanone (MEK)	26	U*	26	UJ	11
DG-I11S-9.5-10	2-Chlorotoluene	0.81	U*	0.81	UJ	11
DG-I11S-9.5-10	2-Hexanone	12	U*	12	UJ	11
DG-I11S-9.5-10	4-Chlorotoluene	0.85	U*	0.85	UJ	11
DG-I11S-9.5-10	4-Isopropyltoluene	3.1	U*	3.1	UJ	11
DG-I11S-9.5-10	4-Methyl-2-pentanone (MIBK)	12	U*	12	UJ	11
DG-I11S-9.5-10	Acetone	160	*	160	J+	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-I11S-9.5-10	Benzene	0.81	U*	0.81	UJ	11
DG-I11S-9.5-10	Bromobenzene	0.99	U*	0.99	UJ	11
DG-I11S-9.5-10	Bromoform	2.5	U*	2.5	UJ	11
DG-I11S-9.5-10	Bromomethane	0.99	U*	0.99	UJ	11
DG-I11S-9.5-10	Carbon disulfide	4.3	J *	4.3	J	11
DG-I11S-9.5-10	Carbon tetrachloride	0.77	U*	0.77	UJ	11
DG-I11S-9.5-10	Chlorobenzene	0.86	U*	0.86	UJ	11
DG-I11S-9.5-10	Chlorobromomethane	0.90	U*	0.90	UJ	11
DG-I11S-9.5-10	Chlorodibromomethane	0.89	U*	0.89	UJ	11
DG-I11S-9.5-10	Chloroethane	0.70	U*	0.70	UJ	11
DG-I11S-9.5-10	Chloroform	0.82	U*	0.82	UJ	11
DG-I11S-9.5-10	Chloromethane	0.99	U*	0.99	UJ	11
DG-I11S-9.5-10	cis-1,2-Dichloroethene	0.85	U*	0.85	UJ	11
DG-I11S-9.5-10	cis-1,3-Dichloropropene	0.86	U*	0.86	UJ	11
DG-I11S-9.5-10	Dibromomethane	1.1	U*	1.1	UJ	11
DG-I11S-9.5-10	Dichlorobromomethane	0.90	U*	0.90	UJ	11
DG-I11S-9.5-10	Dichlorodifluoromethane	0.99	U*	0.99	UJ	11
DG-I11S-9.5-10	Ethylbenzene	0.94	U*	0.94	UJ	11
DG-I11S-9.5-10	Ethylene Dibromide	1.8	U*	1.8	UJ	11
DG-I11S-9.5-10	Gasoline Range Organics (GRO)-C4-C12	120	U*	120	UJ	11
DG-I11S-9.5-10	Hexachlorobutadiene	1.1	U*	1.1	UJ	11
DG-I11S-9.5-10	Isopropylbenzene	0.85	U*	0.85	UJ	11
DG-I11S-9.5-10	Methyl tert-butyl ether	1.5	U*	1.5	UJ	11
DG-I11S-9.5-10	Methylene Chloride	7.0	U*	7.0	UJ	11
DG-I11S-9.5-10	Naphthalene	1.9	U*	1.9	UJ	11
DG-I11S-9.5-10	n-Butylbenzene	1.2	U*	1.2	UJ	11
DG-I11S-9.5-10	N-Propylbenzene	0.82	U*	0.82	UJ	11
DG-I11S-9.5-10	sec-Butylbenzene	0.90	U*	0.90	UJ	11
DG-I11S-9.5-10	Styrene	0.79	U*	0.79	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-I11S-9.5-10	tert-Butylbenzene	0.91	U*	0.91	UJ	11
DG-I11S-9.5-10	Tetrachloroethene	0.84	U*	0.84	UJ	11
DG-I11S-9.5-10	Toluene	0.89	U*	0.89	UJ	11
DG-I11S-9.5-10	trans-1,2-Dichloroethene	0.94	U*	0.94	UJ	11
DG-I11S-9.5-10	trans-1,3-Dichloropropene	0.84	U*	0.84	UJ	11
DG-I11S-9.5-10	Trichloroethene	0.79	U*	0.79	UJ	11
DG-I11S-9.5-10	Trichlorofluoromethane	0.70	U*	0.70	UJ	11
DG-I11S-9.5-10	Vinyl acetate	6.2	U*	6.2	UJ	11
DG-I11S-9.5-10	Vinyl chloride	0.91	U*	0.91	UJ	11
DG-K11S-9.5-10	1,1,2,2-Tetrachloroethane	0.63	U*	0.63	UJ	11
DG-K11S-9.5-10	1,2,3-Trichlorobenzene	0.62	U*	0.62	UJ	11
DG-K11S-9.5-10	1,2,3-Trichloropropane	0.65	U*	0.65	UJ	11
DG-K11S-9.5-10	1,2,4-Trichlorobenzene	0.60	U*	0.60	UJ	11
DG-K11S-9.5-10	1,2,4-Trimethylbenzene	1.4	U*	1.4	UJ	11
DG-K11S-9.5-10	1,2-Dibromo-3-Chloropropane	1.4	U*	1.4	UJ	11
DG-K11S-9.5-10	1,2-Dichlorobenzene	0.57	U*	0.57	UJ	11
DG-K11S-9.5-10	1,3,5-Trimethylbenzene	0.55	U*	0.55	UJ	11
DG-K11S-9.5-10	1,3-Dichlorobenzene	0.61	U*	0.61	UJ	11
DG-K11S-9.5-10	1,4-Dichlorobenzene	0.60	U*	0.60	UJ	11
DG-K11S-9.5-10	2-Chlorotoluene	0.55	U*	0.55	UJ	11
DG-K11S-9.5-10	4-Chlorotoluene	0.57	U*	0.57	UJ	11
DG-K11S-9.5-10	4-Isopropyltoluene	2.1	U*	2.1	UJ	11
DG-K11S-9.5-10	Bromobenzene	0.66	U*	0.66	UJ	11
DG-K11S-9.5-10	Hexachlorobutadiene	0.76	U*	0.76	UJ	11
DG-K11S-9.5-10	Naphthalene	1.3	U*	1.3	UJ	11
DG-K11S-9.5-10	n-Butylbenzene	0.84	U*	0.84	UJ	11
DG-K11S-9.5-10	N-Propylbenzene	0.56	U*	0.56	UJ	11
DG-K11S-9.5-10	sec-Butylbenzene	0.61	U*	0.61	UJ	11
DG-K11S-9.5-10	tert-Butylbenzene	0.61	U*	0.61	UJ	11
DG-L9S-3.5-4	1,1,1,2-Tetrachloroethane	0.73	U	0.73	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-L9S-3.5-4	1,1,1-Trichloroethane	0.59	U	0.59	UJ	1
DG-L9S-3.5-4	1,1,2,2-Tetrachloroethane	0.72	U	0.72	UJ	1
DG-L9S-3.5-4	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	U	2.0	UJ	1
DG-L9S-3.5-4	1,1,2-Trichloroethane	0.67	U	0.67	UJ	1
DG-L9S-3.5-4	1,1-Dichloroethane	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	1,1-Dichloroethene	0.60	U*	0.60	UJ	1
DG-L9S-3.5-4	1,1-Dichloropropene	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	1,2,3-Trichlorobenzene	0.71	U	0.71	UJ	1
DG-L9S-3.5-4	1,2,3-Trichloropropane	0.74	U	0.74	UJ	1
DG-L9S-3.5-4	1,2,4-Trichlorobenzene	0.68	U	0.68	UJ	1
DG-L9S-3.5-4	1,2,4-Trimethylbenzene	1.6	U	1.6	UJ	1
DG-L9S-3.5-4	1,2-Dibromo-3-Chloropropane	1.6	U	1.6	UJ	1
DG-L9S-3.5-4	1,2-Dichlorobenzene	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	1,2-Dichloroethane	0.73	U	0.73	UJ	1
DG-L9S-3.5-4	1,2-Dichloropropane	0.61	U	0.61	UJ	1
DG-L9S-3.5-4	1,3,5-Trimethylbenzene	0.63	U	0.63	UJ	1
DG-L9S-3.5-4	1,3-Dichlorobenzene	0.69	U	0.69	UJ	1
DG-L9S-3.5-4	1,3-Dichloropropane	0.70	U	0.70	UJ	1
DG-L9S-3.5-4	1,4-Dichlorobenzene	0.68	U	0.68	UJ	1
DG-L9S-3.5-4	2,2-Dichloropropane	1.9	U	1.9	UJ	1
DG-L9S-3.5-4	2-Butanone (MEK)	20	U	20	UJ	1
DG-L9S-3.5-4	2-Chlorotoluene	0.63	U	0.63	UJ	1
DG-L9S-3.5-4	2-Hexanone	9.6	U	9.6	UJ	1
DG-L9S-3.5-4	4-Chlorotoluene	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	4-Isopropyltoluene	2.4	U	2.4	UJ	1
DG-L9S-3.5-4	4-Methyl-2-pentanone (MIBK)	9.6	U	9.6	UJ	1
DG-L9S-3.5-4	Acetone	37	U	37	UJ	1
DG-L9S-3.5-4	Benzene	0.63	U	0.63	UJ	1
DG-L9S-3.5-4	Bromobenzene	0.76	U	0.76	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-L9S-3.5-4	Bromoform	1.9	U	1.9	UJ	1
DG-L9S-3.5-4	Bromomethane	0.76	U	0.76	UJ	1
DG-L9S-3.5-4	C4-C10	100	U	100	UJ	1
DG-L9S-3.5-4	Carbon disulfide	1.9	U*	1.9	UJ	1
DG-L9S-3.5-4	Carbon tetrachloride	0.60	U	0.60	UJ	1
DG-L9S-3.5-4	Chlorobenzene	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	Chlorobromomethane	0.69	U	0.69	UJ	1
DG-L9S-3.5-4	Chlorodibromomethane	0.68	U	0.68	UJ	1
DG-L9S-3.5-4	Chloroethane	0.54	U	0.54	UJ	1
DG-L9S-3.5-4	Chloroform	0.64	U	0.64	UJ	1
DG-L9S-3.5-4	Chloromethane	0.76	U	0.76	UJ	1
DG-L9S-3.5-4	cis-1,2-Dichloroethene	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	cis-1,3-Dichloropropene	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	Dibromomethane	0.83	U	0.83	UJ	1
DG-L9S-3.5-4	Dichlorobromomethane	0.69	U	0.69	UJ	1
DG-L9S-3.5-4	Dichlorodifluoromethane	0.76	U	0.76	UJ	1
DG-L9S-3.5-4	Ethylbenzene	0.72	U	0.72	UJ	1
DG-L9S-3.5-4	Ethylene Dibromide	1.4	U	1.4	UJ	1
DG-L9S-3.5-4	Gasoline Range Organics (GRO)-C4-C12	100	U	100	UJ	1
DG-L9S-3.5-4	Hexachlorobutadiene	0.87	U	0.87	UJ	1
DG-L9S-3.5-4	Isopropylbenzene	0.66	U	0.66	UJ	1
DG-L9S-3.5-4	Methyl tert-butyl ether	1.2	U	1.2	UJ	1
DG-L9S-3.5-4	Methylene Chloride	5.4	U	5.4	UJ	1
DG-L9S-3.5-4	Naphthalene	1.5	U*	1.5	UJ	1
DG-L9S-3.5-4	n-Butylbenzene	0.96	U	0.96	UJ	1
DG-L9S-3.5-4	N-Propylbenzene	0.64	U	0.64	UJ	1
DG-L9S-3.5-4	sec-Butylbenzene	0.69	U	0.69	UJ	1
DG-L9S-3.5-4	Styrene	0.61	U	0.61	UJ	1
DG-L9S-3.5-4	tert-Butylbenzene	0.70	U	0.70	UJ	1

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-L9S-3.5-4	Tetrachloroethene	0.65	U	0.65	UJ	1
DG-L9S-3.5-4	Toluene	0.68	U	0.68	UJ	1
DG-L9S-3.5-4	trans-1,2-Dichloroethene	0.72	U	0.72	UJ	1
DG-L9S-3.5-4	trans-1,3-Dichloropropene	0.65	U	0.65	UJ	1
DG-L9S-3.5-4	Trichloroethene	0.61	U	0.61	UJ	1
DG-L9S-3.5-4	Trichlorofluoromethane	0.54	U	0.54	UJ	1
DG-L9S-3.5-4	Vinyl acetate	4.8	U	4.8	UJ	1
DG-L9S-3.5-4	Vinyl chloride	0.70	U	0.70	UJ	1
DG-L9S-3.5-4	Xylenes, Total	1.2	U	1.2	UJ	1
DG-M11S-3.5-4	1,1,2,2-Tetrachloroethane	0.74	U*	0.74	UJ	11
DG-M11S-3.5-4	1,2,3-Trichlorobenzene	0.73	U*	0.73	UJ	11
DG-M11S-3.5-4	1,2,3-Trichloropropane	0.76	U*	0.76	UJ	11
DG-M11S-3.5-4	1,2,4-Trichlorobenzene	0.70	U*	0.70	UJ	11
DG-M11S-3.5-4	1,2,4-Trimethylbenzene	1.6	U*	1.6	UJ	11
DG-M11S-3.5-4	1,2-Dibromo-3-Chloropropane	1.7	U*	1.7	UJ	11
DG-M11S-3.5-4	1,2-Dichlorobenzene	0.67	U*	0.67	UJ	11
DG-M11S-3.5-4	1,3,5-Trimethylbenzene	0.64	U*	0.64	UJ	11
DG-M11S-3.5-4	1,3-Dichlorobenzene	0.71	U*	0.71	UJ	11
DG-M11S-3.5-4	1,4-Dichlorobenzene	0.70	U*	0.70	UJ	11
DG-M11S-3.5-4	2-Chlorotoluene	0.64	U*	0.64	UJ	11
DG-M11S-3.5-4	4-Chlorotoluene	0.67	U*	0.67	UJ	11
DG-M11S-3.5-4	4-Isopropyltoluene	2.5	U*	2.5	UJ	11
DG-M11S-3.5-4	Bromobenzene	0.78	U*	0.78	UJ	11
DG-M11S-3.5-4	Hexachlorobutadiene	0.89	U*	0.89	UJ	11
DG-M11S-3.5-4	Naphthalene	1.5	U*	1.5	UJ	11
DG-M11S-3.5-4	n-Butylbenzene	0.98	U*	0.98	UJ	11
DG-M11S-3.5-4	N-Propylbenzene	0.65	U*	0.65	UJ	11
DG-M11S-3.5-4	sec-Butylbenzene	0.71	U*	0.71	UJ	11
DG-M11S-3.5-4	tert-Butylbenzene	0.72	U*	0.72	UJ	11

µg/kg - Microgram per kilogram

J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the reporting limit (RL) and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

As noted above, sample DG-L9S-3.5-4 was analyzed from the 8-oz. jar instead of the QAPP-specified Terra Core samplers; the sample was prepared nine and ten days after collection. Since the VOC results for this samples were UJ qualified due to analysis from the 8-oz. jar, no additional qualifications were applied to the data.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five method blanks were reported (batches 250625, 250626, 250644, 250750 and 250946). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Batch MS/MSD pairs were reported in batches 250750 and 250946. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batches 250625, 250626 and 250644. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy in these batches.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Ten LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250625 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250626 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250644 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The carbon disulfide recovery in the LCS and the ,1,2-trichloro-1,2,2-trifluoroethane recovery in the LCSD in batch 250750 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 (all from work order 720-88264-1), were collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively, with the following exceptions.

Acetone was reported at concentrations greater than the MDLs in field duplicates DUP-22, DUP-23 and DUP-31and not detected in samples DG-L9S-0.5-1, DG-H9S-3.5-4 and DG-I11S-3.5-4, respectively, resulting in non-calculable RPD results. Therefore, the non-detect acetone results in samples DG-L9S-0.5-1, DG-H9S-3.5-4 and DG-I11S-3.5-4 were UJ qualified as estimated less than the MDLs.

GRO was reported at a concentration greater than the MDL in field duplicate DUP-32 (from job 720-88264-1) and not detected in sample DG-E11S-0.5-1, resulting in a non-calculable RPD. Therefore, the non-detect GRO result in sample DG-E11S-0.5-1 was UJ qualified as estimated less than the MDL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I11S-3.5-4	Acetone	33	U*	33	UJ	7
DG-E11S-0.5-1	Gasoline Range Organics (GRO)-C4-C12	81	U	81	UJ	7
DG-H9S-3.5-4	Acetone	30	U*	30	UJ	7
DG-L9S-0.5-1	Acetone	45	U	45	UJ	7

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample

✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative and Internal Standard Recovery Report indicated that the 1 perylene-d12 internal standard recovery for sample DG-I11S-3.5-4 was low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated analytes in sample DG-I11S-3.5-4 were UJ qualified as estimated less than the MDLs.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I11S-3.5-4	Benzo[a]pyrene	15	U*	15	UJ	11
DG-I11S-3.5-4	Benzo[b]fluoranthene	16	U*	16	UJ	11
DG-I11S-3.5-4	Benzo[g,h,i]perylene	33	U*	33	UJ	11
DG-I11S-3.5-4	Benzo[k]fluoranthene	16	U*	16	UJ	11
DG-I11S-3.5-4	Dibenz(a,h)anthracene	27	U*	27	UJ	11
DG-I11S-3.5-4	Indeno[1,2,3-cd]pyrene	32	U*	32	UJ	11

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250580 and 250607). PAHs were not detected in the method blanks above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-K11S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The benzo[b]fluoranthene and benzo[k]fluoranthene MS recoveries were high and outside the laboratory specified acceptance criteria. Therefore, the benzo[b]fluoranthene and benzo[k]fluoranthene concentrations in sample DG-K11S-0.5-1 were J qualified as estimated.

