SFPP Norwalk Pump Station
Norwalk, California

Fourth Quarter 2019 Remediation Progress Report

Final

January 15, 2020

Kinder Morgan, Inc.

SFPP Norwalk Pump Station, Norwalk, California

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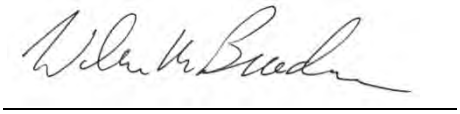
The material and data presented in this report were prepared consistent with current and generally accepted consulting principles and practices. This work was supervised by the following Jacobs licensed professional.



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January 15, 2020
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Contents

Acronyms and Abbreviations

µg/L	microgram(s) per liter
1,2-DCA	1,2-dichloroethane
AS	air sparge
ASTM	ASTM International
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CH2M	CH2M HILL Engineers, Inc., now part of Jacobs Engineering Group Inc.
COPC	chemical of potential concern
DFSP	Defense Fuel Support Point
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
GWE	groundwater extraction
GWTS	groundwater treatment system
HDPE	high-density polyethylene
Jacobs	Jacobs Engineering Group Inc.
Kinder Morgan	Kinder Morgan, Inc.
LGAC	liquid-phase granular activated carbon
LNAPL	light nonaqueous phase liquid
MTBE	methyl tertiary butyl ether
No.	number
O&M	operation and maintenance
OWS	oil-water separator
PCE	tetrachloroethylene
PID	photoionization detector
PVC	polyvinyl chloride
RTO	regenerative thermal oxidizer
scfm	standard cubic feet per minute
SFPP	SFPP, L.P., an operating partnership of Kinder Morgan, Inc.
SVE	soil vapor extraction
TBA	tertiary butyl alcohol
TCE	trichloroethylene
TFE	total fluids extraction
TPH	total petroleum hydrocarbons
TPH-d	total petroleum hydrocarbons quantified as diesel
TPH-g	total petroleum hydrocarbons quantified as gasoline
TPH-o	total petroleum hydrocarbons quantified as oil
TPH-total	total petroleum hydrocarbons quantified as gasoline, diesel, and oil
VOC	volatile organic compound
Water Board	California Regional Water Quality Control Board, Los Angeles Region
WSB	West Side Barrier

1. Introduction

This report summarizes remediation activities performed at the SFPP, L.P. (SFPP) Norwalk Pump Station located within the Defense Fuel Support Point (DFSP) Norwalk, at 15306 Norwalk Boulevard, Norwalk, California (the site; Figure 1) during the fourth quarter 2019 reporting period.

This progress report is submitted pursuant to a request from the California Regional Water Quality Control Board, Los Angeles Region (Water Board) in its letter dated October 25, 2006 (Water Board, 2006). Additional site background information can be found in the report titled, *Conceptual Site Model and Proposed Alternate Interim Remedy for Soil, Groundwater, and LNAPL* (CH2M[1], 2013), and in previously submitted semiannual groundwater monitoring reports.

This report summarizes the remediation systems present at the site and describes remediation activities for the period of October through December 2019 with documentation of the following tasks:

- Operation and maintenance (O&M) of remediation systems performed by Kinder Morgan field personnel and outside subcontractors
- Remediation system evaluation
- Expansion of the soil vapor extraction (SVE) remediation system performed by Jacobs personnel and an outside subcontractor

The remediation activities performed from October through December 2019 and the progress achieved through those activities are summarized in the following sections.

[1] CH2M is now part of Jacobs.

2. Remediation Systems

Kinder Morgan, Inc. (Kinder Morgan) operates remediation systems consisting of SVE, total fluids extraction (TFE; extraction of free product and/or groundwater using a top-loading pump), groundwater extraction (GWE; extraction of groundwater using a bottom-loading pump), and treatment of extracted soil vapors and groundwater to address the south-central and southeastern areas of the site. Biosparging is also employed in the south-central area to enhance natural attenuation of hydrocarbon constituents.

Operation of the West Side Barrier (WSB) GWE system for remediation of the western offsite area was discontinued in August 2008 based on the reduced lateral extent and low concentrations of volatile organic compounds (VOCs) west of the site.

The objectives of the remediation systems are to contain and control the migration of hydrocarbon constituents in groundwater and soil vapor, and to remove hydrocarbon mass from soil and groundwater. The remediation systems include the following wells:

- South-central area
  - 20 TFE wells
  - 24 onsite and 6 offsite SVE wells (most collocated with TFE wells)
  - 1 horizontal biosparge well
- Southeastern area (24-inch block valve area)
  - 4 TFE wells (GMW-O-15, GMW-O-18, GMW-36, and GMW-SF-9)
  - 3 SVE wells (collocated with TFE wells)
  - 1 GWE well (GMW-SF-10)

A summary of remediation wells in the south-central, southeastern, and WSB areas is presented in Table 1. Table 1 includes well identifications, well construction details, well function, and operational status at the end of the fourth quarter 2019. The remediation system layout is shown on Figure 2. A brief description of each system is provided in Sections 2.1 through 2.3.

Kinder Morgan currently operates three refined fuel pipelines (two 16-inch and one 24-inch) that traverse the southern border of the site. These pipelines previously supplied fuel products to the former tank farm, and various block valves and other connection points were identified as potential sources of subsurface releases in the south-central and southeastern areas of the site. Between the third quarter of 2016 and the second quarter of 2017, the pipelines were modified to remove all valves and connections so that the pipelines now span across the site in a continuous manner, reducing the potential for future releases that could have occurred at those connection points.

2.1 Soil Vapor Extraction System

SVE is performed using a blower to remove soil vapors from the south-central and southeastern areas of the site. The extracted vapors are conveyed to a knock-out tank that separates entrained moisture from the soil vapors. Accumulated moisture in the knock-out tank is treated by the main groundwater treatment system (GWTS) described in Section 2.3. The soil vapors are then treated in a regenerative thermal oxidizer (RTO) where VOCs are converted to carbon dioxide and water prior to being discharged to the atmosphere. Operation of the GWTS and SVE system is conducted in accordance with Permits to Operate (Permit Number [No.] G46188 A/N 578779 and No. G46187 A/N 578777) issued by the South Coast Air Quality Management District.

From March 7 through 8, 2019, three new SVE wells (VEW-3, VEW-4, and VEW-5) were installed in the southeastern area for connection to the SVE system. This was the first step taken to enhance the capture zone coverage of the SVE system in the southeastern area of the site.

From September 30 through November 19, 2019, Jacobs and an outside subcontractor expanded the SVE system to enhance the capture zone coverage in the southeastern area of the site. To minimize vacuum leakage, decrease friction, and increase the volume of air that passes through the conveyance line, a new dedicated 6-inch high-density polyethylene (HDPE) header was installed from the southeastern area wellfield to the RTO influent. The HDPE header connects new and converted SVE wells to the SVE system and replaces the previous connections of dual TFE/SVE wells to the RTO. The well network affected as part of this expansion includes the three new SVE wells (VEW-3, VEW-4, and VEW-5) installed in March 2019, three groundwater monitoring wells (GMW-O-16, GMW-O-19, and MW-8) converted to SVE wells, and three upgraded dual TFE/SVE wells (GMW-O-15, GMW-O-18, and GMW-36). The upgrades to the SVE system (Appendix A) were approved by the City of Norwalk on September 16, 2019, and Building Permit No. 19070024 was issued to the outside subcontractor. During construction, field conditions (previously unidentified underground utilities) required Jacobs and the outside subcontractor to implement minor changes to the design (Appendix A). The City of Norwalk was notified prior to implementing these changes. Underground utilities encountered during construction also necessitated minor deviations in the trench line for the underground vapor conveyance line and in the placement of the easternmost drip leg (i.e., the drip leg that serves as the transition between the HDPE header and the underground polyvinyl chloride [PVC] vapor conveyance line). Since the easternmost drip leg was moved off the southeast fence line and positioned near the right-of-way, the outside subcontractor installed traffic bollards adjacent to the drip leg as a traffic control measure.

2.2 Horizontal Biosparge System

In December 2015, Kinder Morgan completed installation of a horizontal biosparge system in the south-central area of the site, which consists of a horizontal well and a 500-standard-cubic-foot-per-minute (scfm) compressor. To reduce the potential for off-gassing of VOCs during biosparging, the SVE system has an interlock that will not allow the biosparge to operate without the SVE system running. The biosparge well is constructed of 4-inch-diameter Schedule 80 PVC casing and screen completed to a vertical depth of approximately 45 feet below ground surface. The lateral distance of the screen interval is 600 feet centered below the central portion of the south-central area hydrocarbon plume. Further details regarding the construction of the biosparge well are documented in the report titled *Horizontal Biosparge Well and Soil Vapor Monitoring Probe Completion Report* (CH2M, 2015).

Pilot testing of the biosparge system commenced in early January 2016 and continued through October 2016. A comprehensive evaluation report that incorporates soil vapor and groundwater data was submitted to the Water Board in August 2017 (CH2M, 2017). Based on the favorable results of the pilot study, a second horizontal biosparge well was installed in the southeastern area of the site in November 2017. The design of the second biosparge well is similar to the south-central biosparge well, consisting of 4-inch-diameter Schedule 80 PVC casing and screen completed to a vertical depth of approximately 45 feet below ground surface. The lateral distance of the screen interval is 240 feet centered below the southeastern area hydrocarbon plume. A construction completion report documenting construction activities and specifications was submitted on July 12, 2018 (Jacobs, 2018). The 500-scfm sparge compressor was turned off temporarily and a new air sparge compressor (883 scfm) was installed in the fourth quarter 2018 to deliver ambient air to both the south-central and southeastern sparge wells. The 500-scfm and 883-scfm compressors are appropriately sized to deliver ambient air to both the south-central and southeastern sparge wells, and to allow for future system expansion.

As discussed in Section 2.1, the SVE system in the southeastern area was upgraded to enhance the capture zone coverage required to match the zone of influence of the new biosparge well. This upgrade was necessary prior to initiating biosparging activities in this area of the site.

2.3 Groundwater Treatment System

The main GWTS processes free product and groundwater recovered from the south-central and southeastern parts of the site. Free product and groundwater recovered by pneumatically operated, top-loading total fluid pumps and bottom-loading groundwater pumps are piped to a dissolved air flotation unit (oil-water separator [OWS]). Free product, if any, from the OWS is collected in a storage tank and

recycled at an offsite location. Water from the OWS is conveyed to a 300-gallon tank and then treated using liquid-phase granular activated carbon (LGAC) to remove hydrocarbons including benzene, toluene, ethylbenzene, and xylenes (BTEX). Treated water is routed through an onsite 3,000-gallon equalization tank. Two fluidized bed bioreactors installed downstream of the equalization tank treat fuel oxygenates such as tertiary butyl alcohol (TBA) and methyl tertiary butyl ether (MTBE). The treated groundwater then passes through polishing LGAC units prior to discharge to a storm drain that leads to Coyote Creek. Discharge to Coyote Creek is performed in accordance with a National Pollutant Discharge Elimination System permit (Permit No. CA0063509; Order No. R4-2016-0309).

3. Operations and Maintenance

During the fourth quarter 2019 reporting period, O&M of the remediation systems included the following tasks:

- Performed ongoing weekly maintenance on the GWTS.
- Removed, inspected, and repaired existing TFE/GWE pumps and associated discharge lines.
- Installed pumps and associated equipment necessary for TFE at select wells with measurable free product.

The remediation systems operated continuously during the fourth quarter 2019, with the following exceptions:

- The SVE system was restarted on October 1, 2019. The system shut down on September 28, 2019, due to a high combustion temperature hard-wire interlocking alarm. The wiring was secured, and the alarm was reset.
- The SVE, GWTS, and air sparge systems were shut down from October 22 through November 5, 2019, to facilitate gauging and sampling activities during the DFSP second semiannual groundwater sampling event that was conducted October 28 to November 1, 2019, and the annual soil vapor sampling event that was conducted from October 28 to October 30, 2019.
- The GWTS was shut down on November 11, 2019, due to a leak in the secondary effluent polishing vessel. The new carbon vessel is scheduled to arrive in January 2020, and upon installation, the GWTS will be restarted.
- The SVE system was shut down on November 26, 2019, due to a malfunctioning chart recorder. A temporary replacement chart recorder was calibrated and installed on December 9, 2019. The site-specific chart recorder was shipped back to manufacturer for repairs. The SVE system was restarted on December 9, 2019.
- The SVE system was shut down on December 26, 2019, due to a malfunctioning chart recorder. Moisture was discovered inside the display and is scheduled to be repaired in January 2020. The SVE system remained off through December 31, 2019.

During the fourth quarter 2019, the GWTS was operational approximately 29.4 percent of the time. The SVE system was operational approximately 65.1 percent of the time. The biosparge system was operational 63.3 percent of the time. Table 2 presents the SVE system operation summary. Photoionization detector (PID) measurements and analytical results for extracted vapor during the fourth quarter 2019 are summarized in Tables 3 and 4, respectively. The groundwater remediation system operation activities for the fourth quarter 2019 are summarized in Table 5. The extracted groundwater analytical results for the fourth quarter 2019 are summarized in Table 6. Table 7 presents the biosparge system operation summary. Table 8 presents the soil vapor probe analytical results for October 2019. Historical (post-2007) gauging results of select TFE and SVE wells are provided in Table 9. Pre-2007 data can be found in previous semiannual groundwater monitoring reports.

Water samples from the GWTS influent were collected on October 8 and November 19, 2019. The November 2019 samples were collected while the system was in standby mode and not discharging. The water samples were delivered to Asset Laboratories of Las Vegas, Nevada, and BC Laboratories of Bakersfield, California, for analysis. Asset and BC Laboratories are certified by the California Department of Public Health Environmental Laboratory Accreditation Program.

Asset Laboratories analyzed the water samples for VOCs using U.S. Environmental Protection Agency (EPA) Method 8260B, total petroleum hydrocarbons (TPH) quantified as gasoline (TPH-g), diesel (TPH-d), and oil (TPH-o) (collectively referred to as TPH-total) using EPA Method 8015(B).

Vapor samples from the SVE influent were collected on October 4, November 7, and December 12, 2019. The vapor samples were delivered to Air Technology Laboratories in City of Industry, California, for the following analyses:

- Fixed gases (methane, carbon dioxide, oxygen, and argon) using ASTM International (ASTM) D1946
- VOCs using EPA Method TO-15
- Total VOCs using EPA Method TO-3

The laboratory analytical reports and chain-of-custody documents for these samples are included in Appendix B.

Soil vapor sampling was conducted from soil vapor probes SVM-1, SVM-2, SVM-3, SVM-5 through SVM-23, SVP-108, and SVP-109, in the south-central and southeastern areas to ensure that shallow subsurface vapors do not pose an unacceptable human health risk to residents in the offsite area south of the site. The soil vapor probes from each monitoring location were purged and sampled using a vacuum/pressure sampling pump calibrated to a flow rate of 200 milliliters per minute in accordance with the Department of Toxic Substances Control (DTSC) recommended flow rates as set forth in the *Advisory for Active Soil Gas Investigations* (DTSC, 2015). The American Analytics laboratory of Chatsworth, California, conducted this event on October 28, 29, and 30, 2019. Results of these activities are presented in Table 8.

A soil vapor sample was not collected at the deep probe of SVM-2 and shallow probe of SVM-10 due to flow restrictions (excessive vacuum) observed during purging activities with a hand-held sampling pump. Soil vapor samples also were not collected from the shallow or deep probes of SVM-4 due to property access restrictions.

In accordance with the Advisory (DTSC, 2015), field duplicate samples were collected at a minimum frequency of 1 per every 20 primary samples collected. Duplicate soil vapor samples were collected at SVM-7 (13-foot depth), SVM-13 (22-foot depth), and SVP-109 (10-foot depth) during the October 2019 event. The duplicate samples were collected and analyzed in the same manner as the primary samples.

Ambient air samples were also collected each day of sampling and analyzed by the laboratory for VOCs and TPH-g. The purpose of the ambient air samples is to quantify background concentrations of chemicals of potential concern (COPCs) near select sampling locations.

The American Analytics laboratory collected and analyzed soil vapor samples for the following:

- Fixed gases (methane, carbon dioxide, and oxygen) using EPA Method 3CM
- VOCs using EPA Method TO-15
- Gasoline-range organics using EPA Method TO-3

The laboratory analytical reports and chain-of-custody documents for these samples are included in Appendix B.

4. Summary of Remediation Progress

Based on weekly monitoring of the influent vapor concentration, vapor extraction flow rate, and hours of operation, the total mass of VOCs removed by SVE was 2,822 pounds during the fourth quarter 2019, which was significantly lower than the third quarter 2019 (6,984 pounds). This decrease is attributed to several SVE wells in the southeastern area being offline during the SVE expansion project (discussed in Section 2.1). Total mass recovered by the SVE system has consistently decreased since the first quarter of 2016 (74,148 pounds of VOCs recovered), when biosparging in the south-central area was implemented (see Figure 3). The cumulative mass of VOCs removed since SVE was implemented in September 1995 is 3,577,431 pounds (Table 2). The cumulative mass removed by SVE does not include the mass removed by naturally occurring in situ biodegradation. The highest VOC concentration measured with a PID is from the south-central area SVE well GMW-O-20 (Table 3). Laboratory analytical data show that the influent VOC concentrations (BTEX and MTBE) have consistently decreased since biosparging started in 2016 (Table 4, Figure 4).

A total of 84,944 gallons of groundwater was extracted during the fourth quarter 2019 (Table 5). No water was extracted from the WSB area during the fourth quarter 2019. Approximately 107.7 million gallons of groundwater has been extracted from the south-central, southeastern, and WSB areas since GWTS operations first began in 1996.

GWE was discontinued in the WSB region during the third quarter 2008 based on the reduced lateral extent and low concentrations of MTBE and 1,2-dichloroethane (1,2-DCA) west of the site. 1,2-DCA, MTBE, and TBA concentrations in the western area during the semiannual groundwater monitoring event conducted in April 2019 did not warrant restarting the WSB system.

Free product did not accumulate in the product holding tank during the fourth quarter 2019. Since 1995, a total of 14,426 gallons of product has been removed by TFE, vacuum truck, or manual bailing operations. The estimated mass removal (pounds) of hydrocarbons by the GWTS is shown in Table 5. Mass removal estimates between 1996 and 2005 are based on BTEX and MTBE concentrations in the groundwater influent (TPH data were not available) and total volume of extracted groundwater. Mass removal estimates between 2006 and 2011 are based on groundwater influent concentrations of TPH-g and TPH quantified as fuel product, and the total volume of extracted groundwater. Mass removal estimates between 2012 and the fourth quarter 2019 are based on groundwater influent TPH-total concentrations (TPH-total includes TPH-g, TPH-d, and TPH-o) and the total volume of extracted groundwater.

Since GWE first began in 1996, hydrocarbon mass removed by the GWTS is estimated to be 18,457 pounds. During the fourth quarter 2019, the mass removal of hydrocarbons was calculated to be 0.3 pound (Table 5). Table 6 shows the extracted groundwater analytical results for the samples collected on October 8 and November 19, 2019. TPH, BTEX, and MTBE concentrations during the fourth quarter 2019 decreased from the concentrations reported in the third quarter 2019 and are considerably less than the concentrations reported in late 2015 and early 2016 when the south-central biosparge system was started. The overall reduction in dissolved-phase hydrocarbon concentrations can be attributed to biosparge operations in the south-central area. Figure 5 includes a time series chart that shows this general decrease in dissolved-phase hydrocarbon concentrations in the extracted groundwater.

The biosparge system operated for 1,489 hours in the fourth quarter 2019 (Table 7). The biosparge system flow (air injection) rate ranged from 0 to 466 scfm during the fourth quarter 2019. Soil vapor samples were collected from 24 locations around the south-central and southeastern areas on October 28, 29, and 30, 2019. In accordance with standard procedure used during annual sampling, sampling occurred during equilibrium conditions with the SVE and sparge wells off.

5. Soil Vapor Monitoring Results

5.1 Overview

During the fourth quarter 2019, soil vapor samples were collected using 1.4-liter Summa canisters. The samples were analyzed by the American Analytics laboratory for VOCs using EPA Method TO-15, TPH-g using EPA Method TO-3, and fixed gases (carbon dioxide, methane, and oxygen) using EPA Method 3CM. Included in the TO-15 list of analytes were BTEX, MTBE, naphthalene, TBA, 1,2-DCA, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-butylbenzene, sec-butylbenzene, isopropylbenzene, n-propylbenzene, and 2-propanol (the leak test compound). These constituents were identified as COPCs based on the results of the 2006 soil gas investigation and human health risk assessment (Geomatrix, 2006).