One or both of the benzo[g,h,i]perylene, dibenz(a,h)anthracene and indeno[1,2,3-cd]pyrene recoveries in the MS/MSD pair were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect dibenz(a,h)anthracene result in sample DG-K11S-0.5-1 was UJ qualified as estimated less than the MDL and the benzo[g,h,i]perylene and indeno[1,2,3-cd]pyrene concentrations were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K11S-0.5-1	Benzo[b]fluoranthene	33	F1	33	J	4
DG-K11S-0.5-1	Benzo[g,h,i]perylene	9.4	F1	9.4	J	4
DG-K11S-0.5-1	Benzo[k]fluoranthene	14	F1	14	J	4
DG-K11S-0.5-1	Dibenz(a,h)anthracene	3.4	UF1	3.4	UJ	4
DG-K11S-0.5-1	Indeno[1,2,3-cd]pyrene	8.7	F1	8.7	J	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recoveries were outside acceptance limits.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

There were no surrogate recoveries (0%) in samples DG-I11S-9.5-10, DG-E11S-0.5-1 and DG-E11S-3.5-4. Since the samples were analyzed at 1:10 dilutions, no qualifications were applied to the data based on professional and technical judgement.

2.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 (work order 720-88264-1), were collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively, with the following exceptions.

Anthracene and naphthalene were reported at concentrations greater than the MDLs in sample DG-L9S-0.5-1 and not detected in field duplicate DUP-22 (job 720-88264-1), resulting in non-calculable RPDs. Therefore, the anthracene and naphthalene concentrations in sample DG-L9S-0.5-1 were J qualified as estimated.

The benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, fluoranthene and pyrene RPD results for field duplicate pair DG-L9S-0.5-1/DUP-22 were greater than 50%. Therefore, the concentrations of these compounds in sample DG-L9S-0.5-1 were J qualified as estimated.

Benzo[a]pyrene and benzo[k]fluoranthene were reported at concentrations greater than the MDLs in sample DG-H9S-3.5-4 and not detected in field duplicate DUP-23 (from job 720-88264-1), resulting in non-calculable RPD results. Therefore, the benzo[a]pyrene and benzo[k]fluoranthene concentrations in sample DG-H9S-3.5-4 were J qualified as estimated.

Acenaphthylene was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-K11S-3.5-4 and not detected in field duplicate DUP-30 (from job 720-88264-1), resulting in a non-calculable RPD. Therefore, the estimated acenaphthylene concentration in sample DG-K11S-3.5-4 was J qualified as estimated.

Dibenz(a,h)anthracene and indeno[1,2,3-cd]pyrene were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-K11S-3.5-4 and at concentrations greater than the RLs in field duplicate DUP-30 (job 720-88264-1), resulting in non-calculable

RPDs. Therefore, the estimated dibenz(a,h)anthracene and indeno[1,2,3-cd]pyrene concentrations in sample DG-K11S-3.5-4 were J qualified as estimated.

The anthracene, benzo[b]fluoranthene and benzo[g,h,i]perylene RPD results for field duplicate pair DG-K11S-3.5-4/DUP-30 were greater than 50%. Therefore, the concentrations of these compounds in sample DG-K11S-3.5-4 were J qualified as estimated.

Acenaphthylene and naphthalene were reported at concentrations greater than the MDLs in field duplicate DUP-32 (job 720-88264-1) and not detected in sample DG-E11S-0.5-1, resulting in non-calculable RPDs. Therefore, the non-detect acenaphthylene and naphthalene results in sample DG-E11S-0.5-1 were UJ qualified as estimated less than the MDL.

Pyrene was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-E11S-0.5-1 and at a concentration greater than the RL in field duplicate DUP-32 (job 720-88264-1), resulting in a non-calculable RPD. Therefore, the estimated pyrene concentration in sample DG-E11S-0.5-1 was J qualified as estimated.

The anthracene RPD for field duplicate pair DG-E11S-0.5-1/DUP-32 was greater than 50%. Therefore, the anthracene concentration in sample DG-E11S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K11S-3.5-4	Acenaphthylene	2.7	J	2.7	J	7
DG-K11S-3.5-4	Anthracene	12	NA	12	J	7
DG-K11S-3.5-4	Benzo[b]fluoranthene	23	NA	23	J	7
DG-K11S-3.5-4	Benzo[g,h,i]perylene	6.6	NA	6.6	J	7
DG-K11S-3.5-4	Dibenz(a,h)anthracene	3.7	J	3.7	J	7
DG-K11S-3.5-4	Indeno[1,2,3-cd]pyrene	4.3	J	4.3	J	7
DG-E11S-0.5-1	Acenaphthylene	23	U	23	UJ	7
DG-E11S-0.5-1	Anthracene	140	NA	140	J	7
DG-E11S-0.5-1	Naphthalene	34	U	34	UJ	7
DG-E11S-0.5-1	Pyrene	36	J	36	J	7
DG-H9S-3.5-4	Benzo[a]pyrene	2.7	J	2.7	J	7
DG-H9S-3.5-4	Benzo[k]fluoranthene	2.0	J	2.0	J	7
DG-L9S-0.5-1	Anthracene	3.5	J	3.5	J	7
DG-L9S-0.5-1	Benzo[a]pyrene	9.1	NA	9.1	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-L9S-0.5-1	Benzo[b]fluoranthene	13	NA	13	J	7
DG-L9S-0.5-1	Benzo[g,h,i]perylene	5.3	NA	5.3	J	7
DG-L9S-0.5-1	Benzo[k]fluoranthene	6.4	NA	6.4	J	7
DG-L9S-0.5-1	Fluoranthene	13	NA	13	J	7
DG-L9S-0.5-1	Naphthalene	3.5	J	3.5	J	7
DG-L9S-0.5-1	Pyrene	16	NA	16	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate

✓ Sensitivity
✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPDs between the primary and confirmation columns were greater than 40% for cis-chlordane and trans-chlordane in sample DG-H9S-0.5-1. Therefore, the cis-chlordane and trans-chlordane concentrations in sample DG-H9S-0.5-1 were J qualified as estimated.

The narrative indicated that the RPD between the primary and confirmation columns was greater than 40% for 4,4'-DDT in sample DG-M11S-0.5-1. Therefore, the estimated 4,4'-DDT concentration in sample DG-M11S-0.5-1 was J qualified as estimated.

The narrative indicated that the RPDs between the primary and confirmation columns were greater than 40% for 4,4'-DDT and trans-chlordane in sample DG-K11S-0.5-1. Therefore, the 4,4'-DDT and trans-chlordane concentrations in sample DG-K11S-0.5-1 were J qualified as estimated.

The narrative indicated that the RPD between the primary and confirmation columns was greater than 40% for cis-chlordane in sample DG-I11S-0.5-1. Therefore, the estimated cis-chlordane concentration in sample DG-I11S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K11S-0.5-1	4,4'-DDT	2.2	p	2.2	J	13
DG-K11S-0.5-1	trans-Chlordane	1	J p	1	J	13
DG-I11S-0.5-1	cis-Chlordane	1.8	J p	1.8	J	13
DG-H9S-0.5-1	cis-Chlordane	0.77	J p	0.77	J	13
DG-H9S-0.5-1	trans-Chlordane	1.9	p	1.9	J	13
DG-M11S-0.5-1	4,4'-DDT	0.41	J p	0.41	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250531, 250595 and 250674). Organochlorine pesticides were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

There were no surrogate recoveries (0%) in sample DG-I11S-9.5-10. Since this sample was analyzed at a 1:10 dilution, no qualifications were applied to the data.

3.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 (job 720-88264-1), were collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively, with the following exceptions.

4,4'-DDT was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-L9S-0.5-1 and not detected in field duplicate DUP-22 (job 720-88264-1), resulting in a non-calculable RPD. Therefore, the estimated 4,4'-DDT concentration in sample DG-L9S-0.5-1 was J qualified as estimated.

Delta-BHC was reported at a concentration greater than the MDL in field duplicate DUP-30 (job 720-88264-1) and not detected in sample DG-K11S-3.5-4, resulting in a non-calculable RPD. Therefore, the non-detect delta-BHC result in sample DG-L9S-0.5-1 was UJ qualified as estimated less than the MDL.

trans-Chlordane was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-I11S-3.5-4 and not detected in field duplicate DUP-31 (job 720-88264-1), resulting in a non-calculable RPD. Therefore, the estimated trans-chlordane concentration in sample DG-I11S-3.5-4 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K11S-3.5-4	delta-BHC	0.43	U	0.43	UJ	7
DG-I11S-3.5-4	trans-Chlordane	1.3	J	1.3	J	7
DG-L9S-0.5-1	4,4'-DDT	0.41	J	0.41	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C /8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The estimated Aroclor-1260 concentration in sample DG-I11S-0.5-1 was 'p' flagged by the laboratory indicating that the RPD between the primary and confirmation columns was greater than 40%. Therefore, the estimated Aroclor-1260 concentration in sample DG-I11S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I11S-0.5-1	Aroclor-1260	42	J p	42	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 343157). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-E11S-9.5-10. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 (all from work order 720-88264-1), were collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250566). DRO was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-E11S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exceptions.

There were no surrogate recoveries (0%) in samples DG-I11S-3.5-4, DG-I11S-9.5-10, DG-E11S-0.5-1 and DG-E11S-3.5-4. Since this samples were analyzed at dilutions, no qualifications were applied to the data.

5.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 (job 720-88264-1), were collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively, with the following exceptions.

The DRO RPDs for field duplicate pairs DG-K11S-3.5-4/DUP-3, DG-I11S-3.5-4/DUP-31 and DG-E11S-0.5-1/DUP-32 were greater than 50%. Therefore, the DRO concentrations in samples DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K11S-3.5-4	Diesel Range Organics [C10-C28]	13000	NA	13000	J	7
DG-I11S-3.5-4	Diesel Range Organics [C10-C28]	340000	NA	340000	J	7
DG-E11S-0.5-1	Diesel Range Organics [C10-C28]	130000	NA	130000	J	7

µg/kg - Microgram per kilogram
NA - Not applicable.

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilution
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The laboratory 'L' flagged the non-detect beryllium result in sample DG-K11S-3.5-4 due to a negative instrument reading with an absolute value greater than the RL. Since the negative reading may indicate a false negative result and based on professional and technical judgement, the non-detect beryllium result in sample DG-K11S-3.5-4 was UJ qualified as estimated less than the MDL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K11S-3.5-4	Beryllium	120	UL	120	UJ	13

µg/kg - Microgram per kilogram
L - Laboratory flag indicating there was a negative instrument reading that had an absolute value greater than the RL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250513, 250563 and 250633). Metals were not detected in the method blanks above the MDLs.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-E11S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The antimony recoveries in the MS/MSD pair were low and outside the laboratory specified acceptance criteria. Therefore, the estimated antimony concentration in sample DG-E11S-0.5-1 was J- qualified as estimated with a low bias.

One or both of the barium, beryllium, chromium, cobalt, lead, silver, vanadium and zinc recoveries in the MS/MSD pair were high and outside the laboratory specified acceptance criteria. Therefore, the barium, chromium, cobalt, lead, vanadium and zinc concentrations in sample DG-E11S-0.5-1 were J+ qualified as estimated with a high bias, and the estimated silver concentration was J qualified as estimated. However, since beryllium was not detected in sample DG-E11S-0.5-1, no qualification was applied to the beryllium data.

The copper MS recovery and RPD result for the MS/MSD pair were high and outside the laboratory specified acceptance criteria. Therefore, the estimated copper concentration in sample DG-E11S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-E11S-0.5-1	Antimony	330	J F1	330	J-	4
DG-E11S-0.5-1	Barium	36000	F1	36000	J+	4
DG-E11S-0.5-1	Chromium	12000	F1	12000	J+	4
DG-E11S-0.5-1	Cobalt	12000	F1	12000	J+	4
DG-E11S-0.5-1	Copper	130000	F1 F2	130000	J	4
DG-E11S-0.5-1	Lead	32000	F1	32000	J+	4
DG-E11S-0.5-1	Silver	200	J F1	200	J	4
DG-E11S-0.5-1	Vanadium	110000	F1	110000	J+	4
DG-E11S-0.5-1	Zinc	55000	F1	55000	J+	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recoveries were outside acceptance limits.
F2 - Laboratory flag indicating the MS/MSD RPD exceeds control limits.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.

Batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

One sample set specific serial dilution was reported, using sample DG-E11S-0.5-1. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, chromium, cobalt, copper, lead and vanadium RPD results for the serial dilution were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of these compounds in sample DG-E11S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-E11S-0.5-1	Barium	36000	F1	36000	J	8
DG-E11S-0.5-1	Chromium	12000	F1	12000	J	8
DG-E11S-0.5-1	Cobalt	12000	F1	12000	J	8
DG-E11S-0.5-1	Copper	130000	F1 F2	130000	J	8
DG-E11S-0.5-1	Lead	32000	F1	32000	J	8
DG-E11S-0.5-1	Vanadium	110000	F1	110000	J	8

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recoveries were outside acceptance limits.
F2 - Laboratory flag indicating the MS/MSD RPD exceeds control limits.

6.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 (Job 720-88264-1), were collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively, with the following exceptions.

Antimony, beryllium and thallium were reported at concentrations greater than the MDLs in field duplicate DUP-22 (job 720-88264-1) and not detected in sample DG-L9S-0.5-1, resulting in non-calculable RPDs. Therefore, the non-detect antimony, beryllium and thallium results in sample DG-L9S-0.5-1 were UJ qualified as estimated less than the MDLs.

Molybdenum and silver were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-L9S-0.5-1 and not detected in field duplicate DUP-22 (job 720-88264-1), resulting in non-calculable RPDs. Therefore, the estimated molybdenum and silver concentrations in sample DG-L9S-0.5-1 were J qualified as estimated.

The lead RPD for field duplicate pair DG-L9S-0.5-1/DUP-22 was greater than 50%. Therefore, the lead concentration in sample DG-L9S-0.5-1 was J qualified as estimated.

Beryllium was reported at a concentration greater than the MDL in field duplicate DUP-23 (job 720-88264-1) and not detected in sample DG-H9S-3.5-4, resulting in a non-calculable RPD. Therefore, the non-detect beryllium result in sample DG-H9S-3.5-4 was UJ qualified as estimated less than the MDL.

Cadmium, molybdenum, selenium and silver were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-H9S-3.5-4 and not detected in field duplicate

DUP-23 (job 720-88264-1), resulting in non-calculable RPDs. Therefore, the estimated cadmium, molybdenum, selenium and silver concentrations in sample DG-H9S-3.5-4 were J qualified as estimated.

Copper was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-23 (job 720-88264-1) and at a concentration greater than the RL in sample DG-H9S-3.5-4, resulting in a non-calculable RPD. Therefore, the copper concentration in sample DG-H9S-3.5-4 was J qualified as estimated.

The lead, vanadium and zinc RPD results for field duplicate pair DG-H9S-3.5-4/DUP-23 were greater than 50%. Therefore, the lead, vanadium and zinc concentrations in sample DG-H9S-3.5-4 were J qualified as estimated.

Beryllium and molybdenum were reported at concentrations greater than the MDLs in field duplicate DUP-30 (job 720-88264-1) and not detected in sample DG-K11S-3.5-4, resulting in non-calculable RPDs. Therefore, the non-detect beryllium and molybdenum results in sample DG-K11S-3.5-4 were UJ qualified as estimated less than the MDLs.

Arsenic was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-K11S-3.5-4 and at a concentration greater than the RL in field duplicate DUP-30 (job 720-88264-1), resulting in a non-calculable RPD. Therefore, the estimated arsenic concentration in sample DG-K11S-3.5-4 was J qualified as estimated.

Thallium was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-30 (from job 720-88264-1) and at a concentration greater than the RL in sample DG-K11S-3.5-4, resulting in a non-calculable RPD. Therefore, the thallium concentration in sample DG-K11S-3.5-4 was J qualified as estimated.

The lead, nickel and vanadium RPDs for field duplicate pair DG-K11S-3.5-4/DUP-30 were greater than 50%. Therefore, the lead, nickel and vanadium concentrations in sample DG-K11S-3.5-4 were J qualified as estimated.

Molybdenum was reported at a concentration greater than the MDL in sample DG-I11S-3.5-4 and not detected in field duplicate DUP-31 (job 720-88264-1), resulting in a non-calculable RPD. Therefore, the molybdenum concentration in sample DG-I11S-3.5-4 was J qualified as estimated.

Thallium was reported at a concentration greater than the MDL in field duplicate DUP-31 (job 720-88264-1) and not detected in sample DG-I11S-3.5-4, resulting in a non-calculable RPD. Therefore, the non-detect thallium result in sample DG-I11S-3.5-4 was UJ qualified as estimated less than the MDL.

Antimony and cadmium were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-E11S-0.5-1 and not detected in field duplicate DUP-32 (job 720-88264-1), resulting in non-calculable RPDs. Therefore, the estimated antimony and cadmium concentrations in sample DG-E11S-0.5-1 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-K11S-3.5-4	Arsenic	2100	J	2100	J	7
DG-K11S-3.5-4	Beryllium	120	UL	120	UJ	7
DG-K11S-3.5-4	Lead	7000	NA	7000	J	7
DG-K11S-3.5-4	Molybdenum	240	U	240	UJ	7
DG-K11S-3.5-4	Nickel	52000	NA	52000	J	7
DG-K11S-3.5-4	Thallium	2800	NA	2800	J	7
DG-K11S-3.5-4	Vanadium	190000	NA	190000	J	7
DG-I11S-3.5-4	Molybdenum	1800	NA	1800	J	7
DG-I11S-3.5-4	Thallium	500	U	500	UJ	7
DG-E11S-0.5-1	Antimony	330	J F1	330	J	7
DG-E11S-0.5-1	Cadmium	77	J	77	J	7
DG-H9S-3.5-4	Beryllium	120	U	120	UJ	7
DG-H9S-3.5-4	Cadmium	120	J	120	J	7
DG-H9S-3.5-4	Copper	24000	NA	24000	J	7
DG-H9S-3.5-4	Lead	120000	NA	120000	J	7
DG-H9S-3.5-4	Molybdenum	360	J	360	J	7
DG-H9S-3.5-4	Selenium	630	J	630	J	7
DG-H9S-3.5-4	Silver	440	J	440	J	7
DG-H9S-3.5-4	Vanadium	29000	NA	29000	J	7
DG-H9S-3.5-4	Zinc	49000	NA	49000	J	7
DG-L9S-0.5-1	Antimony	310	U	310	UJ	7
DG-L9S-0.5-1	Beryllium	120	U	120	UJ	7
DG-L9S-0.5-1	Lead	170000	NA	170000	J	7
DG-L9S-0.5-1	Molybdenum	250	J	250	J	7
DG-L9S-0.5-1	Silver	270	J	270	J	7
DG-L9S-0.5-1	Thallium	540	U	540	UJ	7

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recoveries were outside acceptance limits.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
L - Laboratory flag indicating there was a negative instrument reading that had an absolute value greater than the RL.
NA - Not applicable.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250621 and 250662). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-H9S-0.5-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 (all from work order 720-88264-1), were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively, with the following exceptions.

Mercury was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-I11S-3.5-4 and at a concentration greater than the RL in field duplicate DUP-31 (job 720-88264-1), resulting in a non-calculable RPD. Therefore, the estimated mercury concentration in sample DG-I11S-3.5-4 was J qualified as estimated.

The mercury RPD for field duplicate pair DG-E11S-0.5-1/DUP-32 was greater than 50%. Therefore, the mercury concentration in sample DG-E11S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-I11S-3.5-4	Mercury	10	J	10	J	7
DG-E11S-0.5-1	Mercury	73	NA	73	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable.

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	6 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88264-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of three soil samples and five field duplicate samples, collected 27 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88264-1	DUP-23
720-88264-2	DUP-22
720-88264-3	DUP-30
720-88264-4	DUP-31

Laboratory ID	Client ID
720-88264-5	DUP-32
720-88264-6	DG-G11S-0.5-1
720-88264-7	DG-G11S-3.5-4
720-88264-8	DG-G11S-9.5-10

The samples were received at TA Pleasanton, California at 2.8^{o}C and at TA Canton, Ohio at 0.8^{o}C, within the criteria of <6°C. No sample preservation issues were noted by the laboratory.

Field duplicate samples DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32 were reported in this job 720-88264-1; however, the following parent samples were reported in job, 720-88263-1: DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1, respectively.

The year was not included in the collection dates on the chain of custody (COC) and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives, with the following expectations. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4, chlorobenzene-d5 and fluorobenzene internal standard recoveries for sample DUP-23 were low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated analytes in sample DUP-23 were UJ qualified as estimated less than the method detection limits (MDLs) and the estimated concentrations were J qualified as estimated.

The narrative indicated the gasoline range organics (GRO) concentration in sample DUP-32 was due to the presence of unknown discrete peaks. Therefore, the GRO concentration in sample DUP-32 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-23	1,1,1,2-Tetrachloroethane	0.60	U*	0.60	UJ	11
DUP-23	1,1,1-Trichloroethane	0.48	U*	0.48	UJ	11
DUP-23	1,1,2,2-Tetrachloroethane	0.59	U*	0.59	UJ	11
DUP-23	1,1,2-Trichloro-1,2,2-trifluoroethane	1.6	U*	1.6	UJ	11
DUP-23	1,1,2-Trichloroethane	0.55	U*	0.55	UJ	11
DUP-23	1,1-Dichloroethane	0.54	U*	0.54	UJ	11
DUP-23	1,1-Dichloroethene	0.49	U*	0.49	UJ	11
DUP-23	1,1-Dichloropropene	0.54	U*	0.54	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-23	1,2,3-Trichlorobenzene	0.58	U*	0.58	UJ	11
DUP-23	1,2,3-Trichloropropane	0.61	U*	0.61	UJ	11
DUP-23	1,2,4-Trichlorobenzene	0.56	U*	0.56	UJ	11
DUP-23	1,2,4-Trimethylbenzene	1.3	U*	1.3	UJ	11
DUP-23	1,2-Dibromo-3-Chloropropane	1.3	U*	1.3	UJ	11
DUP-23	1,2-Dichlorobenzene	0.54	U*	0.54	UJ	11
DUP-23	1,2-Dichloroethane	0.60	U*	0.60	UJ	11
DUP-23	1,2-Dichloropropane	0.50	U*	0.50	UJ	11
DUP-23	1,3,5-Trimethylbenzene	0.51	U*	0.51	UJ	11
DUP-23	1,3-Dichlorobenzene	0.57	U*	0.57	UJ	11
DUP-23	1,3-Dichloropropane	0.58	U*	0.58	UJ	11
DUP-23	1,4-Dichlorobenzene	0.56	U*	0.56	UJ	11
DUP-23	2,2-Dichloropropane	1.6	U*	1.6	UJ	11
DUP-23	2-Butanone (MEK)	17	U*	17	UJ	11
DUP-23	2-Chlorotoluene	0.51	U*	0.51	UJ	11
DUP-23	2-Hexanone	7.9	U*	7.9	UJ	11
DUP-23	4-Chlorotoluene	0.54	U*	0.54	UJ	11
DUP-23	4-Isopropyltoluene	2.0	U*	2.0	UJ	11
DUP-23	4-Methyl-2-pentanone (MIBK)	7.9	U*	7.9	UJ	11
DUP-23	Acetone	32	J *	32	J	11
DUP-23	Benzene	0.51	U*	0.51	UJ	11
DUP-23	Bromobenzene	0.62	U*	0.62	UJ	11
DUP-23	Bromoform	1.6	U*	1.6	UJ	11
DUP-23	Bromomethane	0.62	U*	0.62	UJ	11
DUP-23	Carbon disulfide	1.6	U*	1.6	UJ	11
DUP-23	Carbon tetrachloride	0.49	U*	0.49	UJ	11
DUP-23	Chlorobenzene	0.54	U*	0.54	UJ	11
DUP-23	Chlorobromomethane	0.57	U*	0.57	UJ	11
DUP-23	Chlorodibromomethane	0.56	U*	0.56	UJ	11
DUP-23	Chloroethane	0.44	U*	0.44	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-23	Chloroform	0.52	U*	0.52	UJ	11
DUP-23	Chloromethane	0.62	U*	0.62	UJ	11
DUP-23	cis-1,2-Dichloroethene	0.54	U*	0.54	UJ	11
DUP-23	cis-1,3-Dichloropropene	0.54	U*	0.54	UJ	11
DUP-23	Dibromomethane	0.68	U*	0.68	UJ	11
DUP-23	Dichlorobromomethane	0.57	U*	0.57	UJ	11
DUP-23	Dichlorodifluoromethane	0.62	U*	0.62	UJ	11
DUP-23	Ethylbenzene	0.59	U*	0.59	UJ	11
DUP-23	Ethylene Dibromide	1.1	U*	1.1	UJ	11
DUP-23	Gasoline Range Organics (GRO)-C4-C12	79	U*	79	UJ	11
DUP-23	Hexachlorobutadiene	0.71	U*	0.71	UJ	11
DUP-23	Isopropylbenzene	0.54	U*	0.54	UJ	11
DUP-23	Methyl tert-butyl ether	0.95	U*	0.95	UJ	11
DUP-23	Methylene Chloride	4.4	U*	4.4	UJ	11
DUP-23	Naphthalene	1.2	U*	1.2	UJ	11
DUP-23	n-Butylbenzene	0.79	U*	0.79	UJ	11
DUP-23	N-Propylbenzene	0.52	U*	0.52	UJ	11
DUP-23	sec-Butylbenzene	0.57	U*	0.57	UJ	11
DUP-23	Styrene	0.50	U*	0.50	UJ	11
DUP-23	tert-Butylbenzene	0.58	U*	0.58	UJ	11
DUP-23	Tetrachloroethene	0.53	U*	0.53	UJ	11
DUP-23	Toluene	0.56	U*	0.56	UJ	11
DUP-23	trans-1,2-Dichloroethene	0.59	U*	0.59	UJ	11
DUP-23	trans-1,3-Dichloropropene	0.53	U*	0.53	UJ	11
DUP-23	Trichloroethene	0.50	U*	0.50	UJ	11
DUP-23	Trichlorofluoromethane	0.44	U*	0.44	UJ	11
DUP-23	Vinyl acetate	3.9	U*	3.9	UJ	11
DUP-23	Vinyl chloride	0.58	U*	0.58	UJ	11
DUP-23	Xylenes, Total	0.96	U	0.96	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DUP-32	Gasoline Range Organics (GRO)-C4-C12	120	J	120	J	13

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the reporting limit (RL) and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250625, 250626 and 250644). VOCs were not detected in the method blanks above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy in these batches.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Six LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250625 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

The 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250626 were high and outside the laboratory specified acceptance criteria. Since this compound was not detected in the associated samples, no qualification were applied to the data.

One or both of the 1,1-dichloroethene and 1,1,2-trichloro-1,2,2-trifluoroethane recoveries in the LCS/LCSD pair in batch 250644 were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32, were collected with the sample set and analyzed for VOCs. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 (all from work order 720-88263-1), respectively, with the following exceptions.

Acetone was reported at concentrations greater than the MDLs in field duplicates DUP-22, DUP-23 and DUP-31 and not detected in samples DG-L9S-0.5-1, DG-H9S-3.5-4 and DG-I11S-3.5-4 (job 720-88263-1), respectively, resulting in non-calculable RPDs. Therefore, the acetone concentrations in field duplicates DUP-22, DUP-23 and DUP-31 were J qualified as estimated.

GRO was reported at a concentration greater than the MDL in field duplicate DUP-32 and not detected in sample DG-E11S-0.5-1 (job 720-882643-1), resulting in a non-calculable RPD. Therefore, the GRO concentration in field duplicate DUP-32 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-22	Acetone	54	NA	54	J	7
DUP-23	Acetone	32	J *	32	J	7
DUP-31	Acetone	30	J	30	J	7
DUP-32	Gasoline Range Organics (GRO)-C4-C12	120	J	120	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250607). PAHs were not detected in the method blank above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

2.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32, were collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 (job 720-88263-1), respectively, with the following exceptions.

Anthracene and naphthalene were reported at concentrations greater than the MDLs in sample DG-L9S-0.5-1 (job 720-88263-1) and not detected in field duplicate DUP-22, resulting in non-calculable RPDs. Therefore, the non-detect anthracene and naphthalene results in field duplicate DUP-22 were UJ qualified as estimated less than the MDLs.

The benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, fluoranthene and pyrene RPD results for field duplicate pair DG-L9S-0.5-1/DUP-22 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-22 were J qualified as estimated.

Benzo[a]pyrene and benzo[k]fluoranthene were reported at concentrations greater than the MDLs in sample DG-H9S-3.5-4 (job 720-88263-1) and not detected in field duplicate DUP-23, resulting in non-calculable RPDs. Therefore, the non-detect benzo[a]pyrene and benzo[k]fluoranthene results in field duplicate DUP-23 were UJ qualified as estimated less than the MDLs.

Acenaphthylene was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-K11S-3.5-4 (job 720-88263-1) and not detected in field duplicate DUP-30, resulting in a non-calculable RPD. Therefore, the non-detect acenaphthylene result in field duplicate DUP-30 was UJ qualified as estimated less than the MDL.

Dibenz(a,h)anthracene and indeno[1,2,3-cd]pyrene were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-K11S-3.5-4 (job 720-88263-1) and at concentrations greater than the RLs in field duplicate DUP-30, resulting in non-calculable RPDs. Therefore, the dibenz(a,h)anthracene and indeno[1,2,3-cd]pyrene concentrations in field duplicate DUP-30 were J qualified as estimated.

The anthracene, benzo[b]fluoranthene and benzo[g,h,i]perylene RPDs for field duplicate pair DG-K11S-3.5-4 (job 720-88263-1)/DUP-30 were greater than 50%. Therefore, the concentrations of these compounds in field duplicate DUP-30 were J qualified as estimated.

Acenaphthylene and naphthalene were reported at concentrations greater than the MDLs in field duplicate DUP-32 and not detected in sample DG-E11S-0.5-1 (job 720-88263-1), resulting in non-calculable RPDs. Therefore, the acenaphthylene and naphthalene concentrations in field duplicate DUP-32 were J qualified as estimated.

Pyrene was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-E11S-0.5-1 (job 720-88263-1) and at a concentration greater than the RL in field duplicate DUP-32, resulting in a non-calculable RPD. Therefore, the pyrene concentration in field duplicate DUP-32 was J qualified as estimated.

The anthracene RPD for field duplicate pair DG-E11S-0.5-1/DUP-32 was greater than 50%. Therefore, the anthracene concentration in field duplicate DUP-32 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-22	Anthracene	4.0	U	4	UJ	7
DUP-22	Benzo[a]pyrene	18	NA	18	J	7
DUP-22	Benzo[b]fluoranthene	29	NA	29	J	7
DUP-22	Benzo[g,h,i]perylene	11	NA	11	J	7
DUP-22	Benzo[k]fluoranthene	12	NA	12	J	7
DUP-22	Fluoranthene	22	NA	22	J	7
DUP-22	Naphthalene	7.0	U	7.0	UJ	7
DUP-22	Pyrene	27	NA	27	J	7
DUP-23	Benzo[a]pyrene	1.8	U	1.8	UJ	7
DUP-23	Benzo[k]fluoranthene	2.0	U	2.0	UJ	7
DUP-30	Acenaphthylene	2.3	U	2.3	UJ	7
DUP-30	Anthracene	5.0	NA	5.0	J	7
DUP-30	Benzo[b]fluoranthene	42	NA	42	J	7
DUP-30	Benzo[g,h,i]perylene	13	NA	13	J	7
DUP-30	Dibenz(a,h)anthracene	5.4	NA	5.4	J	7
DUP-30	Indeno[1,2,3-cd]pyrene	9.3	NA	9.3	J	7
DUP-32	Acenaphthylene	27	J	27	J	7
DUP-32	Anthracene	450	NA	450	J	7
DUP-32	Naphthalene	41	J	41	J	7
DUP-32	Pyrene	57	NA	57	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the RPD between the primary and confirmation columns was greater than 40% for cis-chlordane in sample DG-G11S-0.5-1. Therefore, the cis-chlordane concentration in sample DG-G11S-0.5-1 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-G11S-0.5-1	cis-Chlordane	0.41	J p	0.41	J	13

µg/kg - Microgram per kilogram

J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
p - Laboratory flag indicating the RPD between the primary and confirmation column/detector was greater than 40%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250595). Organochlorine pesticides were not detected in the method blanks above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DUP-32. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The 4,4'-DDT, beta-BHC, delta-BHC, endosulfan sulfate, endrin aldehyde, endrin ketone and methoxychlor RPDs were high and outside the laboratory specified acceptance criteria. Since these compounds were not detected in the associated samples, no qualifications were applied to the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

3.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32, were collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-

3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 (job 720-88263-1), respectively, with the following exceptions.

4,4'-DDT was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-L9S-0.5-1 (job 720-88263-1) and not detected in field duplicate DUP-22, resulting in a non-calculable RPD. Therefore, the non-detect 4,4'-DDT result in field duplicate DUP-22 was UJ qualified as estimated less than the MDL.

Delta-BHC was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-30 and not detected in sample DG-K11S-3.5-4 (job 720-88263-1), resulting in a non-calculable RPD. Therefore, the estimated delta-BHC concentration in field duplicate DUP-30 was J qualified as estimated.

trans-Chlordane was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-I11S-3.5-4 (job 720-88263-1) and not detected in field duplicate DUP-31, resulting in a non-calculable RPD. Therefore, the non-detect trans-chlordane result in field duplicate DUP-31 was UJ qualified as estimated less than the MDL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-22	4,4'-DDT	0.40	U	0.40	UJ	7
DUP-30	delta-BHC	0.96	J	0.96	J	7
DUP-31	trans-Chlordane	2.2	U	2.2	UJ	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C /8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 343206 and 343944). PCBs were not detected in the method blanks above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were not reported with the sample set.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

The decachlorobiphenyl recovery in sample DUP-30 was high and outside the laboratory specified acceptance criteria. Since the other surrogate recovery was acceptable and based on professional and technical judgement, no qualifications were applied to the data.

4.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32, were collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 (job 720-88263-1), respectively.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250498 and 250619). DRO was not detected in the method blanks above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DUP-32. The MSD recovery was low, and the RPD was high and outside the laboratory specified acceptance criteria. However, due to the difference in the sample concentration, the spike amount and the dilution at which the samples was analyzed, and based on professional and technical judgement, no qualifications were applied to the data.

A batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

5.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32, were collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 (job 720-88263-1), respectively, with the following exceptions.