5.2 Laboratory Results

Table 8 presents the analytical results for samples collected during the October 2019 sampling event. Laboratory analytical reports are included in Appendix B. A summary of results is provided as follows:

- During the fourth quarter 2019 sampling event, COPCs were detected at offsite probes SVM-9 (5-foot depth) and SVM-9 (14.5-foot depth). MTBE was detected at a concentration of 0.029 microgram per liter (µg/L) in SVM-9 (14.5-foot depth). Naphthalene was detected at concentrations of 0.0039 µg/L in SVM-9 (5-foot depth). The detected concentrations were below the November 2019 DTSC modified screening levels (DTSC, 2019[2]).
- All the onsite soil vapor probes were nondetect for COPCs during the fourth quarter 2019 sampling event.
- Other non-COPCs that were detected during this sampling event included tetrachloroethylene (PCE), trichloroethylene (TCE), and tetrahydrofuran. There are no established screening levels for tetrahydrofuran. The detected concentrations for PCE and TCE were below the DTSC modified screening level (DTSC, 2019).
- VOCs detected in the shallow soil vapor in the offsite area do not pose an unacceptable human health risk to residents. The SVE system creates a vacuum in the south-central and southeastern areas to mitigate risk from offsite migration of VOCs. The SVE system will continue to remain online during biosparging operations.

[2] DTSC has developed modified screening levels based on EPA Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities (DTSC, 2019).

6. System Evaluation and Optimization

The GWTS continued to operate during the fourth quarter 2019 for hydraulic control and product recovery in the south-central and southeastern areas. While operating, the SVE wells in the south-central and southeastern areas were fully open to ensure maximum vapor extraction in those areas. As a result of biosparge operations in the south-central area, light nonaqueous phase liquid (LNAPL) thickness was significantly reduced, with measured LNAPL detected in wells GMW-10, GMW-36, GMW-O-12, GMW-O-20, and GMW-O-23. In addition, dissolved-phase TPH, BTEX, and MTBE concentrations also showed significant reductions in the groundwater and vapor samples collected from the influent into the GWTS and SVE, respectively.

The following repairs and modifications were conducted during this reporting period:

- The RTO shut down on September 28, 2019, due to a high combustion hardwire interlock alarm. On October 1, 2019, the thermocouple wiring was checked, the variable frequency drive was reset, and the RTO was restarted. The SVE operated normally.
- A crack in the bioreactor acid tank was observed on July 23, 2019. The acid tank was replaced and restarted on October 17, 2019. The GWTS operated normally.
- The chart recorder display stopped on November 20, 2019. This was observed during weekly maintenance on November 26, 2019, and the RTO and air sparge (AS) systems were shut down. A replacement chart recorder was calibrated and installed on December 9, 2019, and the RTO and AS were restarted. The SVE operated normally.
- The chart recorder display was observed to have failed on December 26, 2019, during weekly maintenance. Water was observed in the chart recorder display. The RTO and AS were shut down on December 26, 2019.

7. Planned First Quarter 2020 Activities

During the first quarter 2020, Kinder Morgan plans to continue to focus remedial efforts on the south-central and southeastern areas of the site. The following maintenance and other activities are planned:

- Continue to operate the SVE system.
- Continue to operate the 883-scfm biosparge compressor and run the south-central horizontal biosparge well using that compressor.
- Continue with the upgrade of the southeastern SVE wells and conveyance system.
- Install a new effluent polishing vessel and restart the GWTS.
- Install repaired chart recorder and restart RTO system.
- Conduct one quarterly soil vapor monitoring event for all soil vapor probes in the south-central area.
- Measure weekly VOC concentrations as hexane at the influent and effluent of the RTO system.
- Collect monthly vapor samples at the influent and effluent of the RTO system, and analyze the samples using Methods TO-15 (VOCs), TO-3 (total VOCs as hexane), and ASTM D1946 (fixed gases).
- Continue weekly maintenance and monitoring of the south-central and southeastern SVE and TFE/GWE treatment systems, and the biosparge system.
- Measure quarterly individual well vapor concentrations with a PID at the manifold.
- Conduct monthly, quarterly, and annual National Pollutant Discharge Elimination System sampling events.
- Collect and analyze system influent vapor and groundwater samples.
- Perform as-needed carbon changeouts of the LGAC vessels.
- Remove, inspect, and repair existing TFE/GWE pumps and associated discharge lines.
- Install pumps and associated equipment necessary for TFE at select wells with measurable free product.
- Maintain the 2007 and 2008 air compressor monthly, as backup operation for both the SVE and the GWTS pumps.

The TFE, GWE, and SVE systems for the south-central and southeastern areas will continue to operate. Operation of the TFE system in the southeastern area will be monitored closely and adjustments will be made to improve fluid recovery. The horizontal biosparge system will continue to operate at ideal air flow to decrease product thickness in the south-central area.

After completion of the SVE system upgrades in the southeastern area, startup of the southeastern biosparge well will commence. System inspections will continue on a weekly basis; system evaluation parameters will be collected as needed.

The remediation activities and progress for the first quarter 2020 will be described in the First Quarter 2020 Remediation Progress Report, to be submitted by April 15, 2020.

8. References

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Tables

Table 1. Remediation Well Construction and Status

SFPP Norwalk Pump Station, Norwalk, California

Remediation Area	Remediation Well ID	Installation Date	Top of Well Casing Elevation (feet msl)	Well Screen Interval (feet bgs)	Remediation Well Function	Well Operation Status During Second Quarter 2019	
						SVE/BS	TFE/GWE
South-Central	MW-SF-1	6/18/1990	78.93	25 - 40	SVE	ON	--
	MW-SF-2	6/18/1990	78.53	25 - 40	SVE; TFE	ON	OFF
	MW-SF-3	6/18/1990	78.12	25 - 40	SVE; TFE	ON	ON
	MW-SF-4	6/19/1990	79.38	25 - 40	SVE	ON	--
	MW-SF-5	9/19/1990	79.74	23 - 38	SVE	ON	--
	MW-SF-6	9/19/1990	76.80	25 - 40	SVE; TFE	ON	OFF
	MW-SF-9	6/15/1995	74.10	--	SVE	ON	--
	MW-SF-10	9/23/2003	76.53	10 - 30	SVE	ON	--
	MW-SF-11	6/19/2007	78.56	20 - 40	SVE; TFE	ON	OFF
	MW-SF-12	6/18/2007	78.07	20 - 40	SVE; TFE	ON	OFF
	MW-SF-13	6/19/2007	73.40	20 - 40	SVE; TFE	ON	OFF
	MW-SF-14	6/21/2007	78.16	20 - 40	SVE; TFE	ON	OFF
	MW-SF-15	6/21/2007	78.27	20 - 40	SVE; TFE	ON	ON
	MW-SF-16	6/20/2007	78.21	20 - 40	SVE; TFE	ON	OFF
	MW-SF-17	--	--	--	SVE	--	--
	GMW-9	7/8/1991	77.16	20 - 50	SVE; TFE	ON	ON
	GMW-10	7/8/1991	N/A	25 - 50	SVE; TFE	ON	OFF
	GMW-22	8/2/1991	77.24	25 - 60	SVE; TFE	ON	OFF
	GMW-24	8/5/1991	77.48	25 - 60	SVE; TFE	ON	OFF
	GMW-25	1/10/1992	78.14	20 - 50	SVE; TFE	ON	OFF
	GWR-3	1/10/1992	77.60	20 - 50	SVE; TFE	ON	OFF
	VEW-1	09/19/90	--	5 - 25	SVE	ON	--
	VEW-2	09/19/90	--	5 - 25	SVE	ON	--
	MW-O-1	1/22/1991	75.48	25 - 40	SVE; TFE	ON	OFF
	MW-O-2	1/23/1991	71.90	25 - 40	SVE; TFE	ON	OFF
	GMW-O-11	5/20/1992	74.17	20 - 50	SVE; TFE	ON	ON
	GMW-O-12	5/21/1992	73.49	20 - 50	SVE	ON	--
	GMW-O-20	6/15/1995	73.32	--	SVE; TFE	ON	ON
	GMW-O-21	10/1/1997	71.43	26 - 46	TFE	--	ON
	GMW-O-23	6/25/2007	73.63	20 - 40	SVE; TFE	ON	OFF
	MW-18 (MID)	6/10/1991	75.67	50 - 60	SVE	ON	--
	HW-1	09/06/92	--	--	SVE	ON	--
	HW-2	09/06/92	--	--	SVE	ON	--
	BS-01	08/27/14	75.06	--	BIOSPARGE	ON	--
	BS-02	11/21/17	--	--	BIOSPARGE	OFF	--
Southeastern	GMW-O-15	4/19/1994	74.23	20 - 50	SVE; TFE	ON	ON
	GMW-O-18	7/25/1994	74.36	21 - 40	SVE; TFE	ON	ON
	GMW-36	4/11/1994	76.66	20 - 50	SVE; TFE	ON	ON
	GMW-SF-9	4/1/2003	73.05	37 - 46	TFE	--	ON
	GMW-SF-10	4/2/2003	75.77	37 - 46	TFE	--	--

Table 1. Remediation Well Construction and Status

SFPP Norwalk Pump Station, Norwalk, California

Remediation Area	Remediation Well ID	Installation Date	Top of Well Casing Elevation (feet msl)	Well Screen Interval (feet bgs)	Remediation Well Function	Well Operation Status During Second Quarter 2019	
						SVE/BS	TFE/GWE
West Side Barrier	BW-2	5/20/1996	73.57	27 - 47	GWE	--	OFF
	BW-3	5/17/1996	74.16	31 - 50	GWE	--	OFF
	BW-4	5/20/1996	74.61	28 - 47	GWE	--	OFF
	BW-5	5/23/1996	73.59	27 - 46	GWE	--	OFF
	BW-6	5/22/1996	73.48	28 - 47	GWE	--	OFF
	BW-7	5/22/1996	74.65	27 - 46	GWE	--	OFF
	BW-8	5/21/1996	75.08	27 - 46	GWE	--	OFF
	BW-9	5/21/1996	76.19	27 - 46	GWE	--	OFF

Notes:

-- = information not available or not applicable

BS = biosparge

feet bgs = feet below ground surface

feet msl = feet above mean sea level based on the National Geodetic Vertical Datum of 1929

GWE = groundwater extraction

SVE = soil vapor extraction

TFE = total fluids extraction

Table 2. Vapor Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Influent PID Reading (ppmv as hexane)	System Flow (scfm)	Header Vacuum (in. H_2O)	Mass Removed (pounds)[a]
1995 Totals	1,240		--	--	--	281,065
1996 Totals	7,208	5,968	--	--	--	516,717
1997 Totals	12,865	5,657	--	--	--	489,526
1998 Totals	17,877	5,012	--	--	--	223,055
1999 Totals	23,600	5,723	--	--	--	390,836
2000 Totals	29,690	6,090	--	--	--	359,092
2001 Totals	33,671	3,981	--	--	--	224,091
2002 Totals	36,358	2,687	--	--	--	79,363
2003 Totals	39,676	3,319	--	--	--	64,671
2004 Totals	44,193	4,517	--	--	--	120,240
2005 Totals	49,750	5,557	--	--	--	212,175
2006 Totals	52,735	2,985	--	--	--	17,263
2007 Totals	58,319	2,058	--	--	--	7,378
2008 Totals	64,233	5,915	--	--	--	5,878
2009 Totals	68,858	4,625	--	--	--	9,387
2010 Totals	72,369	3,511	--	--	--	1,507
2011 Totals	77,489	5,120	--	--	--	14,629
2012 Totals	84,173	6,684	--	--	--	22,260
2013 Totals	90,414	6,241	--	--	--	90,880
2014 Totals	94,083	3,688	--	--	--	67,744
2015 Totals	98,408	4,325	--	--	--	122,706
2016 Totals	104,405	7,694	--	--	--	156,193
2017 Totals	108,262	3,857	--	--	--	42,194
2018 Totals	115,346	7,084	--	--	--	38,999
1/11/2019	115,360	14	84	1,543	50	20
1/15/2019	115,453	93	112	1,585	50	205
1/22/2019	115,626	173	198	1,465	50	634
1/29/2019	115,793	167	130	1,499	50	419
2/7/2019	115,997	204	96	1,451	50	357
2/12/2019	116,119	122	106	1,455	50	239
2/21/2019	116,120	1	98	1,491	50	1.8
2/28/2019	116,293	173	66	1,548	50	219
3/5/2019	116,404	111	104	1,419	50	221
3/12/2019	116,571	167	111	1,416	50	327
3/19/2019	116,738	167	88	1,448	50	258
3/26/2019	116,906	168	210	1,372	50	591
First Quarter 2019 Total	**116,906**	**1,560**	--	--	--	**3,492**

Table 2. Vapor Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Influent PID Reading (ppmv as hexane)	System Flow (scfm)	Header Vacuum (in. H_2O)	Mass Removed (pounds)[a]
4/2/2019	117,077	171	208	1,370	50	653
4/9/2019	117,242	165	226	1,483	50	593
4/25/2029	117,293	51	234	1,610	50	190
4/29/2019	117,385	92	254	1,508	50	371
5/7/2019	117,567	182	196	1,758	50	798
5/14/2019	117,733	166	180	1,438	50	523
5/21/2019	117,902	169	214	1,430	50	628
5/30/2019	118,116	214	198	1,404	50	777
6/4/2019	118,237	121	108	1,267	50	195
6/11/2019	118,404	167	118	1,343	50	341
6/18/2019	118,573	169	190	1,349	50	550
6/27/2019	118,770	197	205	1,405	50	668
Second Quarter 2019 Total	**118,770**	**1,864**	--	--	--	**6,286**
7/2/2019	118,891	121	212	1,400	50	455
7/9/2019	119,060	169	216	1,396	50	641
7/16/2019	119,225	165	119	1,340	50	332
7/23/2019	119,393	168	214	1,350	50	612
7/30/2019	119,562	169	186	1,397	50	552
8/6/2019	119,729	167	195	1,371	50	566
8/13/2019	119,899	170	210	1,381	50	627
8/22/2019	120,114	215	215	1,409	50	844
8/27/2019	120,214	100	185	1,405	50	338
9/3/2019	120,376	162	188	1,425	50	563
9/12/2019	120,591	215	172	1,350	50	639
9/17/2019	120,711	120	172	1,391	50	371
9/24/2019	120,879	168	182	1,132	50	444
Third Quarter 2019 Total	**120,879**	**2,109**	--	--	--	**6,984**

Table 2. Vapor Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Influent PID Reading (ppmv as hexane)	System Flow (scfm)	Header Vacuum (in. H_2O)	Mass Removed (pounds)[a]
10/1/2019	121,012	133	184	1,402	50	448
10/8/2019	121,179	167	196	1,433	50	606
10/15/2019	121,346	167	96	1,415	50	297
10/22/2019	121,513	167	126	1,421	50	391
10/29/2019	121,513	0	0	0	0	0
11/5/2019	121,513	0	50	1,597	50	0
11/7/2019	121,557	44	95	1,466	50	78
11/12/2019	121,675	118	74	1,633	50	183
11/19/2019	121,844	169	4	1,255	50	10
11/26/2019	122,010	166	204	1,320	50	585
12/9/2019	122,010	0	198	1,310	50	0
12/17/2019	122,200	190	36	1,529	50	100
12/26/2019	122,413	213	37	1,290	50	125
12/31/2019	122,413	0	--	0	0	0
Fourth Quarter 2019 Total	**122,413**	**1,534**	--	--	--	**2,822**
Cumulative Totals	**122,413**	--	--	--	--	**3,577,431**

Notes:

[a] The total mass removed is based on influent FID or PID readings, hours of operation, and flow rate.

-- = not applicable or not available

FID = flame ionization detector

in. H_2O = inches of water

PID = photoionization detector

ppmv = parts per million by volume

scfm = standard cubic feet per minute

TPH-g = total petroleum hydrocarbons quantified as gasoline (C4-C12)

Table 3. Remediation Well Vapor Concentrations

SFPP Norwalk Pump Station, Norwalk, California

Remediation Area	Remediation Well ID	Remediation Well Function	09/30/2019 (ppmv as Hexane)[a]	12/31/2019 (ppmv as Hexane)[a]
South-Central	MW-SF-1	SVE	116	NM[b]
	MW-SF-2	SVE; TFE	66	NM[b]
	MW-SF-3	SVE; TFE	294	NM[b]
	MW-SF-4	SVE	0	NM[b]
	MW-SF-5	SVE	84	NM[b]
	MW-SF-6	SVE; TFE	8	NM[b]
	MW-SF-9	SVE	0	NM[b]
	MW-SF-10	SVE	32	NM[b]
	MW-SF-11	SVE; TFE	70	NM[b]
	MW-SF-12	SVE; TFE	240	NM[b]
	MW-SF-13	SVE; TFE	162	NM[b]
	MW-SF-14	SVE; TFE	104	NM[b]
	MW-SF-15	SVE; TFE	24	NM[b]
	MW-SF-16	SVE; TFE	4	NM[b]
	MW-SF-17	SVE; TFE	--	NM[b]
	GMW-9	SVE; TFE	0	NM[b]
	GMW-10	SVE	180	NM[b]
	GMW-22	SVE; TFE	0	NM[b]
	GMW-24	SVE; TFE	NM[c]	NM[b]
	GMW-25	SVE; GWE	NM[c]	NM[b]
	GWR-3	SVE; GWE	NM[c]	NM[b]
	VEW-1	SVE	NM[c]	NM[b]
	VEW-2	SVE	138	NM[b]
	MW-O-1	SVE; TFE	NM[c]	NM[b]
	MW-O-2	SVE; TFE	0	NM[b]
	GMW-O-11	SVE; TFE	16	NM[b]
	GMW-O-12	SVE	192	NM[b]
	GMW-O-20	SVE; TFE	884	NM[b]
	GMW-O-23	SVE; TFE	142	NM[b]
	MW-18 (MID)	SVE	620	NM[b]
	HW-1	SVE	--	NM[b]
	HW-2	SVE	--	NM[b]
Southeastern	GMW-36	SVE; TFE	620	NM[b]
	GMW-O-15	SVE; TFE	620	NM[b]
	GMW-O-18	SVE; TFE	620	NM[b]

Notes:

[a] Vapor readings measured in the field with an Eagle 2 PID calibrated using 50 ppmv of hexane.

[b] Vapor readings on December 31, 2019, were not taken due to the TFE and SVE systems being offline.

[c] Vapor readings could not be measured due to water in the PVC pipe.

-- = not applicable or not available

GWE = groundwater extraction

NM = not measured

PID = photoionization detector

ppmv = parts per million by volume

PVC = polyvinyl chloride

SVE = soil vapor extraction

TFE = total fluids extraction

Table 4. Extracted Vapor Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	ASTM D-1946			EPA TO-3		SCAQMD 25.1	EPA TO-15 (VOCs)[b]				
	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethyl-benzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
8/3/2007	<0.5	<0.5	22.0	63	---	---	650	220	1,100	1,420	55
9/5/2007	<0.5	<0.5	22.0	9	---	---	32	48	140	320	18
10/2/2007	<0.5	<0.5	21.9	27	---	---	250	75	430	610	20
11/2/2007	<0.5	<0.5	22.1	5	---	---	40	10	74	95	7
2/1/2008	<0.5	<0.5	21.8	100	---	---	830	260	2,200	1,850	<50
3/4/2008	<0.5	<0.5	21.7	50	---	---	380	98	570	1,250	36
4/8/2008	<0.5	<0.5	22.2	69	---	---	290	110	480	1,040	41
5/23/2008	<0.5	<0.5	21.8	14	---	---	180	24	190	280	23
6/3/2008	<0.5	<0.5	21.7	30	---	---	380	42	400	330	70
7/2/2008	<0.5	<0.5	21.4	49	---	---	32	6	34	45	10
8/19/2008	<0.5	1.7	20.8	50	---	---	390	63	230	450	40
9/5/2008	<0.5	2.0	21.2	22	---	---	130	39	130	340	42
10/7/2008	<0.5	1.43	21.4	10	---	---	41	15	54	181	6.8
11/4/2008	<0.5	2.08	21.1	7.5	---	---	31	47	190	242	<2.0
3/6/2009	<0.5	<0.5	22.0	83	---	---	1,900	180	990	770	240
4/17/2009	<0.5	<0.5	22.2	3.1	---	---	140	8	37	68	26
5/29/2009	<0.5	1.08	21.0	130	---	---	1,700	640	3,700	3,100	100
8/18/2009	<0.5	0.78	21.7	28	---	---	380	37	290	310	33
8/25/2009	<0.5	0.87	20.6	37	---	---	500	44	320	293	20
9/18/2009	<0.5	0.37	21.6	11	---	---	75	11	39	107	3
10/29/2009	<0.5	1.80	18.2	77	---	---	350	45	250	440	4
11/25/2009	<0.5	<0.5	21.1	14	---	---	110	12	110	164	11
12/15/2009	<0.5	<0.5	21.7	7	---	---	28	3	20	47	<3.2
2/26/2010	<0.5	0.4	21.2	20	---	---	300	18	220	260	21
3/26/2010	<0.5	1.0	20.2	18	---	---	380	20	110	90	5
5/4/2010	<0.5	0.4	21.4	13	---	---	100	42	170	222	3
6/29/2010	<0.5	0.4	21.3	9	---	---	74	13	66	82	<5.0
8/3/2010	<0.5	0.6	20.4	29	---	---	210	13	64	85	9
8/31/2010	0.0039[c]	<0.5	21.4	11	---	---	72	12	66	87	8
9/14/2010	<0.5	<0.5	21.6	6	---	---	63	15	57	84	<3.2
11/2/2010	--	--	--	11	---	---	140	<10	31	28	<10
11/17/2010	0.00075	0.4	22.0	--	---	---	--	--	--	--	--
12/28/2010	0.0052	0.27	22.0	16	---	---	160	37	230	324	4.5
1/14/2011	0.016	0.20	22.0	68	---	---	340	34	89	183	<10
2/8/2011	0.026	0.24	21.0	210	---	---	3,000	1,700	11,000	7,400	110
3/29/2011	0.013	0.13	20.0	5	---	---	170	15	18	41.5	<2.5
4/26/2011	0.0011	0.079	20.0	1.9	---	---	16	2.4	8.8	7.7	<1.2
5/17/2011	0.021	0.65	22.0	90	---	---	2,600	140	2,200	1,100	220
6/17/2011	0.001	0.20	22.0	3	---	---	59	8.1	31	56	<0.25
7/19/2011	0.0056	0.49	22.0	80	---	---	1,800	130	2,200	1,000	<31
8/16/2011	0.0026	0.31	22.0	140	---	---	3,000	600	4,000	2,330	490
9/20/2011	--	--	--	100	---	---	2,100	740.0	2,700	2,040	660
11/22/2011	0.070	0.70	20.0	11	---	---	150	12.0	67	35	<5.0
12/20/2011	0.020	0.34	22.0	0	---	---	110	<25	260	216	<25
1/10/2012	0.010	0.66	20.0	11	---	---	150	14	86	160	<12
2/28/2012	0.0067	0.90	20.0	27	---	---	140	42	140	224	<25
3/13/2012	0.0044	0.71	20.0	27	---	---	440	38	450	241	<25
4/27/2012	0.0290	0.22	21.0	39	---	---	540	42	630	299	<25
5/22/2012	0.0100	0.31	20.0	65	---	---	590	350	770	2,070	<12
6/19/2012	0.0028	0.41	21.0	17	---	---	130	26	150	162	<12
7/27/2012	0.0059	0.40	21.0	13	---	---	46	<5	33	78	<5
8/30/2012	0.0049	0.56	21.0	69	---	---	150	<25	66	194	<25
9/25/2012	0.0073	0.80	21.0	57	---	---	190	19	120	283	<2.5
10/30/2012	0.0099	0.96	21.0	50	---	---	380	<50	230	130	<50

Table 4. Extracted Vapor Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	ASTM D-1946			EPA TO-3		SCAQMD 25.1	EPA TO-15 (VOCs)[b]				
	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethyl-benzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
12/11/2012	0.0074	0.84	21.0	53	---	---	130	17	110	173	<5.0
1/29/2013	0.0028	0.29	22.0	1.4	---	---	8.7	<1.2	9.4	9.6	<1.2
2/12/2013	0.0057	0.88	21.0	60	---	---	500	<50	440	400	<50
3/19/2013	0.0058	0.80	21.0	77	---	---	560	66	490	520	<40
4/16/2013	0.0079	0.74	21.0	53	---	---	430	29	240	193	<25
5/14/2013	0.017	1.6	19	280	---	---	1,700	190	1,800	840	<12
6/28/2013	0.0068	<0.010	21	22	---	---	190	<25	130	131	<25
SVE system down for repair from July 16, 2013, to September 17, 2013.											
9/20/2013	0.014	1	21	590	---	---	4,200	520	3,600	2,830	<40
10/15/2013	0.011	0.68	21	410	---	---	3,500	360	2,800	1,970	<20
11/12/2013	0.012	0.66	21	430	---	---	2,900	440	2,600	1,930	<15
12/10/2013	0.013	0.92	21	910	---	---	8,400	920	7,200	5,500	<50
1/17/2014	0.0077	0.57	21	350	---	---	6,600	6,800	8,200	23,300	3,000
2/11/2014	0.011	0.60	21	640	---	---	6,600	570	6,000	3,800	<100
3/21/2014	0.0050	0.40	21	390	---	---	4,500	290	4,000	1,930	<50
4/21/2014	0.011	0.65	21	700	---	---	6,900	370	6,900	3,400	<40
SVE system down for repair from April 29, 2014, to May 13, 2014.											
5/27/2014	0.011	0.56	21	530	---	---	6,600	570	8,900	3,820	<50
6/13/2014	0.0076	0.49	21	780	---	---	10,000	1,200	15,000	7,100	<80
SVE system down for repair and permit modification from July 1, 2014, to March 27, 2015.											
3/31/2015	0.090	1.3	20	1,400	---	1,300	12,000	1,000	11,000	7,400	<200
4/7/2015	0.014	0.56	21	---	---	710	8,200	8,200	610	3,260	<160
5/5/2015	---	---	---	---	---	760	6,100	1,100	9,600	7,200	<140
6/30/2015	0.0065	0.37	21	---	---	270	3,100	380	3,800	2,820	<160
7/14/2015	0.0094	0.62	21	---	---	650	7,000	950	7,900	6,100	<200
8/4/2015	0.0053	0.49	21	---	---	560	6,200	710	7,700	4,800	<0.097
8/17/2015[c]	---	---	---	---	---	470	4,800	500	5,400	3,600	<0.099
8/17/2015[c]	---	---	---	---	---	470	5,000	520	5,800	3,870	<0.100
8/17/2015[c]	---	---	---	---	---	480	5,100	580	6,100	4,000	<0.097
8/17/2015[c]	---	---	---	---	---	480	5,200	580	6,300	4,100	<0.099
9/1/2015[c]	---	---	---	---	---	670	7,000	850	8,700	6,900	<0.097
9/1/2015[c]	---	---	---	---	---	930	12,000	1,500	14,000	11,400	<0.140
9/1/2015[c]	---	---	---	---	---	890	12,000	2,300	20,000	14,300	<0.140
10/6/2015	0.0067	0.43	21	---	---	960	14,000	3,100	25,000	15,900	<200
11/10/2015	0.0028	0.30	21	---	860	---	9,100	1,800	15,000	9,400	<97
12/10/2015	0.004	0.41	21	---	580	---	6,400	1,200	10,000	7,600	<120
1/4/2016[c]	0.0059	0.27	22	---	750	---	9,600	2,400	20,000	13,500	<220
2/4/2016[c]	0.0038	0.58	21	---	2,000	---	16,000	2,600	29,000	19,300	<610
3/3/2016[c]	0.004	0.64	21	---	1,200	---	11,000	3,000	27,000	27,500	<130
4/5/2016	0.033	0.49	21	---	400	---	3,900	5,500	7,300	4,600	<63
5/13/2016	0.0034	0.50	21	---	290	---	2,200	300	4,300	810	<23
6/7/2016	0.0065	0.32	21	---	150	---	1,000	25 J	1,100	117 J	<36
7/7/2016	0.014	0.48	21	---	170	---	1,000	220	2,500	1,630	<51
8/2/2016	0.0047	0.54	21	---	260	---	1,900	720	5,000	7,400	<22
9/7/2016	0.0066	0.53	21	---	250	---	1,600	680	3,800	5,000	<21
10/13/2016	0.0096	0.67	21	---	250	---	2,700	680	3,800	5,200	<36
11/1/2016	0.0025	0.62	21	---	260	---	1,600	540	3,800	4,600	<40
SVE system was offline for installation of new RTO from November 1, 2016, to June 6, 2017.											
6/7/2017	0.029	1.1	21	--	190	--	960	220	1,200	1,170	<42
7/13/2017	0.055	1.3	20	---	550	---	6,800	1,100	6,600	9,900	<44
8/3/2017	0.013	0.85	21	---	340	--	4,200	750	5,600	7,500	<110
9/12/2017	0.0079	0.89	21	--	290	---	3,000	530	4,600	5,500	510
10/13/2017	0.0091	0.85	21	---	280	--	3,400	540	4,100	5,500	830
11/10/2017	0.0064	0.87	21	---	230	---	3,200	320	2,400	3,050	<84

Table 4. Extracted Vapor Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	ASTM D-1946			EPA TO-3		SCAQMD 25.1	EPA TO-15 (VOCs)[b]				
	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethyl-benzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
12/8/2017	0.0040	0.77	21	---	250	---	3,600	350	3,000	3,700	<81
1/4/2018	0.0047	0.72	21	--	230	--	3,900	440	3,100	4,000	970
2/6/2018	0.0042	0.42	22	--	27	--	140	23	150	310	<5.1
3/13/2018	0.0038	0.74	21	--	79	--	680	110	460	1,150	<11
4/15/2018	0.0034	0.49	22	--	33	--	460	53	280	400	<2.0
5/11/2018	0.0046	0.72	21	--	64	--	660	74	410	850	<11
6/7/2018	0.0031	0.65	21	--	58	--	570	83	320	504	<9.7
7/3/2018	0.0063	0.78	21	--	210	--	4,700	570	2,700	3,940	1,100
8/2/2018	0.0048	0.69	22	--	160	--	3,000	320	2,300	2,380	<40
9/6/2018	0.0044	0.81	21	--	190	--	3,900	550	4,000	5,000	<42
10/5/2018	0.0034	0.85	22	--	180	--	1,200	180	1,400	1,850	<42
11/20/2018	0.0088	0.80	21	--	150	--	1,200	270	1,100	1,290	<11
12/7/2018	0.0038	0.75	22	--	190	--	1,700	360	2,100	2,140	<20
1/11/2019	0.0061	1.5	19	--	46	--	190	25	160	350	<11
2/7/2019	0.0023	0.82	21	--	74	--	240	67	280	990	<10
3/12/2019	<0.0034	0.58	22	--	31	--	110	31	130	570	<4.9
4/4/2019	0.0044	0.80	21	--	160	--	2,400	400	2,000	2,730	550
5/7/2019	0.023	0.78	21	--	120	--	1,900	330	1,500	2,520	410
6/4/2019	0.0037	0.64	21	--	110	--	1,000	260	880	1,550	<19
7/9/2019	0.036	0.64	21	--	99	--	860	190	820	1,210	400
8/18/2019	0.0037	0.64	21	--	97	--	850	220	940	1,630	230
9/12/2019	0.0019	0.0084	22	--	58[c]	--	640[c]	78[c]	520[c]	880[c]	200[c]
10/4/2019	0.0037	0.64	21	--	17	--	61	21	67	470	<3.6
11/7/2019	0.0067	0.67	21	--	19	--	66	26	56	480	<2.0
12/12/2019	0.023	1.1	20	--	30	--	220	23	100	158	140

Notes:

[a] Influent vapor samples were collected from the manifold conveying soil vapors extracted from the south-central and southeastern areas.

[b] Other detected VOCs are included in the laboratory analytical reports in Appendix B.

[c] Influent vapor samples were collected after dilution before entrance into the SVE combustion chamber.

%v = percent by volume

<0.5 = not detected at or above the laboratory reporting limit shown

ASTM = ASTM International

EPA = U.S. Environmental Protection Agency

J = Resulting analyte concentration is between the reporting limit and the method detection limit

MTBE = methyl tertiary butyl ether

ppbv = parts per billion by volume

ppmv = parts per million by volume

RTO = regenerative thermal oxidizer

SCAQMD = South Coast Air Quality Management District

SVE = soil vapor extraction

TGNMOC = total gaseous nonmethane organic carbon

TPH-g = total petroleum hydrocarbons quantified as gasoline (C4-C12)

TVOC = total volatile organic compound

VOC = volatile organic compound

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (gallons)
1996 Totals	1,802,103	0	1,802,103	--	273	4,995
1997 Totals	7,031,533	0	7,031,533	--		2,204
1998 Totals	4,064,700	0	4,064,700	--		856
1999 Totals	3,891,600	2,338,129	6,229,729	--	385	450
2000 Totals	2,290,580	2,454,971	4,745,551	--	295	230
2001 Totals	1,401,473	1,131,700	2,533,173	--	229	0
2002 Totals	1,452,229	2,931,167	4,383,396	--	110	0
2003 Totals	1,607,095	2,281,956	3,889,051	--	65	10
2004 Totals	1,695,361	3,854,470	5,549,831	--	229	0
2005 Totals	1,537,925	4,244,674	5,782,599	--	273	0
2006 Totals	1,699,567	5,089,615	6,789,182	--	684	83
2007 Totals	3,368,481	2,167,724	5,536,205	--		89
2008 Totals[b]	4,283,026	405,954	4,688,980	--	520	0
2009 Totals	2,309,627	0	2,309,627	--	105	0
2010 Totals[c]	3,342,227	2,292	3,344,519	--	363	0
2011 Totals	5,530,317	0	5,530,317	--	585	0
2012 Totals	7,368,318	0	7,368,318	--	699	0
2013 Totals	6,439,733	0	6,439,733	--	568	2
2014 Totals	3,410,427	0	3,410,427	--	2,236	2,335
2015 Totals	4,817,906	0	4,817,906	--	5,959	2,928
2016 Totals	2,428,279	0	2,428,279	--	4,506	242
2017 Totals	3,858,644	0	3,858,644	--	325	2
2018 Totals	2,854,384	0	2,854,384	--	37	0
1/1/2019	0	0	0	460	0.000	0
1/2/2019	0	0	0	460	0.000	0
1/3/2019	0	0	0	460	0.000	0
1/4/2019	762	0	762	460	0.003	0
1/5/2019	48	0	48	460	0.000	0
1/6/2019	0	0	0	460	0.000	0
1/7/2019	0	0	0	460	0.000	0
1/8/2019	422	0	422	460	0.002	0
1/9/2019	4	0	4	460	0.000	0
1/10/2019	1,658	0	1,658	460	0.006	0
1/11/2019	5,956	0	5,956	460	0.023	0
1/12/2019	9,308	0	9,308	460	0.036	0
1/13/2019	8,930	0	8,930	460	0.034	0
1/14/2019	6,554	0	6,554	460	0.025	0
1/15/2019	6,040	0	6,040	460	0.023	0
1/16/2019	9,660	0	9,660	460	0.037	0

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1/17/2019	9,224	0	9,224	460	0.035	0
1/18/2019	8,924	0	8,924	460	0.034	0
1/19/2019	8,792	0	8,792	460	0.034	0
1/20/2019	9,114	0	9,114	460	0.035	0
1/21/2019	8,788	0	8,788	460	0.034	0
1/22/2019	8,894	0	8,894	460	0.034	0
1/23/2019	9,924	0	9,924	460	0.038	0
1/24/2019	9,006	0	9,006	460	0.035	0
1/25/2019	9,134	0	9,134	460	0.035	0
1/26/2019	8,084	0	8,084	460	0.031	0
1/27/2019	7,808	0	7,808	460	0.030	0
1/28/2019	11,720	0	11,720	460	0.045	0
1/29/2019	3,960	0	3,960	410	0.014	0
1/30/2019	7,932	0	7,932	410	0.027	0
1/31/2019	8,912	0	8,912	410	0.030	0
2/1/2019	8,714	0	8,714	410	0.030	0
2/2/2019	9,806	0	9,806	410	0.033	0
2/3/2019	9,048	0	9,048	410	0.031	0
2/4/2019	8,392	0	8,392	410	0.029	0
2/5/2019	8,246	0	8,246	410	0.028	0
2/6/2019	7,650	0	7,650	410	0.026	0
2/7/2019	6,984	0	6,984	340	0.020	0
2/8/2019	6,008	0	6,008	340	0.017	0
2/9/2019	6,138	0	6,138	340	0.017	0
2/10/2019	6,162	0	6,162	340	0.017	0
2/11/2019	6,414	0	6,414	340	0.018	0
2/12/2019	6,362	0	6,362	340	0.018	0
2/13/2019	4,756	0	4,756	340	0.013	0
2/14/2019	8,044	0	8,044	340	0.023	0
2/15/2019	4,956	0	4,956	340	0.014	0
2/16/2019	5,084	0	5,084	340	0.014	0
2/17/2019	4,964	0	4,964	340	0.014	0
2/18/2019	5,200	0	5,200	340	0.015	0
2/19/2019	6,930	0	6,930	340	0.020	0
2/20/2019	10,478	0	10,478	340	0.030	0
2/21/2019	11,862	0	11,862	340	0.034	0
2/22/2019	12,282	0	12,282	340	0.035	0
2/23/2019	11,806	0	11,806	340	0.033	0
2/24/2019	11,616	0	11,616	340	0.033	0

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2/25/2019	11,594	0	11,594	340	0.033	0
2/26/2019	3,532	0	3,532	340	0.010	0
2/27/2019	3,324	0	3,324	340	0.009	0
2/28/2019	2,822	0	2,822	340	0.008	0
3/1/2019	11,514	0	11,514	340	0.033	0
3/2/2019	12,656	0	12,656	340	0.036	0
3/3/2019	11,272	0	11,272	340	0.032	0
3/4/2019	10,892	0	10,892	340	0.031	0
3/5/2019	10,360	0	10,360	340	0.029	0
3/6/2019	11,784	0	11,784	340	0.033	0
3/7/2019	7,390	0	7,390	340	0.021	0
3/8/2019	6,346	0	6,346	420	0.022	0
3/9/2019	10,706	0	10,706	420	0.037	0
3/10/2019	8,138	0	8,138	420	0.028	0
3/11/2019	10,532	0	10,532	420	0.037	0
3/12/2019	6,852	0	6,852	420	0.024	0
3/13/2019	10,718	0	10,718	420	0.038	0
3/14/2019	10,230	0	10,230	420	0.036	0
3/15/2019	10,202	0	10,202	420	0.036	0
3/16/2019	10,152	0	10,152	420	0.036	0
3/17/2019	10,046	0	10,046	420	0.035	0
3/18/2019	9,712	0	9,712	420	0.034	0
3/19/2019	5,790	0	5,790	420	0.020	0
3/20/2019	0	0	0	420	0.000	0
3/21/2019	0	0	0	420	0.000	0
3/22/2019	0	0	0	420	0.000	0
3/23/2019	0	0	0	420	0.000	0
3/24/2019	0	0	0	420	0.000	0
3/25/2019	0	0	0	420	0.000	0
3/26/2019	244	0	244	420	0.001	0
3/27/2019	0	0	0	420	0.000	0
3/28/2019	0	0	0	420	0.000	0
3/29/2019	0	0	0	420	0.000	0
3/30/2019	0	0	0	420	0.000	0
3/31/2019	0	0	0	420	0.000	0
First Quarter 2019 Total	574,268	0	574,268	--	1.9	0
4/1/2019	0	0	0	420	0.000	0
4/2/2019	0	0	0	420	0.000	0
4/3/2019	0	0	0	420	0.000	0

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4/4/2019	3,550	0	3,550	420	0.012	0
4/5/2019	10,880	0	10,880	420	0.038	0
4/6/2019	10,822	0	10,822	420	0.038	0
4/7/2019	10,824	0	10,824	420	0.038	0
4/8/2019	10,638	0	10,638	420	0.037	0
4/9/2019	6,748	0	6,748	420	0.024	0
4/10/2019	0	0	0	420	0.000	0
4/11/2019	1,100	0	1,100	420	0.004	0
4/12/2019	0	0	0	420	0.000	0
4/13/2019	0	0	0	420	0.000	0
4/14/2019	0	0	0	420	0.000	0
4/15/2019	0	0	0	420	0.000	0
4/16/2019	344	0	344	420	0.001	0
4/17/2019	0	0	0	420	0.000	0
4/18/2019	0	0	0	420	0.000	0
4/19/2019	0	0	0	420	0.000	0
4/20/2019	0	0	0	420	0.000	0
4/21/2019	0	0	0	420	0.000	0
4/22/2019	0	0	0	420	0.000	0
4/23/2019	780	0	780	420	0.003	0
4/24/2019	12,454	0	12,454	420	0.044	0
4/25/2019	12,986	0	12,986	420	0.045	0
4/26/2019	16,062	0	16,062	420	0.056	0
4/27/2019	16,496	0	16,496	420	0.058	0
4/28/2019	16,078	0	16,078	420	0.056	0
4/29/2019	15,516	0	15,516	350	0.045	0
4/30/2019	16,164	0	16,164	350	0.047	0
5/1/2019	15,418	0	15,418	350	0.045	0
5/2/2019	15,902	0	15,902	350	0.046	0
5/3/2019	15,368	0	15,368	350	0.045	0
5/4/2019	14,268	0	14,268	350	0.042	0
5/5/2019	15,312	0	15,312	350	0.045	0
5/6/2019	11,004	0	11,004	350	0.032	0
5/7/2019	10,332	0	10,332	350	0.030	0
5/8/2019	10,544	0	10,544	350	0.031	0
5/9/2019	10,570	0	10,570	350	0.031	0
5/10/2019	10,910	0	10,910	350	0.032	0
5/11/2019	10,260	0	10,260	350	0.030	0
5/12/2019	10,372	0	10,372	350	0.030	0