The RPDs for field duplicate pairs DG-K11S-3.5-4/DUP-30, DG-I11S-3.5-4/DUP-31 and DG-E11S-0.5-1/DUP-32 were greater than 50%. Therefore, the DRO concentrations in field duplicates DUP-30, DUP-31 and DUP-32 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-30	Diesel Range Organics [C10-C28]	34000	NA	34000	J	7
DUP-31	Diesel Range Organics [C10-C28]	1200000	NA	1200000	J	7
DUP-32	Diesel Range Organics [C10-C28]	850000	F2	850000	J	7

µg/kg - Microgram per kilogram
F2 - Laboratory flag indicating the MS/MSD RPD was outside acceptance limits.
NA - Not applicable.

5.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Serial Dilution
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250563 and 250637). Metals were not detected in the method blanks above the MDLs.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

Serial dilutions were not reported with the sample set.

6.7 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32, were collected with the sample set and analyzed for metals. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 (job 720-88263-1), respectively, with the following exceptions.

Antimony, beryllium and thallium were reported at concentrations greater than the MDLs in field duplicate DUP-22 and not detected in sample DG-L9S-0.5-1 (job 720-88263-1), resulting in non-calculable RPDs. Therefore, the antimony, beryllium and thallium concentrations in field duplicate DUP-22 were J qualified as estimated.

Molybdenum and silver were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-L9S-0.5-1 (job 720-88263-1) and not detected in field duplicate DUP-22, resulting in non-calculable RPDs. Therefore, the non-detect molybdenum and silver results in field duplicate DUP-22 were UJ qualified as estimated less than the MDLs.

The lead RPD for field duplicate pair DG-L9S-0.5-1 (job 720-88263-1)/DUP-22 was greater than 50%. Therefore, the lead concentration in field duplicate DUP-22 was J qualified as estimated.

Beryllium was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-23 and not detected in sample DG-H9S-3.5-4 (job 720-88263-1), resulting in a non-calculable RPD. Therefore, the estimated beryllium concentration in field duplicate DUP-23 was J qualified as estimated.

Cadmium, molybdenum, selenium and silver were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-H9S-3.5-4 (job 720-88263-1) and not detected in field duplicate DUP-23, resulting in non-calculable RPDs. Therefore, the non-detect cadmium, molybdenum, selenium and silver results in field duplicate DUP-23 were UJ qualified as estimated less than the MDLs.

Copper was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-23 and at a concentration greater than the RL in sample DG-H9S-3.5-4 (job 720-88263-1), resulting in a non-calculable RPD. Therefore, the estimated copper concentration in field duplicate DUP-23 was J qualified as estimated.

The lead, vanadium and zinc RPDs for field duplicate pair DG-H9S-3.5-4/DUP-23 were greater than 50%. Therefore, the lead, vanadium and zinc concentrations in field duplicate DUP-23 were J qualified as estimated.

Beryllium and molybdenum were reported at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-30 and not detected in sample DG-K11S-3.5-4 (job 720-88263-1), resulting in non-calculable RPDs. Therefore, the estimated beryllium and molybdenum concentrations in field duplicate DUP-30 were J qualified as estimated.

Arsenic was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-K11S-3.5-4 (job 720-88263-1) and at a concentration greater than the RL in field duplicate DUP-30, resulting in a non-calculable RPD. Therefore, the arsenic concentration in field duplicate DUP-30 was J qualified as estimated.

Thallium was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-30 and at a concentration greater than the RL in sample DG-K11S-3.5-4 (job 720-88263-1), resulting in a non-calculable RPD. Therefore, the estimated thallium concentration in field duplicate DUP-30 was J qualified as estimated.

The lead, nickel and vanadium RPDs for field duplicate pair DG-K11S-3.5-4/DUP-30 were greater than 50%. Therefore, the lead, nickel and vanadium concentrations in field duplicate DUP-30 were J qualified as estimated.

Molybdenum was reported at a concentration greater than the MDL in sample DG-I11S-3.5-4 (job 720-88263-1) and not detected in field duplicate DUP-31, resulting in a non-calculable RPD. Therefore, the non-detect molybdenum result in field duplicate DUP-31 was UJ qualified as estimated less than the MDL.

Thallium was reported at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-31 and not detected in sample DG-I11S-3.5-4 (job 720-88263-1), resulting in a non-calculable RPD. Therefore, the estimated thallium concentration in field duplicate DUP-31 was J qualified as estimated.

Antimony and cadmium were reported at estimated concentrations greater than the MDLs and less than the RLs in sample DG-E11S-0.5-1 (720-88263-1) and not detected in field duplicate DUP-32, resulting in non-calculable RPDs. Therefore, the non-detect antimony and cadmium results in field duplicate DUP-32 were UJ qualified as estimated less than the MDLs.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-23	Beryllium	190	J	190	J	7
DUP-23	Cadmium	48	U	48	UJ	7
DUP-23	Copper	4600	J	4600	J	7
DUP-23	Lead	4400	NA	4400	J	7
DUP-23	Molybdenum	250	U	250	UJ	7
DUP-23	Selenium	580	U	580	UJ	7
DUP-23	Silver	190	U	190	UJ	7
DUP-23	Vanadium	17000	NA	17000	J	7
DUP-23	Zinc	17000	NA	17000	J	7
DUP-22	Antimony	2200	NA	2200	J	7
DUP-22	Beryllium	300	J	300	J	7
DUP-22	Lead	640000	NA	640000	J	7
DUP-22	Molybdenum	240	U	240	UJ	7
DUP-22	Silver	190	U	190	UJ	7
DUP-22	Thallium	640	J	640	J	7

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-30	Arsenic	5000	NA	5000	J	7
DUP-30	Beryllium	220	J	220	J	7
DUP-30	Lead	45000	NA	45000	J	7
DUP-30	Molybdenum	280	J	280	J	7
DUP-30	Nickel	160000	NA	160000	J	7
DUP-30	Thallium	1700	J	1700	J	7
DUP-30	Vanadium	100000	NA	100000	J	7
DUP-31	Molybdenum	220	U	220	UJ	7
DUP-31	Thallium	550	J	550	J	7
DUP-32	Antimony	220	U	220	UJ	7
DUP-32	Cadmium	33	U	33	UJ	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable.
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ⊗ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250662 and 250663). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Five field duplicate samples, DUP-22, DUP-23, DUP-30, DUP-31 and DUP-32, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1, DG-H9S-3.5-4, DG-K11S-3.5-4, DG-I11S-3.5-4 and DG-E11S-0.5-1 (job 720-88263-1), respectively, with the following exceptions.

Mercury was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-I11S-3.5-4 (job 720-88263-1) and at a concentration greater than the RL in field duplicate DUP-31, resulting in a non-calculable RPD. Therefore, the mercury concentration in field duplicate DUP-31 was J qualified as estimated.

The mercury RPD for field duplicate pair DG-E11S-0.5-1/DUP-32 was greater than 50%. Therefore, the mercury concentration in field duplicate DUP-32 was J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-31	Mercury	16	NA	16	J	7
DUP-32	Mercury	150	NA	150	J	7

µg/kg - Microgram per kilogram
NA - Not applicable.

7.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88272-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of nine soil samples and two field duplicate samples, collected 27 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and the samples were analyzed at analyzed TA Nashville, Tennessee for the following tests:

- Volatile Organic Compounds (VOCs) 1,2,3-Trichloropropane and 1,2-Dibromo-3-Chloropropane by United States Environmental Protection Agency (USEPA) Methods 5035/8260B

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data are usable for meeting project objectives.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88272-1	DG-FG910S-0.5-1
720-88272-2	DG-H9S-0.5-1
720-88272-3	DG-L9S-0.5-1
720-88272-4	DG-M11S-0.5-1
720-88272-5	DG-K11S-0.5-1
720-88272-6	DG-I11S-0.5-1

Laboratory ID	Client ID
720-88272-7	DG-G11S-0.5-1
720-88272-8	DG-E11S-0.5-1
720-88272-9	DG-A8S-0.5-1
720-88272-10	DUP-32
720-88272-11	DUP-22

The samples were received at TA Pleasanton, California at 1.5^{o}C,and at TA Nashville at 1.2^{o}C within the criteria of $\leq$6°C. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the original chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The sampling collection times were not listed on the COC for field duplicate samples DUP-22 and DUP-32. The laboratory assigned collection times of 00:00.

The year was not listed on the COC for the sample collection dates, and for the first sample transfer and the second sampling relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Trip Blank
- ✓ Field Duplicate
- ✓ Sensitivity

✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 540014 and 540434). 1,2,3-Trichloropropane and 1,2-dibromo-3-chloropropane were not detected in the method blanks above the method detection limits (MDLs).

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

A batch MS/MSD pair was reported in batch 540434. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

MS/MSD pairs were not reported in batch 540014. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses with the following exception.

The recovery of dibromofluoromethane in sample DG-L9S-0.5-1 was low, outside the laboratory specified acceptance criteria. Since dibromofluoromethane is not associated with the target analytes, no qualifications were applied to the data, based on professional and technical judgement.

1.7 Trip Blank

Trip blanks were not submitted with the sample set. This did not result in qualification of the data, but should be noted by the data user.

1.8 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-22 and DUP-32. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicates and the original samples, DG-L9S-0.5-1 and DG-E11S-0.5-1 respectively.

1.9 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported for samples DG-I11S-0.5-1 and DG-A8S-0.5-1 due to the dilutions analyzed. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
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CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88273-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of eight groundwater samples, one trip blank, one field blank, and two field duplicates collected 27 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5030B/8260B
- 1,2,3-Trichloropropane by USEPA Methods 5030B/8260B using Selected Ion Monitoring (SIM)
- Diesel Range Organics (DRO) by USEPA Methods 3510C/8015B
- Dissolved Metals by USEPA Methods 3010A/6010B
- Dissolved Mercury by USEPA Method 7470A
- Hexavalent Chromium (Cr VI) by USEPA Method 7196A

USEPA methods 5030B/8260BSIM were performed at TA Irvine, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88273-1	DG-FG910W
720-88273-2	DG-H9W
720-88273-3	DG-L9W
720-88273-4	DG-M11W
720-88273-5	DG-K11W
720-88273-6	DG-I11W

Laboratory ID	Client ID
720-88273-7	DG-G11W
720-88273-8	DG-E11W
720-88273-9	TB-5
720-88273-10	FB-5
720-88273-11	DUP-22
720-88273-12	DUP-32

The samples were received by TA Pleasanton, California at 1.4^{o}C, 1.4^{o}C and 4.3^{o}C and by TA Irvine, California at 3.6^{o}C and 3.8^{o}C, within the criteria of $\leq$6°C. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the original chain of custody (COC) instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1,2,3-Trichloropropane by California Department of Health Services Division of Drinking Water and Environmental Management Sanitation and Radiation Laboratories Branch (SRL) Method Modified 524.2 was listed on the COC; however, the client later requested 1,2,3-trichloropropane analyses by 8260B-SIM. 8260B-SIM was used to analyze the samples for 1,2,3-trichloropropane.

The COC did not specify whether the metals samples were total or dissolved. The client confirmed that the metals samples were field filtered.

The year was not documented on the COC for the sample collection dates, and for the first sample relinquishing documentation.

The time of collection was not listed on the COC for samples TB-5, FB-5, DUP-22 and DUP-32. The laboratory assigned collection times of 00:00.

The narrative indicted that the hexavalent chromium holding times had expired upon laboratory receipt for samples DUP-22 and DUP-32; This was due to the laboratory-assigned collection times of 00:00. Since these were field duplicates, the hexavalent holding times were calculated by the data validator using the collection times of the associated original samples. Based on these collection dates and times, no qualifications were applied to the hexavalent chromium data due to the holding times. See section 5.2, below.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA methods 5030B/8260B and for 1,2,3-trichloropropane by EPA methods 5030B/8260B-SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for these analyses, for the data set is 100%.

It was noted in the case narrative that the recovery of gasoline range organics (GRO) in the continuing calibration verification (CCV) in batch 720-250727 were high, outside the laboratory specified acceptance criteria. Since GRO was not detected in the associated samples, no qualifications were applied to the data.

The narrative indicated that the samples were collected in properly preserved vials; however, the pH of sample DG-G11W for 8260B analysis was greater than 2 when checked by the laboratory at analysis. Since the sample was analyzed within the seven day holding time for a sample with a pH >2, no qualifications were applied to the data.

The narrative indicated the following samples for 8260B analyses were analyzed from vials with headspace: DG-H9W, DG-L9W, DG-M11W, DG-K11W, DG-I11W, DG -G11W and DG-E11W. Therefore, based on professional and technical judgement, the non-detect VOC and GRO results in samples DG-H9W, DG-L9W, DG-M11W, DG-K11W, DG-I11W, DG -G11W and DG-E11W were UJ qualified as estimated less than the method detection limits (MDLs) and the cis-1,2-dichloroethene concentration in sample DG-L9W was J qualified as estimated.

The narrative indicated the GRO concentrations in sample DG-G11W and DUP-32 were due to the presence of discrete peaks. Therefore, based on professional and technical judgment, the GRO concentrations in samples DG-G11W and DUP-32 were J qualified as estimated.

These qualifications are summarized in Attachment 3.

1.2 Holding Times

The holding times for the VOC analyses of a preserved water sample for method 8260B-SIM and USEPA method 8260B are both 14 days from sample collection to analysis. The holding time for VOC analysis of a sample with a pH>2 is seven days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five method blanks were reported (8260B batches 250725, 250727, 250754, and 250833 and 8260B-SIM batch 496818). VOCs were not detected in the method blanks above the MDLs, with the following exceptions.

Styrene was detected at an estimated concentration greater than the MDL and less than the reporting limit (RL) in the method blank in batch 250725. Since styrene was not detected in the associated samples, no qualifications were applied to the data.

1,1,2,2-Tetrachloroethene was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 250754. Since 1,1,2,2-tetrachloroethene was not detected in the associated samples, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Five batch MS/MSD pairs were reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Seven LCS/LCS duplicate (LCSD) pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The recoveries of 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, carbon disulfide, dichlorodifluoromethane and trans-1,2-dichloroethene in the LCS/LCSD in batch 250725 were high, outside the laboratory specified acceptance criteria. Since 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, carbon disulfide, dichlorodifluoromethane and trans-1,2-dichloroethene were not detected in the associated samples, no qualifications were applied to the data.

The recoveries of 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, carbon disulfide, chlorobromomethane and trans-1,2-dichloroethene in the LCS/LCSD in batch 250754 were high, outside the laboratory specified acceptance criteria. Since 1,1,2-trichloro-1,2,2-trifluoroethane, 1,1-dichloroethene, carbon disulfide, dichlorodifluoromethane and trans-1,2-dichloroethene were not detected in the associated samples, no qualifications were applied to the data.

The RPD in the LCS/LCSD in batch 250727 for dichlorodifluoromethane was high, outside the laboratory specified acceptance criteria. Since dichlorodifluoromethane was not detected in the associated samples, no qualifications were applied to the data.

1.6 Surrogate

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

One trip blank accompanied the samples and was analyzed for 1,2,3-trichloropropane, TB-5. 1,2,3-Trichloropropane was not detected in the trip blank above the MDL. The trip blank was not analyzed by method 8260B. No qualifications were applied to the data, but this discrepancy should be noted by the data user.

1.8 Field Blank

One field blank was collected with the samples and analyzed by methods 8260B and 8260B SIM, FB-5. VOCs were not detected in the field blank above the MDLs.

1.9 Field Duplicate

Two field duplicate samples, DUP-22 and DUP-32, were collected with the sample set and analyzed for 8260B and 8260B SIM. Acceptable precision (RPD ≤30%) was demonstrated between the field duplicates and the original samples, DG-L9W and DG-E11W, respectively with the following exceptions.

Vinyl chloride was detected at an estimated concentration greater than the MDL and less than the RL in field duplicate DUP-22 and not detected in sample DG-L9W, resulting in a non-calculable RPD result. Therefore, the non-detect vinyl chloride result in sample DG-L9W was UJ qualified as estimated less than the MDL and the vinyl chloride concentration in field duplicate DUP-22 was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	RPD (%)	Validation Result (µg/L)	Validation Qualifier *	Reason Code **
DG-L9W	Vinyl chloride	0.20	U	NC	0.20	UJ	7
DUP-22	Vinyl chloride	0.37	J		0.37	J	7

µg/L - Microgram per liter
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report

1.10 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 7.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated the DRO concentration in sample DG-E11W was due to the presence of discrete peaks. Therefore, based on professional and technical judgment, the DRO concentration in sample DG-E11W was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-E11W	Diesel Range Organics [C10-C28]	99	NA	99	J	13

µg/L - Microgram per liter.
NA - Not applicable

2.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250415 and 250536). DRO was not detected in the method blanks above the MDLs, with the following exception.

DRO was detected at an estimated concentration greater than the MDL and less than the RL in batch 250536. Since the associated sample concentration was greater than the RL, no qualifications were applied to the data.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. Two LCS/LCSD pairs were used to assess precision and accuracy.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCSD pairs were reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

2.7 Field Blank

A field blank was collected with the sample set, but not analyzed for DRO.

2.8 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-22 and DUP-32. Acceptable precision (RPD $\leq$30%) was demonstrated between the field duplicates and the original samples, DG-L9W and DG-E11W, respectively.

2.9 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table

2.10 7. Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 DISSOLVED METALS

The samples were analyzed for dissolved metals per USEPA Methods 3010A/6010B (mercury evaluated separately in Section 4.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
⊗ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Serial Dilution
✓ Laboratory Control Sample
✓ Field Blank
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Deliverable Review

3.1 Overall Assessment

The dissolved metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding time for the metals analyses of a water sample is 180 days from collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250673 and 250771). Metals were not detected in the method blanks above the MDLs, with the following exceptions.