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5/13/2019	9,442	0	9,442	350	0.028	0
5/14/2019	10,194	0	10,194	350	0.030	0
5/15/2019	10,426	0	10,426	350	0.030	0
5/16/2019	10,412	0	10,412	350	0.030	0
5/17/2019	10,138	0	10,138	350	0.030	0
5/18/2019	9,950	0	9,950	350	0.029	0
5/19/2019	9,752	0	9,752	350	0.028	0
5/20/2019	9,614	0	9,614	350	0.028	0
5/21/2019	9,688	0	9,688	350	0.028	0
5/22/2019	9,564	0	9,564	350	0.028	0
5/23/2019	9,440	0	9,440	350	0.028	0
5/24/2019	9,430	0	9,430	350	0.027	0
5/25/2019	9,340	0	9,340	350	0.027	0
5/26/2019	9,254	0	9,254	350	0.027	0
5/27/2019	9,348	0	9,348	350	0.027	0
5/28/2019	8,716	0	8,716	420	0.030	0
5/29/2019	8,932	0	8,932	420	0.031	0
5/30/2019	9,584	0	9,584	420	0.034	0
5/31/2019	10,294	0	10,294	420	0.036	0
6/1/2019	9,988	0	9,988	420	0.035	0
6/2/2019	10,374	0	10,374	420	0.036	0
6/3/2019	10,010	0	10,010	420	0.035	0
6/4/2019	9,966	0	9,966	420	0.035	0
6/5/2019	10,156	0	10,156	420	0.036	0
6/6/2019	10,336	0	10,336	420	0.036	0
6/7/2019	10,240	0	10,240	420	0.036	0
6/8/2019	10,036	0	10,036	420	0.035	0
6/9/2019	10,250	0	10,250	420	0.036	0
6/10/2019	9,964	0	9,964	420	0.035	0
6/11/2019	11,208	0	11,208	420	0.039	0
6/12/2019	14,434	0	14,434	420	0.051	0
6/13/2019	14,240	0	14,240	420	0.050	0
6/14/2019	13,820	0	13,820	420	0.048	0
6/15/2019	13,972	0	13,972	420	0.049	0
6/16/2019	13,848	0	13,848	420	0.048	0
6/17/2019	13,328	0	13,328	420	0.047	0
6/18/2019	12,428	0	12,428	420	0.043	0
6/19/2019	13,120	0	13,120	420	0.046	0
6/20/2019	10,718	0	10,718	460	0.041	0

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6/21/2019	11,894	0	11,894	460	0.046	0
6/22/2019	12,448	0	12,448	460	0.048	0
6/23/2019	12,296	0	12,296	460	0.047	0
6/24/2019	12,122	0	12,122	460	0.046	0
6/25/2019	11,962	0	11,962	460	0.046	0
6/26/2019	12,092	0	12,092	460	0.046	0
6/27/2019	11,884	0	11,884	460	0.046	0
6/28/2019	11,992	0	11,992	460	0.046	0
6/29/2019	11,934	0	11,934	460	0.046	0
6/30/2019	12,218	0	12,218	460	0.047	0
Second Quarter 2019 Total	848,498	0	848,498	--	2.8	0
7/1/2019	11,696	0	11,696	460	0.045	0
7/2/2019	12,124	0	12,124	460	0.046	0
7/3/2019	13,728	0	13,728	460	0.053	0
7/4/2019	13,624	0	13,624	460	0.052	0
7/5/2019	13,548	0	13,548	460	0.052	0
7/6/2019	15,620	0	15,620	460	0.060	0
7/7/2019	8,374	0	8,374	460	0.032	0
7/8/2019	6,154	0	6,154	460	0.024	0
7/9/2019	17,936	0	17,936	460	0.069	0
7/10/2019	17,464	0	17,464	460	0.067	0
7/11/2019	17,212	0	17,212	460	0.066	0
7/12/2019	17,192	0	17,192	460	0.066	0
7/13/2019	2,644	0	2,644	460	0.010	0
7/14/2019	0	0	0	460	0.000	0
7/15/2019	5,516	0	5,516	460	0.021	0
7/16/2019	15,268	0	15,268	460	0.059	0
7/17/2019	16,602	0	16,602	460	0.064	0
7/18/2019	15,296	0	15,296	460	0.059	0
7/19/2019	15,710	0	15,710	460	0.060	0
7/20/2019	15,600	0	15,600	460	0.060	0
7/21/2019	15,780	0	15,780	460	0.060	0
7/22/2019	15,348	0	15,348	460	0.059	0
7/23/2019	15,276	0	15,276	460	0.059	0
7/24/2019	15,460	0	15,460	460	0.059	0
7/25/2019	15,222	0	15,222	460	0.058	0
7/26/2019	14,980	0	14,980	460	0.057	0
7/27/2019	15,172	0	15,172	460	0.058	0
7/28/2019	14,792	0	14,792	460	0.057	0

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (gallons)
7/29/2019	14,738	0	14,738	460	0.056	0
7/30/2019	14,148	0	14,148	460	0.054	0
7/31/2019	15,220	0	15,220	390	0.049	0
8/1/2019	14,426	0	14,426	390	0.047	0
8/2/2019	14,450	0	14,450	390	0.047	0
8/3/2019	14,312	0	14,312	390	0.047	0
8/4/2019	11,948	0	11,948	390	0.039	0
8/5/2019	10,840	0	10,840	390	0.035	0
8/6/2019	10,864	0	10,864	390	0.035	0
8/7/2019	10,662	0	10,662	390	0.035	0
8/8/2019	7,458	0	7,458	390	0.024	0
8/9/2019	10,748	0	10,748	390	0.035	0
8/10/2019	10,872	0	10,872	390	0.035	0
8/11/2019	10,768	0	10,768	390	0.035	0
8/12/2019	9,208	0	9,208	390	0.030	0
8/13/2019	6,742	0	6,742	390	0.022	0
8/14/2019	6,674	0	6,674	390	0.022	0
8/15/2019	4,456	0	4,456	390	0.014	0
8/16/2019	5,528	0	5,528	390	0.018	0
8/17/2019	7,184	0	7,184	390	0.023	0
8/18/2019	7,088	0	7,088	390	0.023	0
8/19/2019	7,252	0	7,252	390	0.024	0
8/20/2019	7,292	0	7,292	390	0.024	0
8/21/2019	6,984	0	6,984	390	0.023	0
8/22/2019	5,660	0	5,660	1,600	0.075	0
8/23/2019	0	0	0	1,600	0.000	0
8/24/2019	1,884	0	1,884	1,600	0.025	0
8/25/2019	0	0	0	1,600	0.000	0
8/26/2019	3,884	0	3,884	1,600	0.052	0
8/27/2019	7,212	0	7,212	1,600	0.096	0
8/28/2019	7,144	0	7,144	1,600	0.095	0
8/29/2019	4,780	0	4,780	1,600	0.064	0
8/30/2019	7,064	0	7,064	1,600	0.094	0
8/31/2019	6,864	0	6,864	1,600	0.091	0
9/1/2019	4,928	0	4,928	1,600	0.066	0
9/2/2019	6,760	0	6,760	1,600	0.090	0
9/3/2019	6,548	0	6,548	1,600	0.087	0
9/4/2019	6,460	0	6,460	1,600	0.086	0
9/5/2019	6,148	0	6,148	1,600	0.082	0

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (gallons)
9/6/2019	5,844	0	5,844	1,600	0.078	0
9/7/2019	6,164	0	6,164	1,600	0.082	0
9/8/2019	5,792	0	5,792	1,600	0.077	0
9/9/2019	6,116	0	6,116	1,600	0.082	0
9/10/2019	5,576	0	5,576	1,600	0.074	0
9/11/2019	5,800	0	5,800	1,600	0.077	0
9/12/2019	7,080	0	7,080	650	0.038	0
9/13/2019	10,448	0	10,448	650	0.057	0
9/14/2019	10,284	0	10,284	650	0.056	0
9/15/2019	10,112	0	10,112	650	0.055	0
9/16/2019	9,888	0	9,888	650	0.054	0
9/17/2019	7,976	0	7,976	650	0.043	0
9/18/2019	4,616	0	4,616	650	0.025	0
9/19/2019	4,640	0	4,640	650	0.025	0
9/20/2019	4,660	0	4,660	650	0.025	0
9/21/2019	4,576	0	4,576	650	0.025	0
9/22/2019	3,660	0	3,660	650	0.020	0
9/23/2019	3,776	0	3,776	650	0.020	0
9/24/2019	2,412	0	2,412	650	0.013	0
9/25/2019	2,624	0	2,624	650	0.014	0
9/26/2019	2,056	0	2,056	650	0.011	0
9/27/2019	1,944	0	1,944	650	0.011	0
9/28/2019	1,804	0	1,804	650	0.010	0
9/29/2019	1,424	0	1,424	650	0.008	0
9/30/2019	1,108	0	1,108	650	0.006	0
Third Quarter 2019 Total	818,916	0	818,916	--	4.2	0
10/1/2019	2,652	0	2,652	650	0.014	0
10/2/2019	3,248	0	3,248	650	0.018	0
10/3/2019	2,152	0	2,152	650	0.012	0
10/4/2019	1,808	0	1,808	650	0.010	0
10/5/2019	1,732	0	1,732	650	0.009	0
10/6/2019	1,784	0	1,784	650	0.010	0
10/7/2019	1,796	0	1,796	650	0.010	0
10/8/2019	1,672	0	1,672	420	0.006	0
10/9/2019	1,784	0	1,784	420	0.006	0
10/10/2019	1,832	0	1,832	420	0.006	0
10/11/2019	1,772	0	1,772	420	0.006	0
10/12/2019	1,808	0	1,808	420	0.006	0
10/13/2019	1,748	0	1,748	420	0.006	0

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (gallons)
10/14/2019	2,220	0	2,220	420	0.008	0
10/15/2019	2,112	0	2,112	420	0.007	0
10/16/2019	1,628	0	1,628	420	0.006	0
10/17/2019	1,904	0	1,904	420	0.007	0
10/18/2019	1,864	0	1,864	420	0.007	0
10/19/2019	1,768	0	1,768	420	0.006	0
10/20/2019	1,500	0	1,500	420	0.005	0
10/21/2019	1,688	0	1,688	420	0.006	0
10/22/2019	884	0	884	420	0.003	0
10/23/2019	0	0	0	420	0.000	0
10/24/2019	24	0	24	420	0.000	0
10/25/2019	20	0	20	420	0.000	0
10/26/2019	4	0	4	420	0.000	0
10/27/2019	0	0	0	420	0.000	0
10/28/2019	8	0	8	420	0.000	0
10/29/2019	160	0	160	420	0.001	0
10/30/2019	28	0	28	420	0.000	0
10/31/2019	0	0	0	420	0.000	0
11/1/2019	0	0	0	420	0.000	0
11/2/2019	0	0	0	420	0.000	0
11/3/2019	0	0	0	420	0.000	0
11/4/2019	0	0	0	420	0.000	0
11/5/2019	3,092	0	3,092	420	0.011	0
11/6/2019	7,744	0	7,744	420	0.027	0
11/7/2019	7,568	0	7,568	420	0.026	0
11/8/2019	7,344	0	7,344	420	0.026	0
11/9/2019	6,936	0	6,936	420	0.024	0
11/10/2019	7,060	0	7,060	420	0.025	0
11/11/2019	3,532	0	3,532	420	0.012	0
11/12/2019	0	0	0	420	0.000	0
11/13/2019	0	0	0	420	0.000	0
11/14/2019	0	0	0	420	0.000	0
11/15/2019	0	0	0	420	0.000	0
11/16/2019	0	0	0	420	0.000	0
11/17/2019	0	0	0	420	0.000	0
11/18/2019	0	0	0	420	0.000	0
11/19/2019	68	0	68	330	0.0002	0
11/20/2019	0	0	0	330	0.000	0
11/21/2019	0	0	0	330	0.000	0

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (gallons)
11/22/2019	0	0	0	330	0.000	0
11/23/2019	0	0	0	330	0.000	0
11/24/2019	0	0	0	330	0.000	0
11/25/2019	0	0	0	330	0.000	0
11/26/2019	0	0	0	330	0.000	0
11/27/2019	0	0	0	330	0.000	0
11/28/2019	0	0	0	330	0.000	0
11/29/2019	0	0	0	330	0.000	0
11/30/2019	0	0	0	330	0.000	0
12/1/2019	0	0	0	--	0.000	0
12/2/2019	0	0	0	--	0.000	0
12/3/2019	0	0	0	--	0.000	0
12/4/2019	0	0	0	--	0.000	0
12/5/2019	0	0	0	--	0.000	0
12/6/2019	0	0	0	--	0.000	0
12/7/2019	0	0	0	--	0.000	0
12/8/2019	0	0	0	--	0.000	0
12/9/2019	0	0	0	--	0.000	0
12/10/2019	0	0	0	--	0.000	0
12/11/2019	0	0	0	--	0.000	0
12/12/2019	0	0	0	--	0.000	0
12/13/2019	0	0	0	--	0.000	0
12/14/2019	0	0	0	--	0.000	0
12/15/2019	0	0	0	--	0.000	0
12/16/2019	0	0	0	--	0.000	0
12/17/2019	0	0	0	--	0.000	0
12/18/2019	0	0	0	--	0.000	0
12/19/2019	0	0	0	--	0.000	0
12/20/2019	0	0	0	--	0.000	0
12/21/2019	0	0	0	--	0.000	0
12/22/2019	0	0	0	--	0.000	0
12/23/2019	0	0	0	--	0.000	0
12/24/2019	0	0	0	--	0.000	0
12/25/2019	0	0	0	--	0.000	0

Table 5. Groundwater Remediation System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Groundwater Removed from South-Central and Southeastern Areas (gallons)	Groundwater Removed from West Side Barrier Area (gallons)	Total Groundwater Removed (gallons)	Influent TPH-Total Concentration (µg/L)	Estimated Hydrocarbon Mass Removed from South-Central, Southeastern, and West Side Barrier Areas (pounds)[a]	Product Recovery (gallons)
12/26/2019	0	0	0	--	0.000	0
12/27/2019	0	0	0	--	0.000	0
12/28/2019	0	0	0	--	0.000	0
12/29/2019	0	0	0	--	0.000	0
12/30/2019	0	0	0	--	0.000	0
12/31/2019	0	0	0	--	0.000	0
Fourth Quarter 2019 Total	84,944	0	84,944	--	0.326	0
Cumulative Totals	**80,812,161**	**26,902,652**	**107,714,813**	**--**	**18,457**	**14,426**

Notes:

[a] Estimated hydrocarbon mass removed (pounds) between 1996 and 2005 is based on concentrations of dissolved BTEX and MTBE in the groundwater influent and volume of groundwater extracted. Estimated hydrocarbon mass removed (pounds) between 2006 and 2011 is based on concentrations of TPH-g and TPH-fp in the groundwater influent and volume of groundwater extracted. Estimated hydrocarbon mass removed (pounds) between 2012 and 2015 is based on concentrations of dissolved TPH-total in the groundwater influent and volume of extracted groundwater.

[b] Groundwater removal in the West Side Barrier area was discontinued in August 2008.

[c] Groundwater extraction from West Side Barrier area wells BW-3 and BW-6 was resumed on May 14, 2010, to evaluate the efficacy of blending water with lower selenium concentrations from these wells with groundwater extracted from the south-central and southeastern areas. Groundwater removal from the West Side Barrier area was discontinued again on June 22, 2010.

-- = not applicable

µg/L = micrograms per liter

BTEX = benzene, toluene, ethylbenzene, and xylenes

MTBE = methyl tertiary butyl ether

TPH-d = total petroleum hydrocarbons quantified as diesel (C13-C22)

TPH-fp = total petroleum hydrocarbons quantified as fuel product (C7-C28)

TPH-g = total petroleum hydrocarbons quantified as gasoline (C4-C12)

TPH-o = total petroleum hydrocarbons quantified as oil (C23-C36)

TPH-total = total petroleum hydrocarbons quantified as gasoline, diesel, and oil (C4-C36)

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
3/6/1996	--	--	--	--	--	2,600	790	7,200	9,100	---	--	--	--	--
7/23/1998	--	--	--	--	--	750	<10	360	300	---	--	--	--	--
8/27/1998	--	--	--	--	--	1,000	71	530	800	---	--	--	--	--
10/1/1998	--	--	--	--	--	1,200	<10	1,400	1,680	---	--	--	--	--
11/19/1998	--	--	--	--	--	1,600	140	2,600	2,900	---	--	--	--	--
12/17/1998	--	--	--	--	--	4,500	380	4,500	3,900	---	--	--	--	--
1/28/1999	--	--	--	--	--	520	79	660	840	---	--	--	--	--
3/25/1999	--	--	--	--	--	540	160	1,800	4,100	---	--	--	--	--
4/2/1999	--	--	--	--	--	620	76	520	1,200	---	--	--	--	--
4/15/1999	--	--	--	--	--	1,400	99	800	1,480	---	--	--	--	--
5/6/1999	--	--	--	--	--	1,340	180	1,240	1,730	---	--	--	--	--
6/3/1999	--	--	--	--	--	3,410	343	2,240	2,770	---	--	--	--	--
8/5/1999	--	--	--	--	--	3,200	780	5,400	5,200	---	--	--	--	--
9/23/1999	--	--	--	--	--	2,700	130	1,200	720	---	--	--	--	--
9/30/1999	--	--	--	--	--	1,300	77	480	560	---	--	--	--	--
10/13/1999	--	--	--	--	--	1,400	100	660	720	---	--	--	--	--
11/4/1999	--	--	--	--	--	3,000	500	5,600	4,500	---	--	--	--	--
12/9/1999	--	--	--	--	--	4,500	280	1,400	1,480	---	--	--	--	--
1/13/2000	--	--	--	--	--	9,000	7,600	14,000	44,000	---	--	--	--	--
2/11/2000	--	--	--	--	--	2,300	<100	1,200	1,240	3,100	--	--	--	--
3/10/2000	--	--	--	--	--	380	20	110	430	740	--	--	--	--
4/13/2000	--	--	--	--	--	1,300	550	450	920	970	--	--	--	--
6/2/2000	--	--	--	--	--	840	56	240	980	920	--	--	--	--
6/15/2000	--	--	--	--	--	1,600	82	900	990	2,700	--	--	--	--
8/3/2000	--	--	--	--	--	1,900	410	3,500	4,400	2,700	--	--	--	--
8/28/2000	--	--	--	--	--	620	33	200	380	1,800	--	--	--	--
9/20/2000	--	--	--	--	--	460	<20	73	255	1,300	--	--	--	--
10/25/2000	--	--	--	--	--	20	<20	<20	216	6,700	--	--	--	--
11/15/2000	--	--	--	--	--	560	24	210	490	3,700	--	--	--	--
3/22/2001	--	--	--	--	--	3,800	360	3,900	3,160	5,500	--	--	--	--
4/30/2001	--	--	--	--	--	4,100	710	5,800	5,600	8,300	--	--	--	--
5/23/2001	--	--	--	--	--	3,400	160	1,100	1,070	3,900	--	--	--	--
6/22/2001	--	--	--	--	--	1,700	85	680	680	2,200	--	--	--	--
7/16/2001	--	--	--	--	--	2,300	130	1,100	1,350	2,100	--	--	--	--
9/5/2001	--	--	--	--	--	1,500	170	1,200	1,890	1,100	--	--	--	--
1/23/2002	--	--	--	--	--	<0.5	<1	<1	<2	2	--	--	--	--

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
2/28/2002	--	--	--	--	--	<0.5	<1	<1	<2	96	--	--	--	--
3/25/2002	--	--	--	--	--	<0.5	<1	<1	<2	87	--	--	--	--
5/1/2002	--	--	--	--	--	1,900	31	190	480	1,100	--	--	--	--
5/17/2002	--	--	--	--	--	1,400	50	180	970	1,000	--	--	--	--
6/4/2002	--	--	--	--	--	2,700	57	280	530	1,300	--	--	--	--
7/18/2002	--	--	--	--	--	3,800	66	530	1,160	330	--	--	--	--
8/8/2002	--	--	--	--	--	4,800	49	610	1,290	460	--	--	--	--
9/3/2002	--	--	--	--	--	260	<5	5	71	600	--	--	--	--
10/18/2002	--	--	--	--	--	1,200	70	490	820	570	--	--	--	--
11/26/2002	--	--	--	--	--	1,300	68	130	590	860	--	--	--	--
12/27/2002	--	--	--	--	--	1	<1	<1	<2	58	--	--	--	--
1/30/2003	--	--	--	--	--	<0.5	<1	<1	<2	37	--	--	--	--
2/26/2003	--	--	--	--	--	4	<1	<1	4	140	--	--	--	--
3/17/2003	--	--	--	--	--	2,800	23	170	480	570	--	--	--	--
4/30/2003	--	--	--	--	--	3,700	350	2,200	4,600	490	--	--	--	--
6/13/2003	--	--	--	--	--	1,200	17	120	510	740	--	--	--	--
6/19/2003	--	--	--	--	--	680	<10	35	239	680	--	--	--	--
7/3/2003	--	--	--	--	--	2,600	160	610	2,290	450	--	--	--	--
7/25/2003	--	--	--	--	--	300	6	3	39	230	--	--	--	--
8/20/2003	--	--	--	--	--	830	19	130	350	290	--	--	--	--
9/11/2003	--	--	--	--	--	270	<10	<10	46	420	--	--	--	--
10/16/2003	--	--	--	--	--	380	<10	<10	121	490	--	--	--	--
11/17/2003	--	--	--	--	--	93	6	22	106	200	--	--	--	--
12/19/2003	--	--	--	--	--	300	27	110	1,010	62	--	--	--	--
1/30/2004	--	--	--	--	--	700	140	740	1,740	22	--	--	--	--
2/17/2004	--	--	--	--	--	300	47	440	1,150	19	--	--	--	--
3/8/2004	--	--	--	--	--	52	<5.0	10	149	23	--	--	--	--
3/21/2004	--	--	--	--	--	420	11	29	318	120	--	--	--	--
6/28/2004	--	--	--	--	--	740	26	46	337	81	--	--	--	--
7/30/2004	--	--	--	--	--	660	18	68	280	87	--	--	--	--
8/27/2004	--	--	--	--	--	1,500	47	140	530	77	--	--	--	--
9/28/2004	--	--	--	--	--	400	10	32	252	64	--	--	--	--
10/15/2004	--	--	--	--	--	950	31	130	316	64	--	--	--	--
11/12/2004	--	--	--	--	--	2,100	1,500	390	15,800	3,000	--	--	--	--
12/10/2004	--	--	--	--	--	700	320	1,100	3,900	110	--	--	--	--
1/28/2005	--	--	--	--	--	460	140	520	2,260	610	--	--	--	--

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
2/25/2005	--	--	--	--	--	5,700	200	650	1,560	1,300	--	--	--	--
3/22/2005	--	--	--	--	--	<5	<10	<10	26	1,000	--	--	--	--
4/21/2005	--	--	--	--	--	680	8	21	108	420	--	--	--	--
5/20/2005	--	--	--	--	--	6	<5	9	50	<5	--	--	--	--
6/28/2005	--	--	--	--	--	450	80	690	1,030	1,600	--	--	--	--
7/27/2005	--	--	--	--	--	2,000	170	1,700	5,000	1,200	--	--	--	--
8/31/2005	--	--	--	--	--	660	34	320	670	220	--	--	--	--
9/28/2005	--	--	--	--	--	1,800	310	2,800	4,700	360	--	--	--	--
10/26/2005	--	--	--	--	--	940	330	1,800	3,600	530	--	--	--	--
11/30/2005	--	--	--	--	--	900	170	900	2,790	760	--	--	--	--
12/20/2005	--	--	--	--	--	2,500	350	2,600	4,100	2,300	--	--	--	--
7/11/2007	--	--	--	--	--	4,800	130	890	1,040	690	--	--	--	--
8/7/2007	14,000	--	--	--	11,000	5,400	140	1,100	770	540	--	--	--	--
9/25/2007	12,000	--	--	--	30,000	3,400	310	1,600	2,390	540	--	--	--	--
10/16/2007	8,900	--	--	--	8,400	3,400	94	520	660	390	--	--	--	--
11/2/2007	44,000	--	--	--	6,500	3,200	130	860	1,160	570	--	--	--	--
11/30/2007	6,000	--	--	--	5,200	1,800	48	170	490	450	--	--	--	--
12/21/2007	7,200	--	--	--	4,200	2,100	41	170	430	750	--	--	--	--
1/4/2008	4,300	--	--	--	7,200	3,300	49	300	540	620	--	--	--	--
1/18/2008	11,000	--	--	--	2,200	3,600	140	650	850	620	--	--	--	--
2/1/2008	8,700	--	--	--	5,700	3,600	100	440	930	560	--	--	--	--
3/4/2008	7,200	--	--	--	4,900	3,900	120	510	770	620	--	--	--	--
4/8/2008	8,100	--	--	--	10,000	2,800	96	280	580	640	--	--	--	--
5/6/2008	5,300	--	--	--	2,800	2,900	76	190	328	430	--	--	--	--
6/3/2008	8,400	--	--	--	6,800	3,700	110	450	480	320	--	--	--	--
7/2/2008	9,200	--	--	--	4,300[c]	4,500	75	620	650	400	--	--	--	--
8/19/2008	4,000	--	--	--	6,600	2,600	57	76	215	450	--	--	--	--
9/5/2008	160	--	--	--	<500	<12	<25	<25	<25	<25	--	--	--	--
10/7/2008	<100	--	--	--	<500	0.36 J	<1.0	<1.0	1.59	1.7	--	--	--	--
11/4/2008	12,000	--	--	--	660,000	2,500	140	220	760	160	--	--	--	--
12/4/2008	1,300	--	--	--	1,500	600	8.2	28	73	130	--	--	--	--
1/6/2009	1,500	--	--	--	980	560	23	41	110	320	--	--	--	--
3/6/2009	2,500	--	--	--	1,500	1,100	33	51	114	65	--	--	--	--
4/7/2009	3,100	--	--	--	6,900	1,100	36	230	207	210	--	--	--	--
5/13/2009	690	--	--	--	1,500	120	3.2	14	60	24	--	--	--	--
6/12/2009	150	--	--	--	<500	<0.50	<1.0	<1.0	0.71 J	44	--	--	--	--

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
7/10/2009	4,500	--	--	--	560	1,500	41	68	175	150	--	--	--	--
8/4/2009	2,000	--	--	--	1,000	1,200	16	18	64	100	--	--	--	--
9/1/2009	4,800	--	--	--	3,500	380	45	25	328	5.4 J	--	--	--	--
10/6/2009	3,900	--	--	--	4,600	3,200	21	15	35	82	--	--	--	--
10/27/2009	1,000	--	--	--	<500	520	4	15	10	180	--	--	--	--
11/3/2009	120	--	--	--	<500	2	0.55 J	0.61 J	3	40	--	--	--	--
11/25/2009	5,700	--	--	--	4,000	3,100	26	13	48	88	--	--	--	--
2/16/2010	8,000	--	--	--	5,900	4,700	110	1,300	800	1,800	--	--	--	--
3/9/2010	7,000	--	--	--	5,900	6,600	110	460	550	410	--	--	--	--
4/20/2010	10,000	--	--	--	11,000	6,000	44	230	174	130	--	--	--	--
5/14/2010	8,500	--	--	--	2,100	3,600	67	380	400	210	--	--	--	--
6/25/2010	4,600	--	--	--	2,600	2,200	61	540	380	170	--	--	--	--
7/20/2010	21,000	--	--	--	21,000	3,400	370	3,000	2,550	2,300	--	--	--	--
8/3/2010	3,400	--	--	--	1,500	1,400	17	140	161	390	--	--	--	--
8/10/2010	5,800	--	--	--	3,400	2,600	40	190	169	140	--	--	--	--
9/14/2010	9,400	--	--	--	10,000	4,900	170	1,100	1,340	380	--	--	--	--
10/12/2010	5,700	--	--	--	1,000	2,200	43	140	138	120	--	--	--	--
11/16/2010	1,100	--	--	--	1,600	290	4	15	78	84	--	--	--	--
12/14/2010	7,100	--	--	--	3,200	2,600	76	200	315	340	--	--	--	--
1/14/2011	7,400	--	--	--	3,500	3,700	56	110	220	280	--	--	--	--
2/8/2011	5,600	--	--	--	3,500	2,400	43	110	190	420	--	--	--	--
3/25/2011	3,100	--	--	--	1,200	1,300	51	92	200	300	--	--	--	--
4/26/2011	1,400	--	--	--	1,200	610	5.8	5.7	20	130	--	--	--	--
5/17/2011	3,300	--	--	--	1,700	3,600	82	180	300	240	--	--	--	--
6/21/2011	1,200	--	--	--	720	860	9.6	31	82	190	2,200	6.6	<0.07	<0.1
7/27/2011	14,000	10,000	44J	--	--[d]	2,800	150	490	2,100	350	2,800	27	<0.07	<0.1
8/26/2011	7,400	--	--	--	57,000	1,400	120	480	1,300	270	1,600	16	<0.07	<0.1
9/23/2011	6,400	--	--	--	2,800	2,800	83.0	160	340	300	1,300	22	<0.07	<0.1
10/25/2011	6,000	--	--	--	2,300	3,000	52	93	200	200	970	20	<0.70	<1.0
11/22/2011	5,900	--	--	--	2,000	3,600	62	140	240	300	2,900	26	<0.07	<0.1
12/20/2011	780	--	--	--	2,000	330	8	14	43	160	1,000	18	<0.07	<0.1
1/10/2012	5,300	--	--	--	1,900	3,400	36	70	170	200	960	26	<0.07	<0.1
2/21/2012	4,900	--	--	--	<13	3,400	19	16	48	120	2,200	21	<0.07	<0.1
3/13/2012	6,100	--	--	--	2,100	2,900	43	79	180	120	1,600	23	<0.07	<0.1
4/27/2012	5,100	--	--	--	2,200	3,800	49	61	150	150	500	38	<0.13	<0.12
5/22/2012	6,800	--	--	--	31,000	2,800	49	140	262	150	690	30	<0.13	<0.12

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
6/19/2012	5,300	--	--	--	36,000	3,200	45	230	200	220	2,800	33	<0.13	<0.12
7/20/2012	5,600	2,400	210	8,200	--	3,000	71	72	510	170	2,700	26	<0.13	<0.12
8/21/2012	3,600	1,100	140	4,900	--	2,400	26	41	80	110	1,500	22	<0.13	<0.12
9/25/2012	2,100	710	71	2,800	--	1,700	25	35	86	150	690	17	<1.0	<1.0
10/30/2012	2,600	700	74	3,374	--	1,400	15	13	52	54	1,200	14	<0.061	<0.054
11/30/2012	860	8,200	260	9,320	--	1,100	2.4	4.4	12	23	690	<0.038	<0.061	<0.054
12/27/2012	6,200	820	86	7,106	--	2,000	39	76	130	120	1,300	20	<0.061	<0.054
1/15/2013	3,400	14,000	400	17,800	--	800	12	25	130	43	1,200	8.7	<0.061	<0.054
2/12/2013	9,900	3,100	150	13,150	--	2,100	110	440	820	110	330	22	<0.061	<0.054
3/5/2013	3,954	970	80	5,004	--	1,400	21	23	87	63	1,200	15	<0.061	<0.054
3/15/2013	--	--	--	--	--	1,400	25	49	98	74	570	14	<0.061	<0.054
4/16/2013	1,100	1,300	270	2,670	--	370	6	19	56	73	530	17	<0.061	<0.054
5/14/2013	4,300	830	99	5,229	--	2,000	52	98	181	61	270	22	<0.061	<0.054
6/28/2013	2,900	870	150	3,920	--	1,100	18	58	76	92	500	11	<0.061	<0.054
7/16/2013	3,600	1,000	130	4,730	--	870	19	47	140	100	600	14	<0.061	<0.054
8/16/2013	3,800	5,900	530	10,230	--	1,400	13	32	85	77	550	27	<0.061	<0.054
9/24/2013	5,800	12,000	550	18,350	--	990	53	400	630	78	440	20	<0.061	<0.054
10/15/2013	3,300	650	120	4,070	--	1,400	11	37	150	43	250	15	<0.061	<0.054
11/12/2013	5,600	3,500	190	9,290	--	570	99	230	660	89	550	20	<0.061	<0.054
12/13/2013	12,500	14,000	400	26,900	--	560	170	690	1,500	52	220	17	<0.061	<0.054
1/17/2014	5,900	980	130	7,010	--	4,200	13	18	61	89	810	40	<0.061	<0.054
2/11/2014	12,000	63,000	2,500	77,500	--	640	130	560	1,990	45	290	12	<0.061	<0.054
3/21/2014	42,000	77,000	2,000	121,000	--	3,700	440	3,300	3,900	100	360	17	<0.061	<0.054
4/21/2014	100,000	30,000	880	130,000	--	6,000	1,300	9,800	9,000	<0.098	<1.0	12	<0.061	<0.054
5/20/2014	33,000	15,000	470	48,000	--	1,400	570	2,700	5,400	30	<0.40	16	<0.061	<0.054
6/13/2014	77,000	33,000	1,100	110,000	--	7,700	1,900	10,000	13,000	38	<0.40	12	<0.061	<0.054
7/12/2014	28,000	82	<52	28,082	--	2,800	820	3,700	6,800	34	<0.40	18J	<25	<25
The GWTS was down between July 29, 2014, and December 1, 2014, to facilitate processing of the modifications to SCAQMD Permit No. F14166 for the GWTS.														
1/15/2015	8,000	5,600	270	13,870	--	2,200	22	140	430	21	390	11	<0.12	<0.11
2/20/2015	120,000	47,000	1,500	170,000	--	3,000	350	1,600	3,000	43	<0.80	17	<0.12	<0.11
3/3/2015	65,000	480,000	15,000	560,000	--	6,600	1,700	9,300	12,000	670	<0.80	11	<0.12	<0.11
4/7/2015	105,000	92,000	2,900	200,000	--	9,000	2,100	18,000	13,000	1,200	<0.80	8.7	<0.12	17
5/19/2015	73,000	90,000	2,400	165,400	--	8,200	1,600	17,000	12,000	380	<0.60	25	<0.078	<0.078
6/2/2015	78,000	89,000	3,100	170,100	--	3,200	530	3,700	7,100	1,100	<0.60	13	<0.078	8.3
7/30/2015	31,000	16,000	570	47,570	--	3,100	720	5,100	6,200	820	<0.60	27	<0.078	6.2
8/6/2015	30,000	17,000	570	37,570	--	2,600	500	3,100	6,200	700	<0.60	16	<0.078	6.4

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
9/15/2015	50,000	79,000	2,700	129,000	--	3,200	1,800	6,500	14,000	820	<0.60	15	<0.078	7.7
10/8/2015	51,000	55,000	1,800	107,800	--	5,700	1,400	11,000	11,000	680	<0.60	16	<0.078	6.2
11/24/2015	45,000	74,000	2,800	121,800	--	3,400	1,100	7,000	7,800	<0.31	<1.5	16	<0.20	<0.20
12/3/2015	40,000	120,000	4,000	164,000	--	4,800	1,100	7,700	8,300	580	<1.5	19	<0.20	5.9
1/21/2016	88,000	2,500,000	97,000	2,685,000	--	4,200	1,700	10,000	14,000	380	<0.60	12	<0.078	<0.078
2/2/2016	31,000	110,000	4,700	145,700	--	2,600	750	4,600	9,500	430	<0.60	8.6	<0.078	<0.078
4/5/2016	32,000	31,000	1,100	64,100	--	1,500	450	2,200	12,000	390	<3.0	<0.17	<0.39	<0.39
5/3/2016	2,600	20,000	680	23,280	--	990	18	83	260	6.0	100	7.1	<0.039	<0.039
6/14/2016	1,900	4,400	280	6,580	--	290	21	110	400	8.6	<5.0	6.00	<1.0	<1.0
The GWTS was down between June 24, 2016, and September 9, 2016, to facilitate installation of the new DAF/OWS.														
9/20/2016	32	230	130	390	--	<0.036	0.18 J	0.080 J	2.6	2.2	150	10	<0.039	<0.039
10/21/2016	10,000	9,300	360	20,000	--	320	320	1,100	2,700	5.1	<0.30	5.3	<0.039	<0.039
11/8/2016	1,100	1,500	130	2,800	--	2.5	<0.036	2.6	160	2.4	66	9.1	<0.039	<0.039
12/27/2016	140	390	130	660	--	1.2	<0.042	<0.042	2.0 J	1.4	2200	8.7	<0.039	<0.039
1/19/2017	190	340	120	640	--	6.9	0.24 J	0.15 J	<1.5	2.4	2300	8.1	<0.15	<0.12
2/3/2017	390	490	170	1,000	--	4.2	0.89 J	3.5	30	3.5	1700	5.1	<0.15	<0.12
3/3/2017	790	320	78	1,200	--	180	5	1.7 J	24	4.2	620	3.0	<0.15	<0.12
4/7/2017	1,200	780	140	2,100	--	740	21	23	87	7.5	120	4.8	<0.15	<0.12
5/4/2017	20	300	100	430	--	0.18 J	<0.036	0.12 J	<1.5	1.4	320	<0.017	<0.039	<0.039
6/20/2017	11,000	54,000	3,000	68,000	--	1,400	100	400	2,300	15	<18	8.1 J	<1.5	<1.2
7/20/2017	17 J	400	180	600	--	<1.0	<1.0	<2.0	<2.0	1.2	38	4.2	<1.0	<1.0
8/3/2017	39 J	410	310	760	--	<1.0	<1.0	<2.0	<2.0	1.3	25	4.2	<1.0	<1.0
9/20/2017	940	2,400	1,300	4,600	--	<1.0	0.15 J	0.17 J	4.4	0.59	5.4	0.70 J	<1.0	<1.0
10/10/2017	860	1,200	240	2,300	--	<1.0	5.2	13	120	3.7	26	6.5	<1.0	<1.0
11/8/2017	4,000	27,000	2,000	33,000	--	24	6.7	8.7	690	70	<5.0	8.8	<1.0	<1.0
12/15/2017	1,400	2,300	500	4,200	--	6.0	1.6	5.9	52	120	200	<1.0	<1.0	<1.0
1/4/2018	1,800	1,500	560	3,900	--	190	4.9	30	410	160	240	5.4	<1.0	<1.0
2/8/2018	36	640	530	1,200	--	0.53 J	<1.0	0.62 J	2.4	2.4	<5.0	2.1	<1.0	<1.0
2/27/2018	220	560	240	100	--	3.9	0.55 J	1.6 J	9.3	2.3	26	5.5	<1.0	<1.0
3/27/2018	430	380	330	1,100	--	5.3	0.83 J	<2.0	11	43	410	2.1	<1.0	<1.0
4/24/2018	49 J	370	410	830 J	--	<1.0	<1.0	<2.0	<2.0	1.7	230	1.6	<1.0	<1.0
5/22/2018	45 J	120	180	340	--	<1.0	<1.0	<2.0	<2.0	0.94 J	330	0.45 J	<1.0	<1.0
7/3/2018	4,700	1,300	2,300	8,300	--	220	140	35	1,300	92	1,500	0.91 J	<1.0	<1.0
7/31/2018	200	260	220	680	--	14	1.0	<2.0	3.0	27	320	2.6	<1.0	<1.0
8/31/2018	130	200	460	790	--	5.1	0.35 J	1.0 J	4.8	39	610	<1.0	<1.0	<1.0
9/25/2018	<50	280	350	630	--	<1.0	<1.0	<2.0	<2.0	23	52	2.3	<1.0	<1.0

Table 6. Extracted Groundwater Analytical Results[a]

SFPP Norwalk Pump Station, Norwalk, California

Date Sampled	EPA 8015M					EPA 8260B Volatile Organic Compounds (VOCs)[b]								
	TPH-g (µg/L)	TPH-d (µg/L)	TPH-o (µg/L)	TPH-total (µg/L)	TPH-fp (µg/L)	Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)
10/23/2018	74	<32	<80	74 J	--	1.2	<1.0	<2.0	<2.0	2.2	38	3.8	<1.0	<1.0
11/12/2018	<50	120	<100	120	--	<1.0	<1.0	<2.0	<2.0	1.4	120	4.1	<1.0	<1.0
12/14/2018	170	210	77	460	--	1.8	0.49 J	0.94 J	5.3	14	180	1.4	<1.0	<1.0
1/29/2019	100	250	64	410	--	<1.0	<1.0	<2.0	<2.0	2.6	<5.0	1.7	<1.0	<1.0
2/7/2019	36 J	210	93	340	--	<1.0	<1.0	<2.0	2.0 J	1.1	22	0.82 J	<1.0	<1.0
3/8/2019	38 J	270	110	420	--	<1.0	<1.0	<2.0	<2.0	1.7	22	3.8	<1.0	<1.0
4/29/2019	33 J	220	97	350	--	<1.0	<1.0	<2.0	<2.0	1.2	1,100	2.7	<1.0	<1.0
5/28/2019	31 J	270	120	420	--	<1.0	<1.0	<2.0	<2.0	1.8	16	2.6	<1.0	<1.0
6/20/2019	170	210	82	460	--	86	1.1	1.9 J	11	2.8	220	4.5	<1.0	<1.0
7/31/2019	200	130	60	390	--	130	1.9	0.75	11	1.6	320	6.9	<1.0	<1.0
8/22/2019	840	350	420	1,600	--	670	11	2.6	44	2.3	190	11	<1.0	<1.0
9/12/2019	440	180	87	650	--	140	1.8	0.61 J	8	1.2	110	3.4	<1.0	<1.0
10/8/2019	28 J	250	140	420	--	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	0.94 J	<1.0	<1.0
11/19/2019	19[e] B, J	170	150	330	--	<1.0	<1.0	<2.0	<2.0	<1.0	<5.0	<1.0	<1.0	<1.0
December-19	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]	--[f]

Notes:

[a] Influent samples were collected from the manifold conveying groundwater extracted from the south-central and southeastern areas.

[b] Other detected VOCs are included in the laboratory analytical reports in Appendix B.

[c] TPH-fp result from extracted groundwater sample collected on July 10, 2008.