Silver was detected in the method blank in batch 250673 at an estimated concentration greater than the MDL and less than the RL. Since silver was not detected in the associated samples, no qualifications were applied to the data.

Beryllium was detected in the method blank in batch 250771 at an estimated concentration greater than the MDL and less than the RL. Therefore, the estimated dissolved beryllium concentration in sample DG-I11W was U qualified as not detected at the RL.

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-I11W	Beryllium, dissolved	0.00064	J	0.0020	U	3

mg/L - Milligram per liter
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Field Blank

A field blank was collected with the sample set, but not analyzed for metals.

3.7 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-22 and DUP-32. Acceptable precision (RPD ≤30%) was demonstrated between the field duplicates and the original samples, DG-L9W and DG-E11W, respectively with the following exceptions.

Dissolved copper and dissolved beryllium were detected at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-22 and not detected in sample DG-L9W, resulting in non-calculable RPD results. Therefore, the non-detect dissolved copper and dissolved beryllium results in sample DG-L9W were UJ qualified as estimated less than the MDLs and the dissolved copper and dissolved beryllium concentrations in field duplicate DUP-22 were J qualified as estimated.

Dissolved copper, dissolved molybdenum, dissolved nickel and dissolved zinc were detected at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-32 and not detected in sample DG-E11W, resulting in non-calculable RPD results. Therefore, the non-detect dissolved copper, dissolved molybdenum, dissolved nickel and dissolved zinc results in sample DG-E11W were UJ qualified as estimated less than the MDLs and the dissolved copper, dissolved molybdenum, dissolved nickel and dissolved zinc concentrations in field duplicate DUP-32 were J qualified as estimated.

Dissolved beryllium and dissolved cobalt were detected at estimated concentrations greater than the MDLs and less than the RLs in sample DG-E11W; dissolved beryllium was not detected in field duplicate DUP-32 and dissolved cobalt was detected at a concentration greater than the RL, resulting in non-calculable RPD results. Therefore, the non-detect dissolved beryllium result in sample field duplicate DUP-32 was UJ qualified as estimated less than the MDL and the dissolved beryllium and dissolved cobalt concentrations in sample DG-E11W and the dissolved cobalt concentration in DUP-32 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	RPD %	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-L9W	Copper, dissolved	0.0015	U	NC	0.0015	UJ	7
DUP-22	Copper, dissolved	0.0018	J		0.0018	J	7
DG-L9W	Beryllium, dissolved	0.00033	U	NC	0.00033	UJ	7
DUP-22	Beryllium, dissolved	0.00097	J		0.00097	J	7
DUP-32	Beryllium, dissolved	0.00033	U	NC	0.00033	UJ	7

Sample ID	Analyte	Laboratory Result (mg/L)	Laboratory Flag	RPD %	Validation Result (mg/L)	Validation Qualifier	Reason Code
DG-E11W	Beryllium, dissolved	0.00056	J		0.00056	J	7
DUP-32	Cobalt, dissolved	0.0033	NA	NC	0.0033	J	7
DG-E11W	Cobalt, dissolved	0.0016	J		0.0016	J	7
DUP-32	Copper, dissolved	0.0026	J	NC	0.0026	J	7
DG-E11W	Copper, dissolved	0.0015	U		0.0015	UJ	7
DUP-32	Molybdenum, dissolved	0.0036	J	NC	0.0036	J	7
DG-E11W	Molybdenum, dissolved	0.0023	U		0.0023	UJ	7
DUP-32	Nickel, dissolved	0.001	J	NC	0.001	J	7
DG-E11W	Nickel, dissolved	0.0008	U		0.0008	UJ	7
DUP-32	Zinc, dissolved	0.013	J	NC	0.013	J	7
DG-E11W	Zinc, dissolved	0.0096	U		0.0096	UJ	7

mg/L - Milligram per liter
NA – Not applicable
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 7.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 DISSOLVED MERCURY

The samples were analyzed for dissolved mercury per USEPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Deliverable Review

4.1 Overall Assessment

The dissolved mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250639 and 250790). Mercury was not detected in the method blanks above the MDL.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Field Blank

A field blank was collected with the sample set, but not analyzed for mercury.

4.7 Field Duplicate

Two field duplicate samples were collected with the sample set, DUP-22 and DUP-32. Acceptable precision (RPD <30%) was demonstrated between the field duplicates and the original samples, DG-L9W and DG-E11W, respectively.

4.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 HEXAVALENT CHROMIUM

The samples were analyzed for Cr VI per USEPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The Cr VI data reported in this package are considered to be usable for meeting project objectives. The results are considered to be not valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

5.2 Holding Times

The holding times for the Cr VI analysis of a water sample is 24 hours from sample collection to analysis. The holding times were met for the sample analyses.

As noted above, the report narrative indicated that the hexavalent holding times were expired upon laboratory receipt for samples DUP-22 and DUP-32; this was due to the laboratory-assigned collection times of 00:00. Since these were field duplicates, the hexavalent holding times were calculated by the data validator using the collection times of the associated original samples. Based on these collection dates and times and professional and technical judgment, no qualifications were applied to the hexavalent chromium data due to the holding time.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250381). Cr VI was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-FG910W. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS\LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.6 Field Blank

A field blank was collected with the sample set, but not analyzed for Cr VI.

5.7 Field Duplicate

Two field duplicate samples, DUP-22 and DUP-32, were collected with the sample set. Acceptable precision (RPD <30%) was demonstrated between the field duplicates and the original samples, DG-L9W and DG-E11W, respectively.

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

5.9 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

Attachment 3
VOC Qualifications

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-H9W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-H9W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-H9W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-H9W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-H9W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-H9W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-H9W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-H9W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-H9W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-H9W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-H9W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-H9W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-H9W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-H9W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-H9W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-H9W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-H9W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-H9W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-H9W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-H9W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-H9W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-H9W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-H9W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-H9W	2-Hexanone	3.0	U	3.0	UJ	1
DG-H9W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-H9W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-H9W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-H9W	Acetone	20	U	20	UJ	1
DG-H9W	Benzene	0.25	U	0.25	UJ	1
DG-H9W	Bromobenzene	0.20	U	0.20	UJ	1
DG-H9W	Bromoform	0.50	U	0.50	UJ	1
DG-H9W	Bromomethane	0.49	U	0.49	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-H9W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-H9W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-H9W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-H9W	Chlorobromomethane	0.25	U*	0.25	UJ	1
DG-H9W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-H9W	Chloroethane	0.17	U	0.17	UJ	1
DG-H9W	Chloroform	0.40	U	0.40	UJ	1
DG-H9W	Chloromethane	0.19	U	0.19	UJ	1
DG-H9W	cis-1,2-Dichloroethene	0.076	U	0.076	UJ	1
DG-H9W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-H9W	Dibromomethane	0.30	U	0.30	UJ	1
DG-H9W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-H9W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-H9W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-H9W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-H9W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-H9W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-H9W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-H9W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-H9W	Naphthalene	0.22	U	0.22	UJ	1
DG-H9W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-H9W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-H9W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-H9W	Styrene	0.22	U	0.22	UJ	1
DG-H9W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-H9W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-H9W	Toluene	0.17	U	0.17	UJ	1
DG-H9W	trans-1,2-Dichloroethene	0.13	U*	0.13	UJ	1
DG-H9W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-H9W	Trichloroethene	0.20	U	0.20	UJ	1
DG-H9W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-H9W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-H9W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-H9W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-L9W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-L9W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-L9W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-L9W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-L9W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-L9W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-L9W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-L9W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-L9W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-L9W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-L9W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-L9W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-L9W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-L9W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-L9W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-L9W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-L9W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-L9W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-L9W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-L9W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-L9W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-L9W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-L9W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-L9W	2-Hexanone	3.0	U	3.0	UJ	1
DG-L9W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-L9W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-L9W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-L9W	Acetone	20	U	20	UJ	1
DG-L9W	Benzene	0.25	U	0.25	UJ	1
DG-L9W	Bromobenzene	0.20	U	0.20	UJ	1
DG-L9W	Bromoform	0.50	U	0.50	UJ	1
DG-L9W	Bromomethane	0.49	U	0.49	UJ	1
DG-L9W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-L9W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-L9W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-L9W	Chlorobromomethane	0.25	U*	0.25	UJ	1
DG-L9W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-L9W	Chloroethane	0.17	U	0.17	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-L9W	Chloroform	0.40	U	0.40	UJ	1
DG-L9W	Chloromethane	0.19	U	0.19	UJ	1
DG-L9W	cis-1,2-Dichloroethene	0.82	NA	0.82	J	1
DG-L9W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-L9W	Dibromomethane	0.30	U	0.30	UJ	1
DG-L9W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-L9W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-L9W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-L9W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-L9W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-L9W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-L9W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-L9W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-L9W	Naphthalene	0.22	U	0.22	UJ	1
DG-L9W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-L9W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-L9W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-L9W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-L9W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-L9W	Toluene	0.17	U	0.17	UJ	1
DG-L9W	trans-1,2-Dichloroethene	0.13	U*	0.13	UJ	1
DG-L9W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-L9W	Trichloroethene	0.20	U	0.20	UJ	1
DG-L9W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-L9W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-L9W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-L9W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-L9W	Styrene	0.22	U	0.22	UJ	1
DG-M11W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-M11W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-M11W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-M11W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-M11W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-M11W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-M11W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-M11W	1,1-Dichloropropene	0.20	U	0.20	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-M11W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-M11W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-M11W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-M11W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-M11W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-M11W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-M11W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-M11W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-M11W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-M11W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-M11W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-M11W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-M11W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-M11W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-M11W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-M11W	2-Hexanone	3.0	U	3.0	UJ	1
DG-M11W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-M11W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-M11W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-M11W	Acetone	20	U	20	UJ	1
DG-M11W	Benzene	0.25	U	0.25	UJ	1
DG-M11W	Bromobenzene	0.20	U	0.20	UJ	1
DG-M11W	Bromoform	0.50	U	0.50	UJ	1
DG-M11W	Bromomethane	0.49	U	0.49	UJ	1
DG-M11W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-M11W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-M11W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-M11W	Chlorobromomethane	0.25	U*	0.25	UJ	1
DG-M11W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-M11W	Chloroethane	0.17	U	0.17	UJ	1
DG-M11W	Chloroform	0.40	U	0.40	UJ	1
DG-M11W	Chloromethane	0.19	U	0.19	UJ	1
DG-M11W	cis-1,2-Dichloroethene	0.076	U	0.076	UJ	1
DG-M11W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-M11W	Dibromomethane	0.30	U	0.30	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-M11W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-M11W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-M11W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-M11W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-M11W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-M11W	Isopropylbenzene	0.2	U	0.2	UJ	1
DG-M11W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-M11W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-M11W	Naphthalene	0.22	U	0.22	UJ	1
DG-M11W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-M11W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-M11W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-M11W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-M11W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-M11W	Toluene	0.17	U	0.17	UJ	1
DG-M11W	trans-1,2-Dichloroethene	0.13	U*	0.13	UJ	1
DG-M11W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-M11W	Trichloroethene	0.20	U	0.20	UJ	1
DG-M11W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-M11W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-M11W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-M11W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-M11W	Styrene	0.22	U	0.22	UJ	1
DG-K11W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-K11W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-K11W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-K11W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-K11W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-K11W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-K11W	1,1-Dichloroethene	0.20	U	0.20	UJ	1
DG-K11W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-K11W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-K11W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-K11W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-K11W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-K11W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-K11W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-K11W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-K11W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-K11W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-K11W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-K11W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-K11W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-K11W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-K11W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-K11W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-K11W	2-Hexanone	3.0	U	3.0	UJ	1
DG-K11W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-K11W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-K11W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-K11W	Acetone	20	U	20	UJ	1
DG-K11W	Benzene	0.25	U	0.25	UJ	1
DG-K11W	Bromobenzene	0.20	U	0.20	UJ	1
DG-K11W	Bromoform	0.50	U	0.50	UJ	1
DG-K11W	Bromomethane	0.49	U	0.49	UJ	1
DG-K11W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-K11W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-K11W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-K11W	Chlorobromomethane	0.25	U	0.25	UJ	1
DG-K11W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-K11W	Chloroethane	0.17	U	0.17	UJ	1
DG-K11W	Chloroform	0.40	U	0.40	UJ	1
DG-K11W	Chloromethane	0.19	U	0.19	UJ	1
DG-K11W	cis-1,2-Dichloroethene	0.076	U	0.076	UJ	1
DG-K11W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-K11W	Dibromomethane	0.30	U	0.30	UJ	1
DG-K11W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-K11W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-K11W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-K11W	Ethylene Dibromide	0.075	U	0.075	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-K11W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-K11W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-K11W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-K11W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-K11W	Naphthalene	0.22	U	0.22	UJ	1
DG-K11W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-K11W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-K11W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-K11W	Styrene	0.22	U	0.22	UJ	1
DG-K11W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-K11W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-K11W	Toluene	0.17	U	0.17	UJ	1
DG-K11W	trans-1,2-Dichloroethene	0.13	U	0.13	UJ	1
DG-K11W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-K11W	Trichloroethene	0.20	U	0.20	UJ	1
DG-K11W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-K11W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-K11W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-K11W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-I11W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-I11W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-I11W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-I11W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-I11W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-I11W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-I11W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-I11W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-I11W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-I11W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-I11W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-I11W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-I11W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-I11W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-I11W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-I11W	1,2-Dichloropropane	0.20	U	0.20	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-I11W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-I11W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-I11W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-I11W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-I11W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-I11W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-I11W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-I11W	2-Hexanone	3.0	U	3.0	UJ	1
DG-I11W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-I11W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-I11W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-I11W	Acetone	20	U	20	UJ	1
DG-I11W	Benzene	0.25	U	0.25	UJ	1
DG-I11W	Bromobenzene	0.20	U	0.20	UJ	1
DG-I11W	Bromoform	0.50	U	0.50	UJ	1
DG-I11W	Bromomethane	0.49	U	0.49	UJ	1
DG-I11W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-I11W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-I11W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-I11W	Chlorobromomethane	0.25	U*	0.25	UJ	1
DG-I11W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-I11W	Chloroethane	0.17	U	0.17	UJ	1
DG-I11W	Chloroform	0.40	U	0.40	UJ	1
DG-I11W	Chloromethane	0.19	U	0.19	UJ	1
DG-I11W	cis-1,2-Dichloroethene	0.076	U	0.076	UJ	1
DG-I11W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-I11W	Dibromomethane	0.30	U	0.30	UJ	1
DG-I11W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-I11W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-I11W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-I11W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-I11W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-I11W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-I11W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-I11W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-I11W	Naphthalene	0.22	U	0.22	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-I11W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-I11W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-I11W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-I11W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-I11W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-I11W	Toluene	0.17	U	0.17	UJ	1
DG-I11W	trans-1,2-Dichloroethene	0.13	U*	0.13	UJ	1
DG-I11W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-I11W	Trichloroethene	0.20	U	0.20	UJ	1
DG-I11W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-I11W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-I11W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-I11W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-I11W	Styrene	0.22	U	0.22	UJ	1
DG-G11W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-G11W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-G11W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-G11W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-G11W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-G11W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-G11W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-G11W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-G11W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-G11W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-G11W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-G11W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-G11W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-G11W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-G11W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-G11W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-G11W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-G11W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-G11W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-G11W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-G11W	2,2-Dichloropropane	0.17	U	0.17	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-G11W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-G11W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-G11W	2-Hexanone	3.0	U	3.0	UJ	1
DG-G11W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-G11W	4-Isopropyltoluene	0.20	U	0.20	UJ	1
DG-G11W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-G11W	Acetone	20	U	20	UJ	1
DG-G11W	Benzene	0.25	U	0.25	UJ	1
DG-G11W	Bromobenzene	0.20	U	0.20	UJ	1
DG-G11W	Bromoform	0.50	U	0.50	UJ	1
DG-G11W	Bromomethane	0.49	U	0.49	UJ	1
DG-G11W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-G11W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-G11W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-G11W	Chlorobromomethane	0.25	U*	0.25	UJ	1
DG-G11W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-G11W	Chloroethane	0.17	U	0.17	UJ	1
DG-G11W	Chloroform	0.40	U	0.40	UJ	1
DG-G11W	Chloromethane	0.19	U	0.19	UJ	1
DG-G11W	cis-1,2-Dichloroethene	0.076	U	0.076	UJ	1
DG-G11W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-G11W	Dibromomethane	0.30	U	0.30	UJ	1
DG-G11W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-G11W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-G11W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-G11W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-G11W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-G11W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-G11W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-G11W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-G11W	Naphthalene	0.22	U	0.22	UJ	1
DG-G11W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-G11W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-G11W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-G11W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-G11W	Tetrachloroethene	0.20	U	0.20	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-G11W	Toluene	0.17	U	0.17	UJ	1
DG-G11W	trans-1,2-Dichloroethene	0.13	U*	0.13	UJ	1
DG-G11W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-G11W	Trichloroethene	0.20	U	0.20	UJ	1
DG-G11W	Trichlorofluoromethane	0.30	U	0.30	UJ	1
DG-G11W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-G11W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-G11W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-G11W	Styrene	0.22	U	0.22	UJ	1
DG-E11W	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
DG-E11W	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
DG-E11W	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
DG-E11W	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U*	0.091	UJ	1
DG-E11W	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
DG-E11W	1,1-Dichloroethane	0.11	U	0.11	UJ	1
DG-E11W	1,1-Dichloroethene	0.20	U*	0.20	UJ	1
DG-E11W	1,1-Dichloropropene	0.20	U	0.20	UJ	1
DG-E11W	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
DG-E11W	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
DG-E11W	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
DG-E11W	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
DG-E11W	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
DG-E11W	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
DG-E11W	1,2-Dichloroethane	0.077	U	0.077	UJ	1
DG-E11W	1,2-Dichloropropane	0.20	U	0.20	UJ	1
DG-E11W	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
DG-E11W	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
DG-E11W	1,3-Dichloropropane	0.17	U	0.17	UJ	1
DG-E11W	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
DG-E11W	2,2-Dichloropropane	0.17	U	0.17	UJ	1
DG-E11W	2-Butanone (MEK)	8.4	U	8.4	UJ	1
DG-E11W	2-Chlorotoluene	0.20	U	0.20	UJ	1
DG-E11W	2-Hexanone	3.0	U	3.0	UJ	1
DG-E11W	4-Chlorotoluene	0.20	U	0.20	UJ	1
DG-E11W	4-Isopropyltoluene	0.20	U	0.20	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-E11W	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
DG-E11W	Acetone	20	U	20	UJ	1
DG-E11W	Benzene	0.25	U	0.25	UJ	1
DG-E11W	Bromobenzene	0.20	U	0.20	UJ	1
DG-E11W	Bromoform	0.50	U	0.50	UJ	1
DG-E11W	Bromomethane	0.49	U	0.49	UJ	1
DG-E11W	Carbon disulfide	0.78	U*	0.78	UJ	1
DG-E11W	Carbon tetrachloride	0.11	U	0.11	UJ	1
DG-E11W	Chlorobenzene	0.13	U	0.13	UJ	1
DG-E11W	Chlorobromomethane	0.25	U*	0.25	UJ	1
DG-E11W	Chlorodibromomethane	0.10	U	0.10	UJ	1
DG-E11W	Chloroethane	0.17	U	0.17	UJ	1
DG-E11W	Chloroform	0.40	U	0.40	UJ	1
DG-E11W	Chloromethane	0.19	U	0.19	UJ	1
DG-E11W	cis-1,2-Dichloroethene	0.076	U	0.076	UJ	1
DG-E11W	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
DG-E11W	Dibromomethane	0.30	U	0.30	UJ	1
DG-E11W	Dichlorobromomethane	0.20	U	0.20	UJ	1
DG-E11W	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
DG-E11W	Ethylbenzene	0.13	U	0.13	UJ	1
DG-E11W	Ethylene Dibromide	0.075	U	0.075	UJ	1
DG-E11W	Hexachlorobutadiene	0.27	U	0.27	UJ	1
DG-E11W	Isopropylbenzene	0.20	U	0.20	UJ	1
DG-E11W	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
DG-E11W	Methylene Chloride	1.5	U	1.5	UJ	1
DG-E11W	Naphthalene	0.22	U	0.22	UJ	1
DG-E11W	n-Butylbenzene	0.30	U	0.30	UJ	1
DG-E11W	N-Propylbenzene	0.20	U	0.20	UJ	1
DG-E11W	sec-Butylbenzene	0.17	U	0.17	UJ	1
DG-E11W	tert-Butylbenzene	0.20	U	0.20	UJ	1
DG-E11W	Tetrachloroethene	0.20	U	0.20	UJ	1
DG-E11W	Toluene	0.17	U	0.17	UJ	1
DG-E11W	trans-1,2-Dichloroethene	0.13	U*	0.13	UJ	1
DG-E11W	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
DG-E11W	Trichloroethene	0.20	U	0.20	UJ	1
DG-E11W	Trichlorofluoromethane	0.30	U	0.30	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier	Reason Code
DG-E11W	Vinyl acetate	0.60	U	0.60	UJ	1
DG-E11W	Vinyl chloride	0.20	U	0.20	UJ	1
DG-E11W	Xylenes, Total	0.40	U	0.40	UJ	1
DG-E11W	Styrene	0.22	U	0.22	UJ	1
DUP-32	Gasoline Range Organics (GRO)-C4-C12	29	J	29	J	13
DG-G11W	Gasoline Range Organics (GRO)-C4-C12	85	NA	85	J	1, 13
DG-H9W	Gasoline Range Organics (GRO)-C4-C12	21	U	21	UJ	1
DG-L9W	Gasoline Range Organics (GRO)-C4-C12	21	U	21	UJ	1
DG-M11W	Gasoline Range Organics (GRO)-C4-C12	21	U	21	UJ	1
DG-K11W	Gasoline Range Organics (GRO)-C4-C12	21	U	21	UJ	1
DG-I11W	Gasoline Range Organics (GRO)-C4-C12	21	U	21	UJ	1
DG-E11W	Gasoline Range Organics (GRO)-C4-C12	21	U	21	UJ	1

µg/L - Microgram per liter
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL
* - Laboratory flag indicating the LCS/LCSD recovery and/or RPD results are outside acceptance criteria

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Memorandum

Date:	6 December 2018
To:	Anthony Smith
From:	Todd Olsen
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88291-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of nine soil samples and two field duplicate samples, collected 27 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5035/8260B
- Polynuclear Aromatic Hydrocarbons (PAHs) by USEPA Methods 3546/8270C using Selected Ion Monitoring (SIM)
- Organochlorine Pesticides by USEPA Methods 3546/8081A
- Polychlorinated Biphenyls (PCBs) by USEPA Methods 3540C/8082
- Diesel Range Organics (DRO) by USEPA Methods 3546/8015B
- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A
- Asbestos by California Air Resources Board (CARB) Method 435

USEPA methods 3540C/8082 were performed at TA Canton, Ohio. CARB method 435 was performed at Asbestos TEM Laboratories Berkeley, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88291-1	DG-A8S-0.5-1
720-88291-2	DG-A8S-3.5-4
720-88291-3	DG-A8S-17-17.5
720-88291-4	DG-C9S-0.5-1
720-88291-5	DG-C9S-3.5-4
720-88291-6	DG-F7S-0.5-1

Laboratory ID	Client ID
720-88291-7	DG-F7S-3.5-4
720-88291-8	DG-D7S-1.5-2
720-88291-9	DG-D7S-3.5-4
720-88291-10	DUP-16
720-88291-11	DUP-35

The samples were received at TA Pleasanton, California at 1.4ºC and 4.3ºC and at TA Canton, Ohio at 17.8ºC, both within and outside the criteria of <6ºC. Since the PCB samples received TA Canton, Ohio at 17.8ºC were extracted within the 14-day holding time and based on professional and technical judgement, no qualifications were applied to the data.

An incorrect error correction was observed on the chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

Field duplicate sample DUP-35 was reported in this job, 720-88291-1; however, the parent sample, DG-M12S-3.5-4, was reported in job 720-88292-1.

The narrative indicated that the containers for sample DUP-35 were labeled with sample ID DUP-36. In an email communication on 29 August 2018, the client confirmed that DUP-35 was the correct sample ID.

The year was not included in the collection dates on the COC and in the first sample relinquishing documentation.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs per USEPA Methods 5035/8260B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for this analysis, for the data set is 100%.

The narrative and Internal Standard Recovery Reports indicated that the 1,4-dichlorobenzene-d4 internal standard recovery for sample DG-A8S-0.5-1 was low and outside the laboratory specified acceptance criteria. Therefore, the non-detect results for the associated analytes in sample DG-A8S-0.5-1 were UJ qualified as estimated less than the method detection limits (MDLs).

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-A8S-0.5-1	1,1,2,2-Tetrachloroethane	0.77	U*	0.77	UJ	11
DG-A8S-0.5-1	1,2,3-Trichlorobenzene	0.76	U*	0.76	UJ	11
DG-A8S-0.5-1	1,2,3-Trichloropropane	0.79	U*	0.79	UJ	11

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier**	Reason code***
DG-A8S-0.5-1	1,2,4-Trichlorobenzene	0.73	U*	0.73	UJ	11
DG-A8S-0.5-1	1,2,4-Trimethylbenzene	1.7	U*	1.7	UJ	11
DG-A8S-0.5-1	1,2-Dibromo-3-Chloropropane	1.7	U*	1.7	UJ	11
DG-A8S-0.5-1	1,2-Dichlorobenzene	0.70	U*	0.70	UJ	11
DG-A8S-0.5-1	1,3,5-Trimethylbenzene	0.66	U*	0.66	UJ	11
DG-A8S-0.5-1	1,3-Dichlorobenzene	0.74	U*	0.74	UJ	11
DG-A8S-0.5-1	1,4-Dichlorobenzene	0.73	U*	0.73	UJ	11
DG-A8S-0.5-1	2-Chlorotoluene	0.66	U*	0.66	UJ	11
DG-A8S-0.5-1	4-Chlorotoluene	0.70	U*	0.70	UJ	11
DG-A8S-0.5-1	4-Isopropyltoluene	2.6	U*	2.6	UJ	11
DG-A8S-0.5-1	Bromobenzene	0.81	U*	0.81	UJ	11
DG-A8S-0.5-1	Hexachlorobutadiene	0.92	U*	0.92	UJ	11
DG-A8S-0.5-1	Naphthalene	1.5	U*	1.5	UJ	11
DG-A8S-0.5-1	n-Butylbenzene	1.0	U*	1.0	UJ	11
DG-A8S-0.5-1	N-Propylbenzene	0.67	U*	0.67	UJ	11
DG-A8S-0.5-1	sec-Butylbenzene	0.74	U*	0.74	UJ	11
DG-A8S-0.5-1	tert-Butylbenzene	0.75	U*	0.75	UJ	11

µg/kg - Microgram per kilogram
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.
* - Laboratory flag indicating the internal standard response or retention time was outside the acceptable limits.
** - Validation qualifiers are defined in Attachment 1 at the end of this report.
*** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analysis of a solid sample are 48 hours from sample collection to preservation and 14 days from collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250626). VOCs were not detected in the method blank above the MDLs.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were not reported. Laboratory control sample (LCS)/LCS duplicate (LCSD) pairs were used to assess precision and accuracy in these batches.

1.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCS/LCSD pairs were reported. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exception.

The 1,1-dichloroethene recoveries in the LCS/LCSD pair in batch 250626 were high and outside the laboratory specified acceptance criteria. Since 1,1-dichloroethene was not detected in the associated samples, no qualification were applied to the data.

1.6 Surrogates

Acceptable surrogate recoveries were reported for the sample analyses.

1.7 Trip Blank

Trip blanks did not accompany the samples.

1.8 Field Duplicate

One field duplicate sample, DUP-16, was collected with the sample set and analyzed for VOCs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-A8S-17-17.

1.9 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 6.

1.10 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 POLYNUCLEAR AROMATIC HYDROCARBONS

The samples were analyzed for PAHs per USEPA Methods 3546/8270C using SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The PAH data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the PAH analysis of a solid sample are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250712). PAHs were not detected in the method blank above the MDLs.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one pair per batch of 20 samples). A batch MS/MSD pair was reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There were no surrogate recoveries (0%) in sample DG-A8S-0.5-1. Since the sample was analyzed at a 1:20 dilution, no qualifications were applied to the data.

2.7 Field Duplicate

One field duplicate sample, DUP-16, was collected with the sample set and analyzed for PAHs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-A8S-17-17, with the following exceptions.

2-Methylnaphthalene and naphthalene were reported at concentrations greater than the reporting limits (RLs) in sample DG-A8S-17-17.5 and not detected in field duplicate DUP-16, resulting in non-calculable RPDs. Therefore, the non-detect 2-methylnaphthalene and naphthalene results in field duplicate DUP-16 were UJ qualified as estimated less than the MDLs and the concentrations in sample DG-A8S-17-17.5 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A8S-17-17.5	2-Methylnaphthalene	24	NA	NC	24	J	7
DUP-16	2-Methylnaphthalene	9.4	U		9.4	UJ	7
DG-A8S-17-17.5	Naphthalene	46	NA	NC	46	J	7
DUP-16	Naphthalene	4.7	U		4.7	UJ	7

µg/kg - Microgram per kilogram.
NA - Not applicable

NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

2.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

2.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 ORGANOCHLORINE PESTICIDES

The samples were analyzed for organochlorine pesticides per USEPA Methods 3546/8081A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

3.1 Overall Assessment

The organochlorine pesticides data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding times for the organochlorine pesticides analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250674). Organochlorine pesticides were not detected in the method blank above the MDLs.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-A8S-17-17.5. The recovery and RPD results were within the laboratory specified acceptance criteria.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There were no surrogate recoveries (0%) in sample DG-A8S-0.5-1. Since the sample was analyzed at a 1:10 dilution, no qualifications were applied to the data.

3.7 Field Duplicate

One field duplicate sample, DUP-16, was collected with the sample set and analyzed for organochlorine pesticides. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-A8S-17-17.

3.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 POLYCHLORINATED BIPHENYLS

The samples were analyzed for PCBs per USEPA Methods 3540C /8082A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

4.1 Overall Assessment

The PCB (Aroclor) data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

The narrative indicated that the Aroclor-1242 percent difference (%D) in the continuing calibration verification (CCV) associated with batch 343587 was high and outside the laboratory specified

acceptance criteria, with a high bias. Since Aroclor-1242 was not detected in the associated samples, no qualifications were applied to the data.

4.2 Holding Times

The holding time for the PCB analysis of solid samples is 1 year from sample collection to extraction and analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 343472). PCBs were not detected in the method blank above the MDLs.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DUP-16. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

4.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

4.7 Field Duplicate

One field duplicate sample, DUP-16, was collected with the sample set and analyzed for PCBs. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate and the original sample, DG-A8S-17-17.

4.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) per USEPA Methods 3546/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Time
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The DRO data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

5.2 Holding Times

The holding times for the DRO analysis of solids are 14 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250498 and 250665). DRO was not detected in the method blanks above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two batch MS/MSD pairs were reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery result was within the laboratory specified acceptance criteria.

5.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria, with the following exception.

There were no surrogate recoveries (0%) in samples DG-A8S-0.5-1 and DG-A8S-3.5-4. Since the samples were analyzed at dilutions, no qualifications were applied to the data.

5.7 Field Duplicate

One field duplicate sample, DUP-16, was collected with the sample set and analyzed for DRO. Acceptable precision (RPD $\leq$50%) was not demonstrated between the field duplicate and the original sample, DG-A8S-17-17.

DRO was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-A8S-17-17.5 and at a concentration greater than the RL in field duplicate DUP-16, resulting in a non-calculable RPD. Therefore, the DRO concentrations in field duplicate pair DG-A8S-17-17.5/DUP-16 were J qualified.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-16	Diesel Range Organics [C10-C28]	2800	NA	NC	2800	J	7

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A8S-17-17.5	Diesel Range Organics [C10-C28]	1200	J		1200	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable.
NC - Not calculable.

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

5.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

6.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 7.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilution
⊗ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

6.1 Overall Assessment

The metals data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

6.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

6.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250697). Metals were not detected in the method blank above the MDLs.

6.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair and post digestion spike (PDS) were reported, using sample DG-C9S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The beryllium MS/MSD pair and PDS recoveries were high and outside the laboratory specified acceptance criteria. Since beryllium was not detected in sample DG-C9S-3.5-4, no qualifications were applied to the data.

The vanadium MS/MSD pair and PDS recoveries were high and outside the laboratory specified acceptance criteria. Therefore, the vanadium concentration in sample DG-C9S-3.5-4 was J+ qualified as estimated, with a high bias.

One or both of the chromium, cobalt and nickel recoveries in the MS/MSD pair were high and outside the laboratory specified acceptance criteria. Since the PDS recoveries were acceptable, the chromium, cobalt and nickel concentrations in sample DG-C9S-3.5-4 were J qualified as estimated.

The antimony and barium MS/MSD pair recoveries were low and outside the laboratory specified acceptance criteria; however, the PDS recoveries were greater than 75%. Therefore, the antimony and barium concentrations in sample DG-C9S-3.5-4 were J qualified as estimated.

The copper, lead and zinc recoveries were outside the laboratory specified acceptance criteria. Since the sample concentrations were at least four times greater than the spike concentrations, no qualifications were applied to the data.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C9S-3.5-4	Antimony	6100	F1	6100	J	4
DG-C9S-3.5-4	Barium	110000	F1	110000	J	4
DG-C9S-3.5-4	Chromium	13000	F1	13000	J	4
DG-C9S-3.5-4	Cobalt	15000	F1	15000	J	4
DG-C9S-3.5-4	Nickel	9500	F1	9500	J	4
DG-C9S-3.5-4	Vanadium	92000	F1	92000	J+	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recoveries were outside acceptance limits.

6.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

6.6 Serial Dilution

One serial dilution was reported with sample set, using sample DG-C9S-3.5-4. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, vanadium and zinc RPD results were outside the laboratory specified acceptance criteria. Therefore, the concentrations of these metals in sample DG-C9S-3.5-4 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C9S-3.5-4	Arsenic	19000	NA	19000	J	8
DG-C9S-3.5-4	Barium	110000	F1	110000	J	8
DG-C9S-3.5-4	Cadmium	4000	NA	4000	J	8

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-C9S-3.5-4	Chromium	13000	F1	13000	J	8
DG-C9S-3.5-4	Cobalt	15000	F1	15000	J	8
DG-C9S-3.5-4	Copper	420000	NA	420000	J	8
DG-C9S-3.5-4	Lead	1400000	NA	1400000	J	8
DG-C9S-3.5-4	Nickel	9500	F1	9500	J	8
DG-C9S-3.5-4	Vanadium	92000	F1	92000	J	8
DG-C9S-3.5-4	Zinc	780000	NA	780000	J	8

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recoveries were outside acceptance limits.
NA - Not applicable.