[d] The July 27, 2011, sample, and samples collected after July 20, 2012, were analyzed for TPH-g, TPH-d, and TPH-o.

[e] The concentration detected in method blank sample was 12 µg/L (J).

[f] The GWTS remained down for the entire month of December 2019 due to a malfunction with the chart recorder and leaking effluent polishing carbon vessel.

-- = not analyzed

<X = Not detected at or above the laboratory reporting limit "X"

J = Analyte detected above the laboratory method detection limit and below the laboratory reporting limit

B = Analyte detected in the associated method blank

µg/L = micrograms per liter

ppm = parts per million

DAF = dissolved air flotation

DIPE = di-isopropyl ether

ETBE = ethyl tertiary butyl ether

GWTS = groundwater treatment system

MTBE = methyl tertiary butyl ether

OWS = oil-water separator

SCAQMD = South Coast Air Quality Management District

TAME = tertiary amyl methyl ether

TBA = tertiary butyl alcohol

TPH-d = total petroleum hydrocarbons quantified as diesel (C13-C22)

TPH-fp = total petroleum hydrocarbons quantified as fuel product (C7-C28)

TPH-g = total petroleum hydrocarbons quantified as gasoline (C4-C12)

TPH-o = total petroleum hydrocarbons quantified as oil (C23-C36)

TPH-total = total petroleum hydrocarbons quantified as gasoline, diesel, and oil (C4-C36)

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	System Flow[a] (scfm)	BS-01 Sparge Leg Pressure (psi)
1/6/2016	0			60	10
2/16/2016	899	899	91.9	500	13
2/23/2016	1,071	172	99.1	500	14
2/29/2016	1,192	121	85.1	500	13
3/1/2016	1,214	22	98.5	500	13
3/8/2016	1,381	167	99.9	500	14
3/10/2016	1,426	45	98.5	500	14
3/22/2016	1,432	6	2.0	240	7
3/31/2016	1,524	92	42.5	180	8
First Quarter 2016 Total	1,524	1,524	74.7	--	--
4/5/2016	1,644	120	99.2	120	7
4/15/2016	1,645	1	0.4	120	8
4/19/2016	1,735	90	99.4	240	9
4/25/2016	1,856	121	84.6	120	8
4/26/2016	1,881	25	87.7	240	8
4/29/2016	1,955	74	100.0	240	7
5/10/2016	1,955	0	0.0	240	8
5/17/2016	2,123	168	99.8	240	6
5/19/2016	2,140	17	36.9	120	5
5/24/2016	2,254	114	94.4	360	6
5/31/2016	2,422	168	98.7	360	7
6/7/2016	2,591	169	100.0	420	7
6/14/2016	2,754	163	95.3	420	8
6/21/2016	2,906	152	92.7	420	8
6/24/2016	2,982	76	99.6	420	8
Second Quarter 2016 Total	2,982	1,458	71.5	--	--

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	System Flow[a] (scfm)	BS-01 Sparge Leg Pressure (psi)
7/1/2016	2,982	0	0.0	120	5
7/7/2016	3,121	139	97.9	250	8
7/12/2016	3,242	121	100.0	420	5
7/19/2016	3,410	168	97.1	420	8
7/26/2016	3,575	165	99.8	420	8
8/2/2016	3,744	169	99.6	425	8
8/11/2016	3,931	187	88.0	240	7
8/16/2016	3,961	30	24.7	220	8
8/24/2016	4,033	72	36.5	120	4
8/25/2016	4,053	20	89.9	220	8
8/26/2016	4,067	14	66.7	78	5
8/30/2016	4,157	90	96.8	300	9
9/6/2016	4,303	146	84.5	85	5
9/13/2016	4,440	137	81.7	400	8
9/20/2016	4,611	171	100.0	586	14
9/27/2016	4,775	164	100.0	559	13
Third Quarter 2016 Total	4,775	1,793	78.7	--	--
10/7/2016	4,776	1	0.4	110	4
10/8/2016	4,797	21	98.7	170	6
10/11/2016	4,866	69	99.9	420	11
10/13/2016	4,916	50	99.9	563	15
10/18/2016	4,965	49	42.1	120	8
10/25/2016	5,133	168	100.0	585	14
11/1/2016	5,302	169	99.8	598	14
Fourth Quarter 2016 Total	5,302	527	62.7	--	--
2016 Totals	**5,302**	**5,302**	**--**	**--**	**--**
First Quarter 2017 Total	5,302	0	--	--	--
6/27/2017	5,302	0	0.0	220	6
6/30/2017	5,368	66	22.0	207	7
Second Quarter 2017 Total	5,368	66	--	--	--

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	System Flow[a] (scfm)	BS-01 Sparge Leg Pressure (psi)
7/5/2017	5,490	122	92.7	300	9
7/10/2017	5,610	120	100.0	290	8
7/13/2017	5,679	69	95.8	421	11
7/20/2017	5,850	171	100.0	526	14
7/25/2017	5,971	121	100.0	694	14
8/3/2017	6,183	212	94.4	544	13
8/8/2017	6,302	119	99.1	545	15
8/15/2017	6,417	115	68.8	550	14
8/22/2017	6,588	171	100.0	541	14
8/29/2017	6,753	165	99.1	544	14
9/7/2017	6,826	73	33.1	240	7
9/12/2017	6,941	115	100.0	747	14
9/18/2017	7,065	124	85.2	240	7
9/19/2017	7,089	24	100.0	218	7
9/26/2017	7,255	166	99.3	544	15
Third Quarter 2017 Total	7,255	1,887	89.1	--	--
10/6/2017	7,260	5	2.1	260	7
10/10/2017	7,354	94	97.9	521	15
10/12/2017	7,397	43	89.6	556	15
10/16/2017	7,482	85	88.5	250	6
11/2/2017	7,485	3	0.7	260	8
11/7/2017	7,604	119	99.2	549	15
11/21/2017	7,652	48	14.3	280	10
11/28/2017	7,751	99	58.9	594	15
12/5/2017	7,914	163	97.0	705	15
12/8/2017	7,964	50	69.4	697	14
12/12/2017	8,081	117	100.0	774	13
12/19/2017	8,247	166	98.8	782	14
1/2/2018	8,580	333	99.1	755	14
Fourth Quarter 2017 Total	8,580	1,325	56.5		

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	System Flow[a] (scfm)	BS-01 Sparge Leg Pressure (psi)
1/9/2018	8,751	171	100.0	589	13
1/23/2018	8,823	72	21.4	625	14
1/30/2018	8,932	109	64.9	294	8
2/6/2018	9,005	73	43.5	295	8
2/15/2018	9,219	214	95.4	624	14
2/20/2018	9,342	123	100.0	624	14
2/27/2018	9,490	148	90.2	629	14
3/13/2018	9,751	261	79.3	359	8
3/20/2018	9,911	160	95.2	412	8
3/27/2018	10,078	167	99.4	403	8
First Quarter 2018 Total	10,078	1,498	74.3	--	--
4/3/2018	10,247	169	100.0	374	8
4/5/2018	10,295	48	100.0	368	8
4/24/2018	10,419	124	27.2	190	7
4/27/2018	10,493	74	100.0	269	8
5/1/2018	10,585	92	95.8	279	8
5/8/2018	10,752	167	99.4	389	8
5/11/2018	10,826	74	100.0	393	9
5/14/2018	10,899	73	100.0	98	5
5/15/2018	10,900	1	4.2	117	5
5/18/2018	10,974	74	100.0	113	5
5/22/2018	11,049	75	78.1	104	5
5/25/2018	11,118	69	95.8	101	5
5/29/2018	11,217	99	100.0	209	6
6/5/2018	11,381	164	97.6	385	8
6/7/2018	11,431	50	100.0	386	9
6/12/2018	11,504	73	60.8	252	7
6/19/2018	11,673	169	100.0	336	8
6/26/2018	11,841	168	100.0	356	8
6/29/2018	11,842	1.0	1.4	101	5
Second Quarter 2018 Total	**11,842**	**1,764**	**78.2**	--	--

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	System Flow[a] (scfm)	BS-01 Sparge Leg Pressure (psi)
7/3/2018	11,932	90.0	93.8	203	6
7/12/2018	12,012	80.0	37.0	99	5
7/17/2018	12,127	115.0	95.8	270	8
7/24/2018	12,295	168.0	100.0	379	8
7/31/2018	12,449	154.0	91.7	411	10
8/7/2018	12,613	164.0	97.6	425	8
8/10/2018	12,689	76.0	100.0	406	8
8/14/2018	12,781	92.0	95.8	408	8
8/23/2018	12,869	88.0	40.7	109	5
8/28/2018	12,988	119.0	99.2	411	8
9/4/2018	13,085	97.0	57.7	123	5
9/6/2018	13,129	44.0	91.7	120	5
9/11/2018	13,235	106.0	88.3	340	7
9/18/2018	13,398	163.0	97.0	508	10
9/25/2018	13,567	169.0	100.0	422	9
Third Quarter 2018 Total	**13,567**	**1,725**	**81.7**	--	--
10/5/2018	13,812	245.0	100.0	475	8
10/9/2018	13,905	93.0	96.9	391	8
10/16/2018	14,068	163.0	97.0	114	5
10/22/2018	14,216	148.0	100.0	387	8
10/30/2018	14,216	0.0	0.0	0	0
12/31/2018	14,216	0.0	0.0	0	0
Fourth Quarter 2018 Total	**14,216**	**649**	**27.9**	--	--

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	System Flow[a] (scfm)	BS-01 Sparge Leg Pressure (psi)
1/14/2019	14,219	3	0.9	150	20
1/15/2019	14,241	22	91.7	150	20
1/22/2019	14,241	0	0.0	150	2
2/11/2019	14,311	70	14.6	150	1
2/21/2019	14,335	24	10.0	150	2
2/26/2019	14,453	118	98.3	301	7
3/5/2019	14,620	167	99.4	338	6
3/7/2019	14,671	51	100.0	454	5
3/12/2019	14,788	117	97.5	465	4
3/19/2019	14,954	166	98.8	394	4
3/26/2019	15,122	168	100	350	5
First Quarter 2019 Total	**15,122**	**906**	44.4	--	--
4/2/2019	15,197	75	44.6	155	8
4/9/2019	15,366	169	100	280	2
4/23/2019	15,366	0	0	150	2
4/29/2019	15,508	142	99	297	2
5/7/2019	15,691	183	95	149	2
5/14/2019	15,857	166	99	267	3
5/21/2019	16,025	168	100	401	8
5/30/2019	16,238	213	99	444	8
6/4/2019	16,360	122	100	158	2
6/11/2019	16,527	167	99	308	2
6/18/2019	16,696	169	100	338	5
6/27/2019	16,895	199	92.1	445	9
Second Quarter 2019 Total	**16,895**	**1,773**	**79.4**	--	--

Table 7. Biosparge System Operation Summary

SFPP Norwalk Pump Station, Norwalk, California

System Inspection Date	Cumulative Hours of Operation (hours)	Incremental Hours of Operation (hours)	Incremental Uptime (%)	System Flow[a] (scfm)	BS-01 Sparge Leg Pressure (psi)
7/2/2019	17,016	121	100	470	8
7/9/2019	17,184	168	100	488	9
7/16/2019	17,351	167	99	157	2
7/23/2019	17,518	167	99	474	5
7/30/2019	17,686	168	100	485	10
8/6/2019	17,856	170	100	494	8
8/13/2019	18,022	166	99	450	10
8/22/2019	18,238	216	100	461	8
8/27/2019	18,341	103	86	524	10
9/3/2019	18,503	162	96	431	8
9/12/2019	18,720	217	100	464	8
9/17/2019	18,843	123	100	200	1
9/24/2019	18,843	0	0	0	1
Third Quarter 2019 Total	**18,843**	**1,948**	**91.2**	--	--
10/1/2019	18,932	89	53	134	7
10/8/2019	19,100	168	100	466	2
10/15/2019	19,267	167	99	447	8
10/22/2019	19,432	165	98	401	8
10/29/2019	19,432	0	0	0	0
11/5/2019	19,432	0	0	0	0
11/7/2019	19,475	43	90	159	2
11/11/2019	19,593	118	100	431	4
11/19/2019	19,766	173	90	442	4
11/26/2019	19,930	164	98	466	5
12/9/2019	19,930	0	0	150	4
12/17/2019	20,119	189	98	394	2
12/26/2019	20,332	213	99	0	0
12/31/2019	20,332	0	0	0	0
Fourth Quarter 2019 Total	**20,332**	**1,489**	**63.3**	--	--
Cumulative Totals	**20,332**	--	**58.2**	--	--

Notes:

[a] Estimated system flow based on header flowmeter.

-- = not applicable or not available

psi = pounds per square inch

scfm = standard cubic feet per minute

Table 8. Field Measurements and Laboratory Soil Vapor Analytical Results – October 2019

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-1-5 10/28/2019 SVM-1 5-5.5	SVM-1-15 10/28/2019 SVM-1 15-15.5	SVM-2-5 10/28/2019 SVM-2 5-5.5	SVM-3-5 10/29/2019 SVM-3 5-5.5	SVM-3-15 10/29/2019 SVM-3 15-15.5	SVM-5-5 10/28/2019 SVM-5 5-5.5	SVM-5-15 10/28/2019 SVM-5 15-15.5	SVM-6-7 10/28/2019 SVM-6 7-7.5	SVM-6-13 10/28/2019 SVM-6 13-13.5	SVM-7-7 10/28/2019 SVM-7 7-7.5
Field Measurements	Pressure	inches H_2O	---	---	---	---	---	---	---	---	---	---	---	---
	PID	ppmv	---	---	---	---	---	---	---	---	---	---	---	---
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	1,2-Dichloroethane	µg/L	0.11	0.47	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
	1,3,5-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	2-Propanol (leak test compound)	µg/L	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzene	µg/L	0.097	0.42	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Ethylbenzene	µg/L	1.1	4.9	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Isopropylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	m,p-Xylenes	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.083	0.36	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	n-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	n-Propylbenzene	µg/L	1000	4400	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	o-Xylene	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	sec-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	tert-Butanol (TBA)	µg/L	---	---	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	Toluene	µg/L	310	1300	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Other Detected Compounds	Acetone	µg/L	32000	140000	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Tetrachloroethylene (PCE)	µg/L	0.46	2.0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Tetrahydrofuran (THF)	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Trichloroethylene (TCE)	µg/L	0.48	3.0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fixed Gases	Methane	% v/v	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Oxygen	% v/v	---	---	**20**	**18**	**18**	**18**	**20**	**20**	**19**	**21**	**19**	**21**
	Carbon Dioxide	% v/v	---	---	<0.2	<0.2	**0.5**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2019. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* April. DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.
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[c] Chemicals of potential concern identified from the 2006 soil gas investigation and HHRA (Geomatrix, 2006. *Vapor Intrusion Sampling and Human Health Risk Assessment, DFSP Norwalk Facility, Norwalk, California.* December.

SVM-1-5 Light blue highlighting indicates offsite soil vapor probe locations.

10 Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.

10/28/2019 - 10/30/2019 = sample dates
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SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
µg/L = micrograms per liter
COPC = chemical of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 8. Field Measurements and Laboratory Soil Vapor Analytical Results – October 2019

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-7-13 10/28/2019 SVM-7 13-13.5	SVM-7-13 (FD) 10/28/2019 SVM-7 13-13.5	SVM-8-5 10/28/2019 SVM-8 5-5.5	SVM-8-15 10/28/2019 SVM-8 15-15.5	SVM-9-5 10/30/2019 SVM-9 5-5.5	SVM-9-14.5 10/30/2019 SVM-9 14.5-15	SVM-10-15 10/28/2019 SVM-10 15-15.5	SVM-11-7 10/29/2019 SVM-11 7-7.5	SVM-11-15 10/29/2019 SVM-11 15-15.5	SVM-11-22 10/29/2019 SVM-11 22-22.5
Field Measurements	Pressure	inches H_2O	---	---	---	---	---	---	---	---	---	---	---	---
	PID	ppmv	---	---	---	---	---	---	---	---	---	---	---	---
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	1,2-Dichloroethane	µg/L	0.11	0.47	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
	1,3,5-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	2-Propanol (leak test compound)	µg/L	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzene	µg/L	0.097	0.42	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Ethylbenzene	µg/L	1.1	4.9	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Isopropylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	m,p-Xylenes	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	<0.02	<0.02	<0.02	<0.02	<0.02	**0.029**	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.083	0.36	<0.003	<0.003	<0.003	<0.003	**0.0039**	<0.003	<0.003	<0.003	<0.003	<0.003
	n-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	n-Propylbenzene	µg/L	1000	4400	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	o-Xylene	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	sec-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	tert-Butanol (TBA)	µg/L	---	---	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	Toluene	µg/L	310	1300	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Other Detected Compounds	Acetone	µg/L	32000	140000	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Tetrachloroethylene (PCE)	µg/L	0.46	2.0	<0.01	<0.01	<0.01	<0.01	<0.01	**0.012**	<0.01	<0.01	<0.01	**0.15**
	Tetrahydrofuran (THF)	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Trichloroethylene (TCE)	µg/L	0.48	3.0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fixed Gases	Methane	% v/v	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Oxygen	% v/v	---	---	**19**	**19**	**19**	**17**	**19**	**16**	**13**	**19**	**18**	**9**
	Carbon Dioxide	% v/v	---	---	<0.2	**0.38**	<0.2	<0.2	<0.2	**1.3**	**2.9**	<0.2	**0.62**	**7**

Notes:

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Field Measurements	Pressure	inches H_2O	---	---	---	---	---	---	---	---	---	---	---	---
	PID	ppmv	---	---	---	---	---	---	---	---	---	---	---	---
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	1,2-Dichloroethane	µg/L	0.11	0.47	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
	1,3,5-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	2-Propanol (leak test compound)	µg/L	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzene	µg/L	0.097	0.42	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Ethylbenzene	µg/L	1.1	4.9	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Isopropylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	m,p-Xylenes	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.083	0.36	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	n-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	n-Propylbenzene	µg/L	1000	4400	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	o-Xylene	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	sec-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
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Fixed Gases	Methane	% v/v	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Oxygen	% v/v	---	---	**18**	**17**	**10**	**19**	**19**	**18**	**19**	**17**	**18**	**1.4**
	Carbon Dioxide	% v/v	---	---	**1.1**	**2.2**	**5.2**	<0.2	<0.2	**0.74**	**0.47**	**1.3**	<0.2	**3.3**

Notes:

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Field Measurements	Pressure	inches H_2O	---	---	---	---	---	---	---	---	---	---	---	---
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	o-Xylene	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	sec-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
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Fixed Gases	Methane	% v/v	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Oxygen	% v/v	---	---	**19**	**19**	**20**	**17**	**18**	**4.5**	**19**	**18**	**23**	**17**
	Carbon Dioxide	% v/v	---	---	<0.2	<0.2	**0.68**	<0.2	<0.2	**8.8**	**<0.2**	**0.36**	**<0.2**	**2.2**

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Field Measurements	Pressure	inches H_2O	---	---	---	---	---	---	---	---	---	---	---	---
	PID	ppmv	---	---	---	---	---	---	---	---	---	---	---	---
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	1,2-Dichloroethane	µg/L	0.11	0.47	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
	1,3,5-Trimethylbenzene	µg/L	63	262	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	2-Propanol (leak test compound)	µg/L	---	---	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzene	µg/L	0.097	0.42	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Ethylbenzene	µg/L	1.1	4.9	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Isopropylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	m,p-Xylenes	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.083	0.36	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	n-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	n-Propylbenzene	µg/L	1000	4400	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	o-Xylene	µg/L	100	440	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	sec-Butylbenzene	µg/L	---	---	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	tert-Butanol (TBA)	µg/L	---	---	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	Toluene	µg/L	310	1300	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Other Detected Compounds	Acetone	µg/L	32000	140000	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Tetrachloroethylene (PCE)	µg/L	0.46	2.0	<0.01	<0.01	<0.01	**0.04**	**0.061**	<0.01	<0.01	**0.028**	**0.043**	<0.01
	Tetrahydrofuran (THF)	µg/L	---	---	<0.02	<0.02	<0.02	**1.8**	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Trichloroethylene (TCE)	µg/L	0.48	3.0	<0.02	<0.02	<0.02	<0.02	**0.035**	<0.02	<0.02	<0.02	<0.02	<0.02
Fixed Gases	Methane	% v/v	---	---	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
	Oxygen	% v/v	---	---	**19**	**20**	**17**	**17**	**20**	**19**	**17**	**18**	**19**	**16**
	Carbon Dioxide	% v/v	---	---	**<0.2**	**<0.2**	**0.49**	**0.62**	**0.61**	**<0.2**	**0.32**	**1.3**	**0.32**	**0.51**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2019. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* April. DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.
https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-2019-04.pdf
https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/05/HHRA-Note-Number-4-May-14-2019.pdf

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation* and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

[c] Chemicals of potential concern identified from the 2006 soil gas investigation and HHRA (Geomatrix, 2006. *Vapor Intrusion Sampling and Human Health Risk Assessment, DFSP Norwalk Facility, Norwalk, California.* December.

SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
10	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.

10/28/2019 - 10/30/2019 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
µg/L = micrograms per liter
COPC = chemical of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 8. Field Measurements and Laboratory Soil Vapor Analytical Results – October 2019

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVP-108-10 10/29/2019 SVP-108 10-10.5	SVP-109-5 10/30/2019 SVP-109 5-5.5	SVP-109-10 10/30/2019 SVP-109 10-10.5	SVP-109-10 (FD) 10/30/2019 SVP-109 10-10.5	Ambient Air 10/28/2019	Ambient Air 10/29/2019	Ambient Air 10/30/2019
Field Measurements	Pressure	inches H_2O	---	---	---	---	---	---	---	---	---
	PID	ppmv	---	---	---	---	---	---	---	---	---
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	262	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	1,2-Dichloroethane	µg/L	0.11	0.47	<0.064	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
	1,3,5-Trimethylbenzene	µg/L	63	262	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	2-Propanol (leak test compound)	µg/L	---	---	<3.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzene	µg/L	0.097	0.42	<0.048	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Ethylbenzene	µg/L	1.1	4.9	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Isopropylbenzene	µg/L	---	---	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	m,p-Xylenes	µg/L	100	440	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Naphthalene	µg/L	0.083	0.36	<0.048	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	n-Butylbenzene	µg/L	---	---	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	n-Propylbenzene	µg/L	1000	4400	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	o-Xylene	µg/L	100	440	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	sec-Butylbenzene	µg/L	---	---	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	tert-Butanol (TBA)	µg/L	---	---	<320	<20	<20	<20	<20	<20	<20
	Toluene	µg/L	310	1300	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Other Detected Compounds	Acetone	µg/L	32000	140000	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	**0.022**
	Tetrachloroethylene (PCE)	µg/L	0.46	2.0	<0.16	**0.057**	**0.08**	**0.082**	<0.01	<0.01	**0.016**
	Tetrahydrofuran (THF)	µg/L	---	---	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	Trichloroethylene (TCE)	µg/L	0.48	3.0	<0.32	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fixed Gases	Methane	% v/v	---	---	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**---**	**---**	**---**
	Oxygen	% v/v	---	---	**2.1**	**19**	**15**	**16**	**---**	**---**	**---**
	Carbon Dioxide	% v/v	---	---	**12**	**1**	**1.7**	**1.7**	**---**	**---**	**---**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2019. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* April. DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.
https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-2019-04.pdf
https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/05/HHRA-Note-Number-4-May-14-2019.pdf

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance).* October.
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

[c] Chemicals of potential concern identified from the 2006 soil gas investigation and HHRA (Geomatrix, 2006. *Vapor Intrusion Sampling and Human Health Risk Assessment, DFSP Norwalk Facility, Norwalk, California.* December.

SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
10	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.

10/28/2019 - 10/30/2019 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
µg/L = micrograms per liter
COPC = chemical of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-9	4/30/2007	74.44	26.71	---	---	47.73	Secor
	11/12/2007	74.44	27.32	27.04	0.28	47.34	Secor
	8/8/2008	74.44	28.01	27.96	0.05	46.47	Envent
	10/16/2008	74.44	28.36	28.35	0.01	46.09	Envent
	12/17/2008	74.44	27.61	---	---	46.83	Envent
	1/15/2009	74.44	28.91	---	---	45.53	Envent
	3/27/2009	74.44	29.04	---	---	45.40	Envent
	4/21/2009	74.44	28.16	---	---	46.28	Envent
	7/21/2009	74.44	28.31	---	---	46.13	Envent
	10/19/2009	74.44	NM	---	---	NC	Blaine Tech
	5/24/2010	74.44	30.47	---	---	43.97	Blaine Tech
	5/28/2010	74.44	30.35	---	---	44.09	Blaine Tech
	10/4/2010	74.44	30.30	---	---	44.14	Blaine Tech
	1/10/2011	74.44	32.02	---	---	42.42	Blaine Tech
	4/11/2011	74.44	25.41	---	---	49.03	Blaine Tech
	7/11/2011	74.44	NM	---	---	NC	
	10/10/2011	74.44	28.91	---	---	45.53	Blaine Tech
	4/16/2012	74.44	31.15	---	---	43.29	Blaine Tech
	7/9/2012	---	31.64	---	---	NC	Blaine Tech
	10/15/2012	77.16	31.82	---	---	45.34	Blaine Tech
	1/14/2013	77.16	31.88	---	---	45.28	Blaine Tech
	4/8/2013	77.16	31.83	---	---	45.33	Blaine Tech
	10/7/2013	77.16	35.30	31.25	4.05	45.02	Blaine Tech
	4/14/2014	77.16	37.66	31.65	6.01	44.19	Blaine Tech
	5/5/2014	77.16	37.81	31.76	6.05	44.07	Nieto & Sons
	5/12/2014	77.16	37.39	31.83	5.56	44.11	Nieto & Sons
	5/20/2014	77.16	37.70	33.85	3.85	42.46	Nieto & Sons
	5/27/2014	77.16	32.41	28.84	3.57	47.53	Nieto & Sons
	6/4/2014	77.16	33.20	---	---	43.96	Nieto & Sons
	6/10/2014	77.16	37.51	32.77	4.74	43.35	Nieto & Sons
	7/3/2014	77.16	39.26	32.59	6.67	43.10	Nieto & Sons
	7/8/2014	77.16	38.59	32.45	6.14	43.36	Blaine Tech
	7/18/2014	77.16	37.15	32.73	4.42	43.46	Blaine Tech
	7/24/2014	77.16	37.78	32.48	5.30	43.51	Blaine Tech
	8/1/2014	77.16	36.72	32.30	4.42	43.89	Blaine Tech
	8/8/2014	77.16	36.55	32.26	4.29	43.96	Blaine Tech
	8/13/2014	77.16	36.25	32.33	3.92	43.97	Blaine Tech
	8/19/2014	77.16	36.04	32.38	3.66	43.97	Blaine Tech
	8/29/2014	77.16	36.23	32.33	3.90	43.97	Blaine Tech
	9/5/2014	77.16	36.26	32.35	3.91	43.95	Blaine Tech
	9/11/2014	77.16	36.27	32.33	3.94	43.96	Blaine Tech
	9/18/2014	77.16	36.42	32.37	4.05	43.90	Blaine Tech
	9/26/2014	77.16	36.39	32.35	4.04	43.92	Blaine Tech
	10/1/2014	77.16	36.11	32.42	3.69	43.93	Blaine Tech
	10/6/2014	77.16	35.99	32.42	3.57	43.95	Blaine Tech
	10/14/2014	77.16	36.24	32.34	3.90	43.96	Blaine Tech
	10/23/2014	77.16	36.32	32.35	3.97	43.94	Blaine Tech
	10/27/2014	77.16	36.04	32.42	3.62	43.94	Blaine Tech
	11/3/2014	77.16	36.40	32.35	4.05	43.92	Blaine Tech
	11/10/2014	77.16	36.32	32.41	3.91	43.89	Blaine Tech
	11/18/2014	77.16	36.28	32.43	3.85	43.88	Blaine Tech
	11/25/2014	77.16	36.21	32.49	3.72	43.85	Blaine Tech
	12/3/2014	77.16	36.18	32.43	3.75	43.90	Blaine Tech
	12/12/2014	77.16	36.58	32.74	3.84	43.58	Blaine Tech
	12/19/2014	77.16	37.05	32.76	4.29	43.46	Blaine Tech
	3/6/2015	77.16	39.40	33.13	6.27	42.65	Kinder Morgan
	4/20/2015	77.16	36.98	32.99	3.99	43.29	Blaine Tech
	10/20/2015	77.16	34.61	34.37	0.24	42.74	Kinder Morgan

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	3/14/2016	77.16	36.10	---	---	41.06	Blaine Tech
	4/11/2016	77.16	36.20	---	---	40.96	Blaine Tech
	6/30/2016	77.16	31.02	---	---	46.14	Kinder Morgan
	8/22/2016	77.16	37.27	---	---	39.89	Kinder Morgan
	10/3/2016	77.16	38.02	---	---	39.14	Blaine Tech
	3/7/2017	77.16	35.13	---	---	42.03	CH2M
	4/17/2017	77.16	33.32	---	---	43.84	Blaine Tech
	10/2/2017	77.16	38.43	---	---	38.73	Blaine Tech
	4/16/2018	77.16	37.98	---	---	39.18	Blaine Tech
	11/5/2018	77.16	33.95	---	---	43.21	Blaine Tech
	4/23/2019	77.16	29.72	---	---	47.44	Blaine Tech
	10/28/2019	77.16	37.90	---	---	39.26	Blaine Tech
GMW-10	4/30/2007	74.67	25.90	---	---	48.77	Secor
	11/12/2007	74.67	25.02	25.82	0.83	50.33	Secor
	4/14/2008	74.67	25.38	25.44	0.06	49.34	Secor
	10/13/2008	74.67	24.16	---	---	50.51	Stantec
	4/20/2009	74.67	24.46	---	---	50.21	Blaine Tech
	10/19/2009	74.67	27.20	---	---	47.47	Blaine Tech
	5/24/2010	74.67	26.72	---	---	47.95	Blaine Tech
	5/28/2010	74.67	26.70	---	---	47.97	Blaine Tech
	10/4/2010	74.67	27.15	---	---	47.52	Blaine Tech
	4/11/2011	74.67	25.21	---	---	49.46	Blaine Tech
	10/10/2011	74.67	27.75	---	---	46.92	Blaine Tech
	4/27/2012	74.67	28.47	---	---	46.20	Blaine Tech
	7/9/2012	74.67	NM	---	---	NC	Blaine Tech
	10/15/2012	74.67	29.15	29.02	0.13	45.63	Blaine Tech
	4/8/2013	74.67	33.64	28.12	5.52	45.53	Blaine Tech
	9/26/2013	73.35	36.15	29.25	6.90	42.82	Blaine Tech
	10/7/2013	73.35	31.85	29.32	2.53	43.56	Blaine Tech
	4/14/2014	73.35	29.43	29.01	0.42	44.26	Blaine Tech
	8/19/2014	73.35	29.80	29.53	0.27	43.77	Blaine Tech
	8/29/2014	73.35	29.68	29.25	0.43	44.02	Blaine Tech
	9/26/2014	73.35	29.98	29.23	0.75	43.98	Blaine Tech
	10/1/2014	73.35	29.98	29.19	0.79	44.01	Blaine Tech
	10/6/2014	73.35	30.01	29.16	0.85	44.03	Blaine Tech
	10/14/2014	73.35	30.01	29.18	0.83	44.02	Blaine Tech
	10/23/2014	73.35	30.17	29.15	1.02	44.01	Blaine Tech
	10/27/2014	73.35	30.19	29.12	1.07	44.03	Blaine Tech
	11/3/2014	73.35	30.25	29.13	1.12	44.01	Blaine Tech
	11/10/2014	73.35	29.85	29.28	0.57	43.96	Blaine Tech
	11/18/2014	73.35	29.95	29.28	0.67	43.95	Blaine Tech
	11/25/2014	73.35	30.00	29.27	0.73	43.94	Blaine Tech
	12/3/2014	73.35	30.18	29.27	0.91	43.91	Blaine Tech
	12/12/2014	73.35	30.81	29.45	1.36	43.65	Blaine Tech
	12/19/2014	73.35	30.51	30.35	0.16	42.97	Blaine Tech
	4/20/2015	73.35	34.99	28.42	6.57	43.71	Blaine Tech
	7/17/2015	73.35	36.10	29.41	6.69	42.70	Blaine Tech
	10/20/2015	73.35	32.96	31.02	1.94	41.97	Kinder Morgan
	3/16/2016	73.35	34.47	33.42	1.05	39.74	Kinder Morgan
	4/11/2016	73.35	33.70	32.10	1.60	40.95	Blaine Tech
	6/29/2016	73.35	33.02	---	---	40.33	Blaine Tech
	8/22/2016	73.35	33.82	32.93	0.89	40.26	Blaine Tech
	10/3/2016	73.35	35.10	33.65	1.45	39.43	Blaine Tech
	3/8/2017	73.35	32.75	---	---	40.60	CH2M
	04/17/17	73.35	31.15	---	---	42.20	Blaine Tech
	10/2/2017	73.35	33.48	---	---	39.87	Blaine Tech
	4/16/2018	73.35	33.87	33.74	0.13	39.58	Blaine Tech
	11/5/2018	73.35	34.16	34.14	0.02	39.21	Blaine Tech
	4/16/2019	73.35	30.55	--	--	42.80	Blaine Tech
	10/28/2019	73.35	34.12	33.84	0.28	39.45	Blaine Tech