6.7 Field Duplicate

Two field duplicate samples, DUP-16 and DUP-35, were collected with the sample set and analyzed for metals. Acceptable precision (RPD ≤50%) was demonstrated between the field duplicates and the original samples, DG-A8S-17-17.5 and DG-M12S-3.5-4 (job 720-88292-1), respectively, with the following exceptions.

Beryllium was reported at an estimated concentration greater than the MDL and less than the RL in sample DG-A8S-17-17.5 and not detected in field duplicate DUP-16, resulting in a non-calculable RPD. Therefore, the estimated beryllium concentration in sample DG-A8S-17-17.5 was J qualified as estimated and the non-detect result in field duplicate DUP-16 was UJ qualified as estimated less than the MDL.

The cobalt RPD for field duplicate pair DG-A8S-17-17.5/DUP-16 was greater than 50%. Therefore, the cobalt concentrations in field duplicate pair DG-A8S-17-17.5/DUP-16 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	RPD (%)	Validation Result (µg/kg)	Validation Qualifier	Reason code
DG-A8S-17-17.5	Beryllium	160	J	NC	160	J	7
DUP-16	Beryllium	87	U		87	UJ	7
DG-A8S-17-17.5	Cobalt	8300	NA	55	8300	J	7
DUP-16	Cobalt	4700	NA		4700	J	7

µg/kg - Microgram per kilogram.
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable

NC - Non-calculable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL.

Antimony, silver and thallium were reported at concentrations greater than the MDLs in field duplicate DUP-35 and not detected in sample DG-M12S-3.5-4 (job 720-88292-1), resulting in non-calculable RPDs. Therefore, the antimony, silver and thallium concentrations in field duplicate DUP-35 were J qualified as estimated.

Beryllium and molybdenum were reported at estimated concentrations greater than the MDLs and less than the RLs in field duplicate DUP-35 and at concentrations greater than the RLs in sample DG-M12S-3.5-4 (job 720-88292-1), resulting in non-calculable RPDs. Therefore, the estimated beryllium and molybdenum concentrations in field duplicate DUP-35 were J qualified as estimated.

The arsenic and barium RPDs for field duplicate pair DG-M12S-3.5-4/DUP-35 were greater than 50%. Therefore, the arsenic and barium concentrations in field duplicate DUP-35 were J qualified as estimated.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-35	Antimony	1200	J	1200	J	7
DUP-35	Arsenic	8900	NA	8900	J	7
DUP-35	Barium	140000	NA	140000	J	7
DUP-35	Beryllium	280	J	280	J	7
DUP-35	Molybdenum	390	J	390	J	7
DUP-35	Silver	480	J	480	J	7
DUP-35	Thallium	1800	NA	1800	J	7

µg/kg - Microgram per kilogram
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the RL and greater than the MDL.
NA - Not applicable.

6.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to the dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

6.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

7.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

7.1 Overall Assessment

The mercury data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

7.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

7.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (batches 250663, 250709 and 250816). Mercury was not detected in the method blanks above the MDL.

7.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-C9S-3.5-4. The recovery and RPD results were within the laboratory specified acceptance criteria.

Batch MS/MSD pairs were also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

7.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three LCSs were reported. The recovery result was within the laboratory specified acceptance criteria.

7.6 Field Duplicate

Two field duplicate samples, DUP-16 and DUP-35, were collected with the sample set and analyzed for mercury. Acceptable precision (RPD $\leq$50%) was demonstrated between the field duplicate pair DUP-35/DG-M12S-3.5-4. However, mercury was detected at an estimated concentration greater then the MDL and less then the RL in sample DG-A8S-17-17.5 and not detected in DUP-16 resulting in a noncalculable RPD. Therefore, the mercury concentration in sample DG-A8S-17-17.5 was J qualified as estimated and the non-detect result in DUP-16 was UJ qualified as estimated less than the MDL.

Sample ID	Compound	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason code
DUP-16	Mercury	2.2	U	2.2	UJ	7
DG-A8S-17-17.5	Mercury	4.0	J	4.0	J	7

7.7 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 6.

7.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

8.0 ASBESTOS

The samples were analyzed for asbestos by CARB method 435.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

✓ Overall Assessment
⊗ Electronic Data Deliverable Review

8.1 Overall Assessment

The asbestos data reported in this package are considered usable for meeting project objectives. The results are considered valid; the analytical completeness defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

The method specifies confirmation of the asbestos results in 10% of the samples. The laboratory stated in an email to the data validator that they perform 10% QC analysis on the samples; however, the results of the QC analyses were not provided. Based on professional and technical judgment, no qualifications were applied to the data, but this should be noted by the data user.

8.2 Electronic Data Deliverable Review

The asbestos data were not included in the EDD.

* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U — The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ — The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- — The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ — The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88292-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of fourteen soil samples, including one sample for matrix spike/ matrix spike duplicate (MS/MSD) analyses, collected 27 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Metals by USEPA Methods 3050B/6010B
- Mercury by USEPA Method 7471A

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88292-1	DG-G9S-0.5-1
720-88292-2	DG-G9S-3.5-4
720-88292-3	DG-H7S-0.5-1
720-88292-4	DG-H7S-3.5-4
720-88292-5	DG-J7S-0.5-1
720-88292-6	DG-J7S-3.5-4
720-88292-7	DG-L7S-0.5-1

Laboratory ID	Client ID
720-88292-8	DG-L7S-3.5-4
720-88292-9	DG-M13-0.5-1
720-88292-10	DG-M13-3.5-4
720-88292-11	DG-M12-0.5-1
720-88292-12	DG-M12-3.5-4
720-88292-13	DG-L12S-0.5-1
720-88292-14	DG-L12S-3.5-4

The samples were received at TA Pleasanton, California at 1.4ºC, 1.4ºC and 4.3ºC, within the criteria of ≤6ºC. No sample preservation issues were noted by the laboratory.

Incorrect error corrections were observed on the original chain of custody (COC), instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

The year was not documented on the COC for the sample collection dates, and for the first sample transfer and the second sampling relinquishing documentation.

1.0 METALS

The samples were analyzed for metals per USEPA Methods 3050B/6010B (Mercury evaluated separately in Section 2.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
⊗ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
⊗ Serial Dilution
✓ Field Duplicate
✓ Sensitivity
⊗ Electronic Data Deliverable Review

1.1 Overall Assessment

The metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

It was noted in the case narrative that the recoveries for the internal standards in the interference check standards ICSA and ICSAB were outside the method specified acceptance criteria in batch 251004 and for the ICSAB in batch 250877. Since the metals recoveries in these standards were within the method specified acceptance criteria and based on professional and technical judgement, no qualifications were applied to the data.

Two sample results were reported for sample DG-M13-3.5-4 in the electronic data deliverable (EDD), one from 9/4/18 and the other from 9/5/18. The results from the 9/5/18 analysis were reported in the hardcopy report. Therefore, the results from the 9/4/18 analysis in the EDD were R qualified as rejected.

1.2 Holding Times

The holding time for the metals analysis of a solid sample is 180 days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250715 and 250775). Metals were not detected in the method blanks above the method detection limits (MDLs), with the following exceptions.

Arsenic, barium, and zinc were detected in the method blank in batch 205709 at estimated concentrations greater than the MDLs and less than the reporting limits (RLs). Since the associated sample results were greater than the RLs, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate

MS/MSDs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample DG-M13-3.5-4. The MS/MSD pair using sample DG-M13-3.5-04 was analyzed twice. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria, with the following exceptions.

The chromium and nickel recoveries in the first and second MS/MSD analyses using sample DG-M13-3.5-4 were high and outside the laboratory specified acceptance criteria. Since the chromium and nickel concentrations in the sample were greater than four times the spike concentrations, no qualifications were applied to the data.

One or both of the recoveries of arsenic, barium and copper in the first MS/MSD pair analyses using sample DG-M13-3.5-4 were high and outside the laboratory specified acceptance criteria. The cobalt and copper RPDs were also outside the laboratory specified acceptance criteria. Since the post digestion spike (PDS) recoveries for these analytes were less than 125%, the concentrations of arsenic, barium and copper in sample DG-M13-3.5-4 were J qualified as estimated.

The antimony and vanadium recoveries in the first MS/MSD pair analyses using sample DG-M13-3.5-4 were low and outside the laboratory specified acceptance criteria. In addition, the MS recovery of cobalt was low and the MSD recovery and the RPD were high, outside the laboratory specified acceptance criteria. Since the PDS recoveries for these analytes were less than 125%, the concentrations of antimony, cobalt and vanadium in sample DG-M13-3.5-4 were J qualified as estimated.

The antimony and barium recoveries in the second MS/MSD pair analyses using sample DG-M13-3.5-4 were low and outside the laboratory specified acceptance criteria. The barium RPD was also high and outside the laboratory specified acceptance criteria. Since the antimony and barium concentrations in sample DG-M13-3.5-4 were qualified due to the first MS/MSD pair analyses, no additional qualifications were applied to the data.

One or both of the arsenic, cobalt and copper recoveries in the second MS/MSD pair analyses using sample DG-M13-3.5-4 were high and outside the laboratory specified acceptance criteria. The copper RPD was also high and outside the laboratory specified acceptance criteria. Since the

arsenic, cobalt and copper concentrations in sample DG-M13-3.5-4 were qualified due to the first MS/MSD pair analyses, no additional qualifications were applied to the data.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier *	Reason Code **
DG-M13-3.5-4	Antimony	2200	F1	2200	J	4
DG-M13-3.5-4	Arsenic	110000	B F1	110000	J	4
DG-M13-3.5-4	Barium	140000	B F1 F2	140000	J	4
DG-M13-3.5-4	Copper	55000	F1 F2	55000	J	4
DG-M13-3.5-4	Cobalt	29000	F1	29000	J	4
DG-M13-3.5-4	Vanadium	68000	NA	68000	J	4

µg/kg - Microgram per kilogram
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
F2 – Laboratory flag indicating the MS/MSD RPD was outside the acceptance criteria
B – Laboratory flag indicating method blank contamination
NA-not applicable
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

1.6 Serial Dilution

The narrative indicated that two serial dilutions were analyzed, both using sample DG-M13-3.5-4. The RPD results were within the laboratory specified acceptance criteria, with the following exceptions.

The barium, chromium, cobalt, nickel and vanadium RPDs in one of the serial dilutions were high and outside the laboratory specified acceptance criteria; the arsenic, barium, cobalt, chromium, nickel and vanadium RPDs in the other serial dilution were high and outside the laboratory specified acceptance criteria. Therefore, the concentrations of arsenic, barium, cobalt, chromium, nickel and vanadium in sample DG-M13-3.5-4 were J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/kg)	Laboratory Flag	Validation Result (µg/kg)	Validation Qualifier	Reason Code
DG-M13-3.5-4	Arsenic	110000	B F1	110000	J	8
DG-M13-3.5-4	Barium	140000	B F1 F2	140000	J	8
DG-M13-3.5-4	Chromium	230000	NA	230000	J	8
DG-M13-3.5-4	Cobalt	29000	F1	29000	J	8
DG-M13-3.5-4	Nickel	300000	NA	300000	J	8
DG-M13-3.5-4	Vanadium	68000	NA	68000	J	8

µg/kg - Microgram per kilogram
NA-not applicable
F1 - Laboratory flag indicating the MS and/or MSD recovery was outside the acceptance criteria
B – Laboratory flag indicating method blank contamination

1.7 Field Duplicate

Field duplicates were not collected with the sample set.

1.8 Sensitivity

The samples were reported to the MDLs. Elevated non-detect results were reported due to dilutions analyzed. The MDLs met the proposed SSSLs in the Work Plan Table 6.

1.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. As noted above, two sample results were reported for sample DG-M13-3.5-4 in the EDD, one from 9/4/18 and the other from 9/5/18. The results from the 9/5/18 analysis were reported in the hardcopy report. No other discrepancies were identified between the level II report and the EDD.

2.0 MERCURY

The samples were analyzed for mercury per USEPA Method 7471A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding time for the mercury analysis of a solid sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two method blanks were reported (batches 250709 and 250816). Mercury was not detected in the method blanks above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported using sample DG-M13-3.5-4. The recovery and RPD results were within laboratory specified acceptance criteria.

One batch MS/MSD pair was also reported. Since these are batch QC samples, the results did not impact the data and did not result in qualification of the data.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Two LCSs were reported. The recovery results were within the laboratory specified acceptance criteria.

2.6 Field Duplicate

Field duplicates were not collected with the sample set.

2.7 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSLs in the Work Plan Table 6.

2.8 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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* * * * *

ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference

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Memorandum

Date:	15 November 2018
To:	Anthony Smith
From:	Mike Patty
CC:	Mary Tyler
	J. Caprio
Subject:	**Stage 2A Data Validation - Level II Data Deliverable, TestAmerica Work Order Number 720-88324-1**

SITE: UPC OU-SM

INTRODUCTION

This report summarizes the findings of the Stage 2A data validation of three groundwater samples and one trip blank, collected 30 August 2018, as part of the UPC OU-SM sampling event. The samples were submitted to TestAmerica Laboratories, Inc. (TA) Pleasanton, California and analyzed for the following tests:

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (USEPA) Methods 5030B/8260B
- 1,2,3-Trichloropropane by USEPA Methods 5030B/8260B using Selected Ion Monitoring (SIM)
- Diesel Range Organics (DRO) by USEPA Methods 3510C/8015B
- Metals by USEPA Methods 3010A/6010B
- Mercury by USEPA Method 7470A
- Hexavalent Chromium (Cr VI) by USEPA Method 7196A

USEPA methods 5030B/8260BSIM were performed at TA Irvine, California. The remaining analyses were performed at TA Pleasanton, California.

EXECUTIVE SUMMARY

Overall, based on this Stage 2A data validation covering the quality control (QC) parameters listed below, the data as qualified are usable for meeting project objectives. The qualified data should be used within the limitations of the qualification.

The data were reviewed based on the Final Data Gap Investigation Work Plan, San Mateo Portion of UPC OU, Brisbane, California. 12 October 2018, the Sampling and Analysis Plan and Quality Assurance Project Plan (Appendix E of the Work Plan), the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017 (USEPA-540-R-2017-001), the USEPA National Functional Guidelines for Superfund Organic Methods Data Review, January 2017 (USEPA-540-R-2017-002), as well as by the pertinent methods referenced by the data package and professional and technical judgment.

The following samples were analyzed and validated at Stage 2A level in the data set:

Laboratory ID	Client ID
720-88324-1	GWE-1
720-88324-2	GWE-2

Laboratory ID	Client ID
720-88324-3	GWE-3
720-88324-4	TB-1

The samples were received by TA Pleasanton, California at 5.0°C, within the criteria of ≤6°C, In addition, no receipt issues were noted by TA Irvine, California.

Incorrect error corrections were observed on the chain of custody (COC) forms instead of the proper procedure of a single strike through, correction, and initials and date of person making the corrections.

1,2,3-Trichloropropane by California Department of Health Services Division of Drinking Water and Environmental Management Sanitation and Radiation Laboratories Branch (SRL) Method Modified 524.2 was listed on the COC; however, the client later requested 1,2,3-trichloropropane by 8260B-SIM. 8260B-SIM was used to analyze the samples for 1,2,3-trichloropropane.

The COC did not specify whether the metals samples were total or dissolved. The client confirmed the metals samples were field filtered.

Sample TB-1 was not marked for analysis on the COC. The trip blank was analyzed by methods 8260B and 8260B SIM.

1.0 VOLATILE ORGANIC COMPOUNDS

The samples were analyzed for VOCs by USEPA methods 5030B/8260B and for 1,2,3-trichloropropane by EPA methods 5030B/8260B-SIM.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues

were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

⊗ Overall Assessment
✓ Holding Times
✓ Method Blank
✓ Matrix Spike/Matrix Spike Duplicate
✓ Laboratory Control Sample
✓ Surrogates
✓ Trip Blank
✓ Field Blank
✓ Field Duplicate
✓ Sensitivity
✓ Electronic Data Deliverable Review

1.1 Overall Assessment

The VOC data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results to the total number of analytical results requested on samples submitted for these analyses, for the data set is 100%.

The narrative indicated that the samples were collected in properly preserved vials. However, the pH of sample GWE-3 greater than 2 when verified by the laboratory at analysis by EPA method 8260B. Since the sample was analyzed within the seven day holding time for a sample with a pH >2, no qualifications were applied to the data.

The narrative indicated samples GWE-1 and GWE-2 for method 8260B analyses and sample GWE-2 for 8260B-SIM analysis were analyzed from vials with headspace. Therefore, based on professional and technical judgment, the non-detect VOC results in samples GWE-1 and GWE-2 and 1,2,3-trichloropropane in sample GWE-2 were UJ qualified as estimated less than the method detection limits (MDLs) and the concentrations were J qualified as estimated.

The narrative indicated the gasoline range organics (GRO) concentration in sample GWE-1 was due to the presence of discrete peaks cis-1,2-dichloroethene, vinyl chloride and an unknown compound. Therefore, based on professional and technical judgment, the GRO concentration in the sample GWE-1 was J qualified as estimated.

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier *	Reason Code **
GWE-1	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
GWE-1	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
GWE-1	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1
GWE-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U	0.091	UJ	1
GWE-1	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
GWE-1	1,1-Dichloroethane	0.35	J	0.35	J	1
GWE-1	1,1-Dichloroethene	0.20	U	0.20	UJ	1
GWE-1	1,1-Dichloropropene	0.20	U	0.20	UJ	1
GWE-1	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
GWE-1	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
GWE-1	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
GWE-1	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
GWE-1	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
GWE-1	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
GWE-1	1,2-Dichloroethane	0.077	U	0.077	UJ	1
GWE-1	1,2-Dichloropropane	0.20	U	0.20	UJ	1
GWE-1	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
GWE-1	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
GWE-1	1,3-Dichloropropane	0.17	U	0.17	UJ	1
GWE-1	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
GWE-1	2,2-Dichloropropane	0.17	U	0.17	UJ	1
GWE-1	2-Butanone (MEK)	8.4	U	8.4	UJ	1
GWE-1	2-Chlorotoluene	0.20	U	0.20	UJ	1
GWE-1	2-Hexanone	3.0	U	3.0	UJ	1
GWE-1	4-Chlorotoluene	0.20	U	0.20	UJ	1
GWE-1	4-Isopropyltoluene	0.20	U	0.20	UJ	1
GWE-1	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
GWE-1	Acetone	20	U	20	UJ	1
GWE-1	Benzene	0.25	U	0.25	UJ	1
GWE-1	Bromobenzene	0.20	U	0.20	UJ	1
GWE-1	Bromoform	0.50	U	0.50	UJ	1
GWE-1	Bromomethane	0.49	U	0.49	UJ	1
GWE-1	Carbon disulfide	0.78	U	0.78	UJ	1
GWE-1	Carbon tetrachloride	0.11	U	0.11	UJ	1
GWE-1	Chlorobenzene	0.13	U	0.13	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier *	Reason Code **
GWE-1	Chlorobromomethane	0.25	U	0.25	UJ	1
GWE-1	Chlorodibromomethane	0.10	U	0.10	UJ	1
GWE-1	Chloroethane	0.17	U	0.17	UJ	1
GWE-1	Chloroform	0.40	U	0.40	UJ	1
GWE-1	Chloromethane	0.19	U	0.19	UJ	1
GWE-1	cis-1,2-Dichloroethene	70	NA	70	J	1
GWE-1	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
GWE-1	Dibromomethane	0.30	U	0.30	UJ	1
GWE-1	Dichlorobromomethane	0.20	U	0.20	UJ	1
GWE-1	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
GWE-1	Ethylbenzene	0.13	U	0.13	UJ	1
GWE-1	Ethylene Dibromide	0.075	U	0.075	UJ	1
GWE-1	Gasoline Range Organics (GRO)-C4-C12	120	NA	120	J	1, 13
GWE-1	Hexachlorobutadiene	0.27	U	0.27	UJ	1
GWE-1	Isopropylbenzene	0.20	U	0.20	UJ	1
GWE-1	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
GWE-1	Naphthalene	0.22	U	0.22	UJ	1
GWE-1	n-Butylbenzene	0.30	U	0.30	UJ	1
GWE-1	N-Propylbenzene	0.20	U	0.20	UJ	1
GWE-1	sec-Butylbenzene	0.17	U	0.17	UJ	1
GWE-1	Styrene	0.22	U	0.22	UJ	1
GWE-1	tert-Butylbenzene	0.20	U	0.20	UJ	1
GWE-1	Tetrachloroethene	0.28	J	0.28	J	1
GWE-1	Toluene	0.17	U	0.17	UJ	1
GWE-1	trans-1,2-Dichloroethene	0.85	NA	0.85	J	1
GWE-1	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
GWE-1	Trichloroethene	3.0	NA	3.0	J	1
GWE-1	Trichlorofluoromethane	0.30	U	0.30	UJ	1
GWE-1	Vinyl acetate	0.60	U	0.60	UJ	1
GWE-1	Xylenes, Total	0.40	U	0.40	UJ	1
GWE-1	Methylene Chloride	15	U	15	UJ	1
GWE-1	Vinyl chloride	210	NA	210	J	1
GWE-2	1,1,1,2-Tetrachloroethane	0.067	U	0.067	UJ	1
GWE-2	1,1,1-Trichloroethane	0.20	U	0.20	UJ	1
GWE-2	1,1,2,2-Tetrachloroethane	0.074	U	0.074	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier *	Reason Code **
GWE-2	1,1,2-Trichloro-1,2,2-trifluoroethane	0.091	U	0.091	UJ	1
GWE-2	1,1,2-Trichloroethane	0.11	U	0.11	UJ	1
GWE-2	1,1-Dichloroethane	0.11	U	0.11	UJ	1
GWE-2	1,1-Dichloroethene	0.20	U	0.20	UJ	1
GWE-2	1,1-Dichloropropene	0.20	U	0.20	UJ	1
GWE-2	1,2,3-Trichlorobenzene	0.21	U	0.21	UJ	1
GWE-2	1,2,3-Trichloropropane	0.087	U	0.087	UJ	1
GWE-2	1,2,4-Trichlorobenzene	0.13	U	0.13	UJ	1
GWE-2	1,2,4-Trimethylbenzene	0.20	U	0.20	UJ	1
GWE-2	1,2-Dibromo-3-Chloropropane	0.30	U	0.30	UJ	1
GWE-2	1,2-Dichlorobenzene	0.21	U	0.21	UJ	1
GWE-2	1,2-Dichloroethane	0.077	U	0.077	UJ	1
GWE-2	1,2-Dichloropropane	0.20	U	0.20	UJ	1
GWE-2	1,3,5-Trimethylbenzene	0.17	U	0.17	UJ	1
GWE-2	1,3-Dichlorobenzene	0.20	U	0.20	UJ	1
GWE-2	1,3-Dichloropropane	0.17	U	0.17	UJ	1
GWE-2	1,4-Dichlorobenzene	0.16	U	0.16	UJ	1
GWE-2	2,2-Dichloropropane	0.17	U	0.17	UJ	1
GWE-2	2-Butanone (MEK)	8.4	U	8.4	UJ	1
GWE-2	2-Chlorotoluene	0.20	U	0.20	UJ	1
GWE-2	2-Hexanone	3.0	U	3.0	UJ	1
GWE-2	4-Chlorotoluene	0.20	U	0.20	UJ	1
GWE-2	4-Isopropyltoluene	0.20	U	0.20	UJ	1
GWE-2	4-Methyl-2-pentanone (MIBK)	4.5	U	4.5	UJ	1
GWE-2	Acetone	20	U	20	UJ	1
GWE-2	Benzene	0.25	U	0.25	UJ	1
GWE-2	Bromobenzene	0.20	U	0.20	UJ	1
GWE-2	Bromoform	0.50	U	0.50	UJ	1
GWE-2	Bromomethane	0.49	U	0.49	UJ	1
GWE-2	Carbon disulfide	0.78	U	0.78	UJ	1
GWE-2	Carbon tetrachloride	0.11	U	0.11	UJ	1
GWE-2	Chlorobenzene	0.13	U	0.13	UJ	1
GWE-2	Chlorobromomethane	0.25	U	0.25	UJ	1
GWE-2	Chlorodibromomethane	0.10	U	0.10	UJ	1
GWE-2	Chloroethane	0.17	U	0.17	UJ	1

Sample ID	Analyte	Laboratory Result (µg/L)	Laboratory Flag	Validation Result (µg/L)	Validation Qualifier *	Reason Code **
GWE-2	Chloroform	0.40	U	0.40	UJ	1
GWE-2	Chloromethane	0.19	U	0.19	UJ	1
GWE-2	cis-1,2-Dichloroethene	0.34	J	0.34	J	1
GWE-2	cis-1,3-Dichloropropene	0.10	U	0.10	UJ	1
GWE-2	Dibromomethane	0.30	U	0.30	UJ	1
GWE-2	Dichlorobromomethane	0.20	U	0.20	UJ	1
GWE-2	Dichlorodifluoromethane	0.25	U	0.25	UJ	1
GWE-2	Ethylbenzene	0.13	U	0.13	UJ	1
GWE-2	Ethylene Dibromide	0.075	U	0.075	UJ	1
GWE-2	Gasoline Range Organics (GRO)-C4-C12	21	U	21	UJ	1
GWE-2	Hexachlorobutadiene	0.27	U	0.27	UJ	1
GWE-2	Isopropylbenzene	0.20	U	0.20	UJ	1
GWE-2	Methyl tert-butyl ether	0.11	U	0.11	UJ	1
GWE-2	Naphthalene	0.22	U	0.22	UJ	1
GWE-2	n-Butylbenzene	0.30	U	0.30	UJ	1
GWE-2	N-Propylbenzene	0.20	U	0.20	UJ	1
GWE-2	sec-Butylbenzene	0.17	U	0.17	UJ	1
GWE-2	Styrene	0.22	U	0.22	UJ	1
GWE-2	tert-Butylbenzene	0.20	U	0.20	UJ	1
GWE-2	Tetrachloroethene	0.20	U	0.20	UJ	1
GWE-2	Toluene	0.17	U	0.17	UJ	1
GWE-2	trans-1,2-Dichloroethene	0.15	J	0.15	J	1
GWE-2	trans-1,3-Dichloropropene	0.17	U	0.17	UJ	1
GWE-2	Trichloroethene	0.20	U	0.20	UJ	1
GWE-2	Trichlorofluoromethane	0.30	U	0.30	UJ	1
GWE-2	Vinyl acetate	0.60	U	0.60	UJ	1
GWE-2	Xylenes, Total	0.40	U	0.40	UJ	1
GWE-2	Methylene Chloride	1.5	U	1.5	UJ	1
GWE-2	Vinyl chloride	0.34	J	0.34	J	1
GWE-2	1,2,3-Trichloropropane	0.0025	U	0.0025	UJ	1

µg/L - Microgram per liter
J - Laboratory flag indicating the analyte was detected at an estimated concentration less than the reporting limit (RL) and greater than the MDL
NA - Not applicable
U - Laboratory flag indicating the analyte was analyzed for but was not detected at or above the MDL
* - Validation qualifiers are defined in Attachment 1 at the end of this report
** - Reason codes are defined in Attachment 2 at the end of this report.

1.2 Holding Times

The holding times for the VOC analyses of a preserved water sample for methods 8260B-SIM and 8260B are 14 days from sample collection to analysis. The holding time for the VOC analysis of a sample with pH>2 is seven days from sample collection to analysis. The holding times were met for the sample analyses.

1.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Three method blanks were reported (8260B batches 250881 and 251099 and 8260B-SIM batch 497407). VOCs were not detected in the method blanks above the MDLs, with the following exception.

Naphthalene was detected at an estimated concentration greater than the MDL and less than the RL in the method blank in batch 250881. Since naphthalene was not detected in the associated samples, no qualifications were applied to the data.

1.4 Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported for 8260-SIM, using sample GWE-1. The recovery and relative percent difference (RPD) results were within the laboratory specified acceptance criteria.

Two batch MS/MSD pairs were reported for method 8260B. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

1.5 Laboratory Control Sample (LCS)

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). Four LCS/LCS duplicate (LCSD) pairs and one LCS were reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

1.6 Surrogate

The surrogate recoveries were within the laboratory specified acceptance criteria.

1.7 Trip Blank

One trip blank accompanied the samples and was analyzed by methods 8260B and 8260B-SIM, TB-1. VOCs were not detected in the trip blank above the MDLs, with the following exception.

Methylene chloride was detected at an estimated concentration greater than the MDL and less than the RL. Since methylene chloride was not detected in the associated samples, no qualifications were applied to the data.

1.8 Field Blank

Field blanks were not collected with the sample set.

1.9 Field Duplicate

Field duplicates were not collected with the sample set.

1.10 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported . The MDLs met the proposed site-specific screening levels (SSSLs) in the Work Plan Table 7.

1.11 Electronic Data Deliverable (EDD) Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

2.0 DIESEL RANGE ORGANICS

The samples were analyzed for DRO (C10-C28) by USEPA methods 3510C/8015B.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Time
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate

- ✓ Laboratory Control Sample
- ✓ Surrogates
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

2.1 Overall Assessment

The DRO data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

2.2 Holding Times

The holding times for the DRO analysis of a water sample are 7 days from sample collection to extraction and 40 days from extraction to analysis. The holding times were met for the sample analyses.

2.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250836). DRO was not detected in the method blank above the MDL.

2.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were not reported. An LCS/LCSD pair was used to assess precision and accuracy.

2.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

2.6 Surrogates

The surrogate recoveries were within the laboratory specified acceptance criteria.

2.7 Field Blank

Field blanks were not collected with the sample set.

2.8 Field Duplicate

Field duplicates were not collected with the sample set.

2.9 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

2.10 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

3.0 DISSOLVED METALS

The samples were analyzed for dissolved metals per USEPA Methods 3010A/6010B (mercury evaluated separately in Section 4.0, below).

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Serial Dilution
- ✓ Laboratory Control Sample
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Deliverable Review

3.1 Overall Assessment

The dissolved metals data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

3.2 Holding Times

The holding time for the metals analyses of a water sample is 180 days from collection to analysis. The holding times were met for the sample analyses.

3.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250771). Metals were not detected in the method blank above the MDLs, with the following exception.

Beryllium was detected at an estimated concentration greater than the MDL and less than the RL. Since dissolved beryllium was not detected in the associated samples, , no qualifications were applied to the data.

3.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One batch MS/MSD pair was reported. Since these were batch QC, the results did not impact the data and did not result in qualification of the data.

3.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery results were within the laboratory specified acceptance criteria.

3.6 Field Blank

Field blanks were not collected with the sample set.

3.7 Field Duplicate

Field duplicates were not collected with the sample set.

3.8 Sensitivity

The samples were reported to the MDLs. No elevated non-detect results were reported. The MDLs met the proposed SSSLs in the Work Plan Table 7.

3.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

4.0 DISSOLVED MERCURY

The samples were analyzed for dissolved mercury per USEPA Method 7470A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Deliverable Review

4.1 Overall Assessment

The mercury data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this sample set is 100%.

4.2 Holding Times

The holding time for the mercury analysis of a water sample is 28 days from sample collection to analysis. The holding times were met for the sample analyses.

4.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250951). Mercury was not detected in the method blank above the MDL.

4.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample GWE-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

4.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS was reported. The recovery result was within the laboratory specified acceptance criteria.

4.6 Field Blank

Field blanks were not collected with the sample set.

4.7 Field Duplicate

Field duplicates were not collected with the sample set.

4.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

4.9 Electronic Data Deliverable Review

Results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

5.0 HEXAVALENT CHROMIUM

The samples were analyzed for Cr VI per USEPA Method 7196A.

The areas of data review are listed below. A leading check mark (✓) indicates an area of review in which the data were acceptable. A preceding crossed circle (⊗) signifies areas where issues were raised during the course of the validation review and should be considered to determine any impact on data quality and usability.

- ✓ Overall Assessment
- ✓ Holding Times
- ✓ Method Blank
- ✓ Matrix Spike/Matrix Spike Duplicate
- ✓ Laboratory Control Sample
- ✓ Field Blank
- ✓ Field Duplicate
- ✓ Sensitivity
- ✓ Electronic Data Deliverable Review

5.1 Overall Assessment

The Cr VI data reported in this package are considered to be usable for meeting project objectives. The results are considered to be valid; the analytical completeness, defined as the ratio of the number of valid analytical results (valid analytical results include values qualified as estimated) to the total number of analytical results requested on samples submitted for this analysis, for this data set is 100%.

5.2 Holding Times

The holding times for the Cr VI analysis of a water sample is 24 hours from sample collection to analysis. The holding times were met for the sample analyses.

5.3 Method Blank

Method blanks were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One method blank was reported (batch 250616). Cr VI was not detected in the method blank above the MDL.

5.4 Matrix Spike/Matrix Spike Duplicate

MS/MSD pairs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One sample set specific MS/MSD pair was reported, using sample GWE-1. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.5 Laboratory Control Sample

LCSs were analyzed at the proper frequency for the number and types of samples analyzed (one per batch of 20 samples). One LCS/LCSD pair was reported. The recovery and RPD results were within the laboratory specified acceptance criteria.

5.6 Field Blank

Field blanks were not collected with the sample set.

5.7 Field Duplicate

Field duplicates were not collected with the sample set.

5.8 Sensitivity

The samples were reported to the MDL. No elevated non-detect results were reported. The MDL met the proposed SSSL in the Work Plan Table 7.

5.9 Electronic Data Deliverable Review

The results and sample IDs in the EDD were reviewed against the information provided by the associated level II report at a minimum of 20%. No discrepancies were identified between the level II report and the EDD.

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ATTACHMENT 1
DATA VALIDATION QUALIFIER DEFINITIONS AND INTERPRETATION KEY
Assigned by Geosyntec's Data Validation Team

DATA QUALIFIER DEFINITIONS

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit. Upon application of the U qualifier to a reported result, the definition changes to "not detected at or above the reported result".

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J+ The analyte was positively identified; however, the associated numerical value is likely to be higher than the concentration of the analyte in the sample due to positive bias of associated QC or calibration data or attributable to matrix interference.

J- The analyte was positively identified; however, the associated numerical value is likely to be lower than the concentration of the analyte in the sample due to negative bias of associated QC or calibration data or attributable to matrix interference.

UJ The analyte was 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.

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

ATTACHMENT 2
DATA VALIDATION REASON CODES
Assigned by Geosyntec's Data Validation Team

Valid Value	Description
1	Preservation requirement not met
2	Extraction or analysis holding time exceeded
3	Blank contamination (i.e., method, trip, equipment, etc.)
4	Matrix spike/matrix spike duplicate recovery or RPD outside limits
5	LCS recovery outside limits or RPD outside limits (LCS/LCSD)
6	Surrogate recovery outside limits
7	Field Duplicate RPD exceeded
8	Serial dilution percent difference exceeded
9	Calibration criteria not met
10	Linear range exceeded
11	Internal standard criteria not met
12	Lab duplicates RPD exceeded
13	Other
14	Lab flag removed: no validation qualification required

LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample duplicate
RPD - Relative percent difference