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SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
GMW-22	4/30/2007	74.17	25.79	---	---	48.38	Secor
	11/12/2007	74.17	26.45	25.91	0.54	48.16	Stantec
	8/12/2008	74.17	26.70	---	---	47.47	Envent
	10/31/2008	74.17	28.25	27.04	1.21	46.91	Envent
	11/4/2008	74.17	26.97	---	---	47.20	Envent
	12/17/2008	74.17	26.65	---	---	47.52	Envent
	1/15/2009	74.17	27.18	---	---	46.99	Envent
	3/27/2009	74.17	27.86	---	---	46.31	Envent
	4/21/2009	74.17	27.30	27.20	0.10	46.95	Envent
	7/21/2009	74.17	27.70	---	---	46.47	Envent
	10/19/2009	74.17	NM	---	---	NC	Blaine Tech
	11/6/2009	74.17	28.12	---	---	46.05	Kinder Morgan
	9/3/2010	74.17	28.36	25.10	3.26	48.47	Kinder Morgan
	10/4/2010	74.17	27.65	---	---	46.52	Blaine Tech
	4/11/2011	74.17	26.45	---	---	47.72	Blaine Tech
	10/10/2011	74.17	29.68	---	---	44.49	Blaine Tech
	4/16/2012	74.17	31.15	---	---	43.02	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	77.24	31.05	---	---	46.19	Blaine Tech
	4/8/2013	77.24	31.92	---	---	45.32	Blaine Tech
	10/7/2013	77.24	34.28	31.65	2.63	45.10	Blaine Tech
	4/14/2014	77.24	35.59	32.30	3.29	44.33	Blaine Tech
	5/6/2014	77.24	35.87	32.35	3.52	44.24	Nieto & Sons
	5/12/2014	77.24	35.76	32.28	3.48	44.32	Nieto & Sons
	5/20/2014	77.24	37.90	32.70	5.20	43.58	Nieto & Sons
	5/27/2014	77.24	36.34	32.71	3.63	43.86	Nieto & Sons
	6/4/2014	77.24	33.36	---	---	43.88	Nieto & Sons
	6/10/2014	77.24	36.74	32.82	3.92	43.69	Nieto & Sons
	7/3/2014	77.24	37.66	32.91	4.75	43.45	Nieto & Sons
	7/8/2014	77.24	36.70	32.79	3.91	43.73	Blaine Tech
	7/18/2014	77.24	36.68	32.77	3.91	43.75	Blaine Tech
	7/24/2014	77.24	36.79	32.62	4.17	43.85	Blaine Tech
	8/1/2014	77.24	35.82	32.44	3.38	44.17	Blaine Tech
	8/8/2014	77.24	35.72	32.44	3.28	44.19	Blaine Tech
	8/13/2014	77.24	35.68	32.45	3.23	44.19	Blaine Tech
	8/19/2014	77.24	35.64	32.45	3.19	44.20	Blaine Tech
	8/29/2014	77.24	35.65	32.44	3.21	44.21	Blaine Tech
	9/5/2014	77.24	35.73	32.46	3.27	44.18	Blaine Tech
	9/11/2014	77.24	35.78	32.47	3.31	44.16	Blaine Tech
	9/18/2014	77.24	35.85	32.49	3.36	44.13	Blaine Tech
	9/26/2014	77.24	35.85	32.46	3.39	44.15	Blaine Tech
	10/1/2014	77.24	35.76	32.45	3.31	44.18	Blaine Tech
	10/6/2014	77.24	35.72	32.44	3.28	44.19	Blaine Tech
	10/14/2014	77.24	35.75	32.42	3.33	44.20	Blaine Tech
	10/23/2014	77.24	35.84	32.43	3.41	44.18	Blaine Tech
	10/27/2014	77.24	35.74	32.41	3.33	44.21	Blaine Tech
	11/3/2014	77.24	35.89	32.45	3.44	44.15	Blaine Tech
	11/10/2014	77.24	35.94	32.45	3.49	44.14	Blaine Tech
	11/18/2014	77.24	35.97	32.48	3.49	44.11	Blaine Tech
	11/25/2014	77.24	35.97	32.51	3.46	44.09	Blaine Tech
	12/3/2014	77.24	35.84	32.45	3.39	44.16	Blaine Tech
	12/12/2014	77.24	36.44	32.65	3.79	43.89	Blaine Tech
	12/19/2014	77.24	36.80	34.71	2.09	42.14	Blaine Tech
	4/20/2015	77.24	36.64	32.84	3.80	43.70	Blaine Tech
	7/24/2015	77.24	39.80	33.70	6.10	42.41	Northstar
	10/20/2015	77.24	36.10	34.92	1.18	42.10	Kinder Morgan
	3/16/2016	77.24	39.73	37.61	2.12	39.24	Kinder Morgan
	4/11/2016	77.24	38.59	35.50	3.09	41.17	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	6/30/2016	77.24	36.55	---	---	40.69	Blaine Tech
	10/3/2016	77.24	37.70	---	---	39.54	Blaine Tech
	4/17/2017	77.24	34.47	---	---	42.77	Blaine Tech
	10/2/2017	77.24	38.45	---	---	38.79	Blaine Tech
	4/16/2018	77.24	38.23	---	---	39.01	Blaine Tech
	11/5/2018	77.24	38.02	---	---	39.22	Blaine Tech
	4/16/2019	77.24	36.19	---	---	41.05	Blaine Tech
	10/28/2019	77.24	38.65	---	---	38.59	Blaine Tech
GMW-24	4/30/2007	74.04	27.07	---	---	46.97	Secor
	11/12/2007	74.04	27.50	27.46	0.04	46.57	Stantec
	8/12/2008	74.04	NM	---	---	NC	Envent
	8/19/2008	74.04	29.34	28.24	1.10	45.58	Envent
	10/17/2008	74.04	30.88	29.90	0.98	43.94	Envent
	10/21/2008	74.04	29.64	28.30	1.34	45.47	Envent
	12/18/2008	74.04	29.04	---	---	45.00	Envent
	1/15/2009	74.04	30.56	29.80	0.76	44.09	Envent
	3/20/2009	74.04	31.28	---	---	42.76	Envent
	3/27/2009	74.04	30.45	---	---	43.59	Envent
	4/21/2009	74.04	29.91	---	---	44.13	Envent
	7/21/2009	74.04	32.78	---	---	41.26	Envent
	10/19/2009	74.04	NM	---	---	NC	Blaine Tech
	2/4/2010	74.04	29.67	29.40	0.27	44.59	Kinder Morgan
	6/22/2010	74.04	29.47	---	---	44.57	Blaine Tech
	9/3/2010	74.04	29.90	---	---	44.14	Kinder Morgan
	10/4/2010	74.04	29.50	---	---	44.54	Blaine Tech
	4/11/2011	74.04	28.21	---	---	45.83	Blaine Tech
	10/10/2011	74.04	28.78	---	---	45.26	Blaine Tech
	4/16/2012	74.04	30.49	30.31	0.18	43.69	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	77.48	31.34	---	---	46.14	Blaine Tech
	4/8/2013	77.48	NM	---	---	NC	Blaine Tech
	6/14/2013	77.48	33.35	32.40	0.95	44.89	Blaine Tech
	10/7/2013	77.48	35.42	31.61	3.81	45.11	Blaine Tech
	4/14/2014	77.48	37.74	32.01	5.73	44.32	Blaine Tech
	5/5/2014	77.48	37.81	32.09	5.72	44.25	Nieto & Sons
	5/12/2014	77.48	37.52	32.14	5.38	44.26	Nieto & Sons
	5/20/2014	77.48	37.39	32.21	5.18	44.23	Nieto & Sons
	5/27/2014	77.48	37.95	32.90	5.05	43.57	Nieto & Sons
	6/4/2014	77.48	37.00	32.70	4.30	43.92	Nieto & Sons
	6/10/2014	77.48	37.85	32.98	4.87	43.53	Nieto & Sons
	7/3/2014	77.48	39.60	33.04	6.56	43.13	Nieto & Sons
	7/8/2014	77.48	38.67	32.89	5.78	43.43	Blaine Tech
	7/18/2014	77.48	38.64	32.86	5.78	43.46	Blaine Tech
	7/24/2014	77.48	38.27	32.82	5.45	43.57	Blaine Tech
	8/1/2014	77.48	37.00	32.55	4.45	44.04	Blaine Tech
	8/8/2014	77.48	36.97	32.51	4.46	44.08	Blaine Tech
	8/13/2014	77.48	36.82	32.54	4.28	44.08	Blaine Tech
	8/19/2014	77.48	36.92	32.55	4.37	44.06	Blaine Tech
	8/29/2014	77.48	36.92	32.51	4.41	44.09	Blaine Tech
	9/5/2014	77.48	36.97	32.55	4.42	44.05	Blaine Tech
	9/11/2014	77.48	37.99	32.57	5.42	43.83	Blaine Tech
	9/18/2014	77.48	36.89	32.60	4.29	44.02	Blaine Tech
	9/26/2014	77.48	36.86	32.58	4.28	44.04	Blaine Tech
	10/1/2014	77.48	36.64	32.61	4.03	44.06	Blaine Tech
	10/6/2014	77.48	36.93	32.92	4.01	43.76	Blaine Tech
	10/14/2014	77.48	36.92	32.88	4.04	43.79	Blaine Tech
	10/23/2014	77.48	37.00	32.90	4.10	43.76	Blaine Tech
	10/27/2014	77.48	36.82	32.91	3.91	43.79	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	11/3/2014	77.48	37.01	32.99	4.02	43.69	Blaine Tech
	11/10/2014	77.48	37.33	33.95	3.38	42.85	Blaine Tech
	11/18/2014	77.48	36.96	33.01	3.95	43.68	Blaine Tech
	11/25/2014	77.48	36.91	33.55	3.36	43.26	Blaine Tech
	12/3/2014	77.48	36.87	32.99	3.88	43.71	Blaine Tech
	12/12/2014	77.48	37.36	33.25	4.11	43.41	Blaine Tech
	12/19/2014	77.48	37.75	33.31	4.44	43.28	Blaine Tech
	3/10/2015	77.48	36.25	---	---	41.23	Kinder Morgan
	4/20/2015	77.48	36.29	33.82	2.47	43.17	Blaine Tech
	7/24/2015	77.48	39.80	33.70	6.10	42.56	Blaine Tech
	10/20/2015	77.48	35.44	---	---	42.04	Kinder Morgan
	3/16/2016	77.48	38.83	---	---	38.65	Kinder Morgan
	4/11/2016	77.48	37.10	---	---	40.38	Blaine Tech
	6/29/2016	77.48	38.20	---	---	39.28	Blaine Tech
	8/22/2016	77.48	38.40	---	---	39.08	Blaine Tech
	10/3/2016	77.48	38.70	---	---	39.44	Blaine Tech
	4/17/2017	77.48	35.64	35.09	0.55	42.28	Blaine Tech
	10/2/2017	77.48	39.33	---	---	38.15	Blaine Tech
	4/16/2018	77.48	38.98	---	---	38.50	Blaine Tech
	11/5/2018	77.48	38.63	38.19	0.44	39.20	Blaine Tech
	4/16/2019	77.48	38.43	---	---	39.05	Blaine Tech
	10/28/2019	77.48	38.65	---	---	38.83	Blaine Tech
GMW-25	4/30/2007	74.29	26.60	---	---	47.69	Secor
	11/12/2007	74.29	27.30	27.25	0.05	47.03	Stantec
	8/12/2008	74.29	27.81	---	---	46.48	Envent
	10/17/2008	74.29	28.26	---	---	46.03	Envent
	12/18/2008	74.29	29.01	---	---	45.28	Envent
	1/15/2009	74.29	28.62	---	---	45.67	Envent
	3/24/2009	74.29	28.79	---	---	45.50	Envent
	4/21/2009	74.29	28.35	---	---	45.94	Envent
	7/21/2009	74.29	29.80	---	---	44.49	Envent
	10/19/2009	74.29	30.28	---	---	44.01	Blaine Tech
	6/22/2010	74.29	31.64	---	---	42.65	Blaine Tech
	10/4/2010	74.29	29.25	---	---	45.04	Blaine Tech
	4/11/2011	74.29	26.21	---	---	48.08	Blaine Tech
	10/10/2011	74.29	30.02	---	---	44.27	Blaine Tech
	4/16/2012	74.29	31.30	---	---	42.99	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	78.14	31.88	---	---	46.26	Blaine Tech
	4/8/2013	78.14	32.11	---	---	46.03	Blaine Tech
	10/7/2013	78.14	33.23	33.10	0.13	45.01	Blaine Tech
	4/14/2014	78.14	37.40	33.00	4.40	44.13	Blaine Tech
	5/5/2014	78.14	37.51	33.06	4.45	44.06	Nieto & Sons
	5/12/2014	78.14	34.97	33.73	1.24	44.12	Nieto & Sons
	5/20/2014	78.14	36.75	34.30	2.45	43.28	Nieto & Sons
	5/27/2014	78.14	34.64	34.44	0.20	43.65	Nieto & Sons
	6/4/2014	78.14	35.00	---	---	43.14	Nieto & Sons
	6/10/2014	78.14	36.67	34.18	2.49	43.39	Nieto & Sons
	7/3/2014	78.14	34.21	---	---	43.93	Nieto & Sons
	7/24/2014	78.14	34.29	---	---	43.85	Blaine Tech
	8/1/2014	78.14	35.02	33.99	1.03	43.91	Blaine Tech
	8/8/2014	78.14	34.54	34.06	0.48	43.97	Blaine Tech
	8/14/2014	78.14	34.48	34.06	0.42	43.98	Blaine Tech
	8/19/2014	78.14	34.51	34.07	0.44	43.97	Blaine Tech
	8/29/2014	78.14	34.65	33.96	0.69	44.02	Blaine Tech
	9/18/2014	78.14	35.21	34.01	1.20	43.85	Blaine Tech
	9/26/2014	78.14	34.87	34.06	0.81	43.89	Blaine Tech
	10/1/2014	78.14	34.92	33.98	0.94	43.94	Blaine Tech
	10/6/2014	78.14	34.93	33.99	0.94	43.93	Blaine Tech
	10/14/2014	78.14	35.10	33.91	1.19	43.96	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	10/23/2014	78.14	35.34	33.91	1.43	43.90	Blaine Tech
	10/27/2014	78.14	34.78	33.95	0.83	44.00	Blaine Tech
	11/3/2014	78.14	34.92	33.98	0.94	43.94	Blaine Tech
	11/10/2014	78.14	35.12	34.02	1.10	43.87	Blaine Tech
	11/18/2014	78.14	34.90	34.11	0.79	43.85	Blaine Tech
	11/25/2014	78.14	35.07	34.07	1.00	43.84	Blaine Tech
	12/3/2014	78.14	35.10	33.98	1.12	43.90	Blaine Tech
	12/12/2014	78.14	35.22	34.30	0.92	43.63	Blaine Tech
	12/19/2014	78.14	35.05	34.50	0.55	43.51	Blaine Tech
	4/20/2015	78.14	35.19	34.47	0.72	43.50	Blaine Tech
	6/25/2015	78.14	36.35	35.40	0.95	42.52	Blaine Tech
	10/20/2015	78.14	35.40	35.38	0.02	42.76	Kinder Morgan
	3/16/2016	78.14	38.99	---	---	39.15	Kinder Morgan
	4/12/2016	78.14	37.15	---	---	40.99	Kinder Morgan
	6/29/2016	78.14	38.40	---	---	39.74	Blaine Tech
	8/22/2016	78.14	38.44	---	---	39.70	Blaine Tech
	10/3/2016	78.14	38.70	---	---	39.44	Blaine Tech
	4/17/2017	78.14	35.23	---	---	42.91	Blaine Tech
	10/2/2017	78.14	39.22	---	---	38.92	Blaine Tech
	4/16/2018	78.14	38.85	---	---	39.29	Blaine Tech
	11/5/2018	78.14	38.70	---	---	39.44	Blaine Tech
	4/16/2019	78.14	36.89	---	---	41.25	Blaine Tech
	10/28/2019	78.14	37.10	---	---	41.04	Blaine Tech
GMW-36	3/12/2007	74.53	24.29	---	---	50.24	Secor
	4/30/2007	74.53	24.40	---	---	50.13	Secor
	8/28/2007	74.53	24.31	---	---	50.22	Stantec
	11/12/2007	74.53	24.86	24.85	0.01	49.68	Stantec
	2/19/2008	74.53	25.50	---	---	49.03	Stantec
	4/14/2008	74.53	24.61	---	---	49.92	Stantec
	8/8/2008	74.53	26.20	26.14	0.06	48.38	Envent
	10/16/2008	74.77	26.11	26.09	0.02	48.68	Envent
	12/18/2008	74.53	28.70	28.65	0.05	45.87	Envent
	1/15/2009	74.53	27.73	27.45	0.28	47.02	Envent
	2/20/2009	74.53	26.39	26.35	0.04	48.17	Envent
	2/23/2009	74.53	26.13	25.80	0.33	48.66	Blaine Tech
	3/24/2009	74.53	29.83	---	---	44.70	Envent
	4/20/2009	74.53	25.63	25.59	0.04	48.93	Blaine Tech
	7/17/2009	74.53	27.40	---	---	47.13	Envent
	7/20/2009	74.53	25.90	---	---	48.63	Blaine Tech
	7/21/2009	74.53	26.03	---	---	48.50	Envent
	7/22/2009	74.53	25.90	---	---	48.63	Blaine Tech
	10/19/2009	74.53	26.56	26.45	0.11	48.06	Blaine Tech
	2/4/2010	74.53	26.93	26.80	0.13	47.70	Kinder Morgan
	3/15/2010	74.53	26.80	---	---	47.73	Blaine Tech
	4/16/2010	74.53	26.90	---	---	47.63	Blaine Tech
	5/24/2010	74.53	25.96	25.90	0.06	48.62	Blaine Tech
	5/28/2010	74.53	25.94	25.88	0.06	48.64	Blaine Tech
	6/22/2010	74.53	25.94	25.91	0.03	48.61	Blaine Tech
	7/12/2010	74.53	NM	---	---	NC	
	8/12/2010	74.53	NM	---	---	NC	
	9/20/2010	74.53	NM	---	---	NC	
	10/4/2010	74.53	26.90	---	---	47.63	
	10/24/2010	74.53	26.90	---	---	47.63	Blaine Tech
	11/23/2010	74.53	27.35	27.10	0.25	47.38	Blaine Tech
	12/22/2010	74.53	28.35	26.84	1.51	47.39	Blaine Tech
	1/10/2011	74.53	29.10	27.70	1.40	46.55	Blaine Tech
	2/24/2011	74.53	NM	---	---	NC	Blaine Tech
	3/23/2011	74.53	NM	---	---	NC	Blaine Tech
	4/12/2011	74.53	26.98	25.05	1.93	49.09	Blaine Tech
	5/13/2011	74.53	NM	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	6/22/2011	74.53	NM	---	---	NC	
	7/11/2011	74.53	NM	---	---	NC	
	8/19/2011	74.53	NM	---	---	NC	
	9/22/2011	74.53	NM	---	---	NC	
	10/10/2011	74.53	25.96	---	---	48.57	Blaine Tech
	11/28/2011	74.53	NM	---	---	NC	
	12/2/2011	74.53	26.71	---	---	47.82	Kinder Morgan
	12/21/2011	74.53	28.17	---	---	46.36	Blaine Tech
	1/9/2012	74.53	27.26	---	---	47.27	Blaine Tech
	2/23/2012	74.53	27.85	---	---	46.68	Blaine Tech
	3/28/2012	74.53	NM	---	---	NC	Blaine Tech
	4/16/2012	74.53	27.34	---	---	47.19	Blaine Tech
	5/25/2012	74.53	NM	---	---	NC	Blaine Tech
	6/15/2012	---	33.27	---	---	NC	Blaine Tech
	7/9/2012	---	33.71	---	---	NC	Blaine Tech
	8/29/2012	---	NM	---	---	NC	Blaine Tech
	9/26/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	76.66	32.11	---	---	44.55	Blaine Tech
	11/29/2012	76.66	33.93	31.68	2.25	44.53	Blaine Tech
	12/26/2012	76.66	34.86	30.36	4.50	45.40	Blaine Tech
	1/14/2013	76.66	34.12	30.42	3.70	45.50	Blaine Tech
	2/20/2013	76.66	NM	---	---	NC	Blaine Tech
	4/10/2013	76.66	32.42	29.75	2.67	46.38	Blaine Tech
	10/7/2013	76.66	34.65	30.72	3.93	45.15	Blaine Tech
	4/25/2014	76.66	34.71	31.12	3.59	44.82	Blaine Tech
	5/20/2014	76.66	34.95	31.50	3.45	44.47	Nieto & Sons
	5/27/2014	76.66	34.53	31.29	3.24	44.72	Nieto & Sons
	6/4/2014	76.66	34.93	31.50	3.43	44.47	Nieto & Sons
	8/13/2014	76.66	34.86	31.27	3.59	44.67	Blaine Tech
	8/19/2014	76.66	34.20	31.39	2.81	44.71	Blaine Tech
	8/29/2014	76.66	34.31	31.32	2.99	44.74	Blaine Tech
	9/5/2014	76.66	34.35	31.37	2.98	44.69	Blaine Tech
	9/11/2014	76.66	35.00	31.23	3.77	44.68	Blaine Tech
	9/18/2014	76.66	34.42	31.50	2.92	44.58	Blaine Tech
	9/26/2014	76.66	34.15	31.48	2.67	44.65	Blaine Tech
	10/1/2014	76.66	33.51	31.61	1.90	44.67	Blaine Tech
	10/6/2014	76.66	33.29	31.63	1.66	44.70	Blaine Tech
	10/14/2014	76.66	33.48	31.55	1.93	44.72	Blaine Tech
	10/23/2014	76.66	33.64	31.57	2.07	44.68	Blaine Tech
	10/27/2014	76.66	33.02	31.79	1.23	44.62	Blaine Tech
	11/3/2014	76.66	33.75	31.57	2.18	44.65	Blaine Tech
	11/18/2014	76.66	33.17	31.75	1.42	44.63	Blaine Tech
	11/25/2014	76.66	33.13	31.86	1.27	44.55	Blaine Tech
	12/3/2014	76.66	32.93	31.75	1.18	44.67	Blaine Tech
	4/20/2015	76.66	33.64	32.20	1.44	44.17	Blaine Tech
	10/21/2015	76.66	33.55	33.16	0.39	43.42	Blaine Tech
	4/12/2016	76.66	34.30	34.03	0.27	42.58	Kinder Morgan
	10/3/2016	76.66	35.05	34.65	0.40	41.93	Blaine Tech
	3/9/2017	76.66	33.45	---	---	43.21	CH2M
	4/17/2017	76.66	32.96	---	---	43.70	Blaine Tech
	10/2/2017	76.66	34.10	---	---	42.56	Blaine Tech
	4/16/2018	76.66	35.18	---	---	41.48	Blaine Tech
	11/5/2018	76.66	35.91	---	---	40.75	Blaine Tech
	4/23/2019	76.66	33.56	---	---	43.10	Blaine Tech
	10/28/2019	76.66	34.86	34.84	0.02	41.82	Blaine Tech
GMW-O-11	4/30/2007	74.17	23.91	23.90	0.01	50.27	Secor
	11/12/2007	74.17	24.40	---	---	49.77	Stantec
	8/15/2008	74.17	29.30	---	---	44.87	Envent
	10/17/2008	74.17	24.45	---	---	49.72	Envent
	12/19/2008	74.17	24.85	---	---	49.32	Envent

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	1/15/2009	74.17	26.87	24.38	2.49	49.29	Envent
	2/24/2009	74.17	24.31	24.21	0.10	49.94	Envent
	3/27/2009	74.17	31.08	---	---	43.09	Envent
	4/21/2009	74.17	25.36	25.34	0.02	48.83	Envent
	7/21/2009	74.17	26.18	---	---	47.99	Envent
	10/19/2009	74.17	NM	---	---	NC	Blaine Tech
	11/6/2009	74.17	26.33	26.18	0.15	47.96	Kinder Morgan
	10/4/2010	74.17	30.00	---	---	44.17	Blaine Tech
	4/13/2011	74.17	24.19	---	---	49.98	Blaine Tech
	10/10/2011	74.17	24.38	---	---	49.79	Blaine Tech
	4/16/2012	74.17	NM	---	---	NC	Blaine Tech
	7/9/2012	74.17	NM	---	---	NC	Blaine Tech
	10/15/2012	74.17	28.12	---	---	46.05	Blaine Tech
	4/8/2013	74.17	NM	---	---	NC	Blaine Tech
	9/24/2013	74.17	31.25	28.15	3.10	45.40	Blaine Tech
	10/7/2013	74.17	31.19	27.69	3.50	45.78	Blaine Tech
	4/25/2014	74.17	28.96	28.62	0.34	45.48	Blaine Tech
	9/5/2014	74.17	31.13	27.89	3.24	45.63	Blaine Tech
	9/11/2014	74.17	31.12	27.85	3.27	45.67	Blaine Tech
	9/18/2014	74.17	31.22	27.85	3.37	45.65	Blaine Tech
	9/26/2014	74.17	31.34	27.91	3.43	45.57	Blaine Tech
	10/1/2014	74.17	31.19	27.84	3.35	45.66	Blaine Tech
	10/6/2014	74.17	32.19	27.84	4.35	45.46	Blaine Tech
	10/14/2014	74.17	31.18	28.85	2.33	44.85	Blaine Tech
	10/23/2014	74.17	31.34	27.85	3.49	45.62	Blaine Tech
	10/27/2014	74.17	31.28	28.89	2.39	44.80	Blaine Tech
	11/3/2014	74.17	32.34	27.83	4.51	45.44	Blaine Tech
	11/10/2014	74.17	31.46	27.97	3.49	45.50	Blaine Tech
	11/18/2014	74.17	31.41	27.88	3.53	45.58	Blaine Tech
	11/25/2014	74.17	31.48	27.87	3.61	45.58	Blaine Tech
	12/3/2014	74.17	33.34	29.95	3.39	43.54	Blaine Tech
	12/12/2014	74.17	33.25	29.08	4.17	44.26	Blaine Tech
	12/19/2014	74.17	32.52	28.09	4.43	45.19	Blaine Tech
	4/22/2015	74.17	31.54	28.10	3.44	45.38	Blaine Tech
	10/22/2015	74.17	33.08	29.23	3.85	44.17	Kinder Morgan
	3/16/2016	74.17	33.39	33.16	0.23	40.96	Kinder Morgan
	4/12/2016	74.17	33.33	33.12	0.21	41.01	Kinder Morgan
	6/30/2016	74.17	31.50	---	---	42.67	Kinder Morgan
	8/22/2016	74.17	32.75	32.74	0.01	41.43	Kinder Morgan
	10/3/2016	74.17	32.72	32.71	0.01	41.46	Kinder Morgan
	3/24/2017	74.17	31.50	30.45	1.05	43.51	CH2M
	4/17/2017	74.17	30.12	29.96	0.16	44.18	Blaine Tech
	10/2/2017	74.17	33.54	---	---	40.63	Blaine Tech
	4/16/2018	74.17	NM	---	---	NC	Blaine Tech
	11/5/2018	74.17	33.22	33.11	0.11	41.04	Blaine Tech
	4/16/2019	74.17	NM	---	---	NC	Blaine Tech
	10/28/2019	74.17	NM	---	---	NC	Blaine Tech
GMW-O-12	4/30/2007	73.49	22.81	---	---	50.68	Secor
	11/12/2007	73.49	23.13	---	---	50.36	Stantec
	4/14/2008	73.49	23.36	---	---	50.13	Stantec
	10/13/2008	73.49	24.20	---	---	49.29	Stantec
	4/20/2009	73.49	24.21	---	---	49.28	Blaine Tech
	10/19/2009	73.49	25.08	---	---	48.41	Blaine Tech
	5/24/2010	73.49	24.80	---	---	48.69	Blaine Tech
	5/28/2010	73.49	24.74	---	---	48.75	Blaine Tech
	10/4/2010	73.49	25.31	25.20	0.11	48.27	Blaine Tech
	1/10/2011	73.49	26.42	26.32	0.10	47.15	Blaine Tech
	4/11/2011	73.49	24.04	---	---	49.45	Blaine Tech
	7/11/2011	73.49	NM	---	---	NC	
	10/10/2011	73.49	24.68	---	---	48.81	Blaine Tech
	1/9/2012	73.49	25.12	---	---	48.37	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	4/16/2012	73.49	25.40	---	---	48.09	Blaine Tech
	7/9/2012	73.49	26.96	---	---	46.53	Blaine Tech
	10/15/2012	73.49	25.48	25.44	0.04	48.04	Blaine Tech
	1/14/2013	73.49	25.62	25.58	0.04	47.90	Blaine Tech
	4/8/2013	73.49	26.60	26.51	0.09	46.96	Blaine Tech
	9/24/2013	73.49	27.90	27.74	0.16	45.72	Blaine Tech
	10/7/2013	73.49	27.34	27.28	0.06	46.20	Blaine Tech
	4/14/2014	73.49	30.34	26.80	3.54	45.96	Blaine Tech
	5/6/2014	73.49	30.93	26.74	4.19	45.89	Nieto & Sons
	5/12/2014	73.49	30.81	26.82	3.99	45.85	Nieto & Sons
	5/20/2014	73.49	31.78	27.32	4.46	45.26	Nieto & Sons
	5/27/2014	73.49	33.04	26.78	6.26	45.43	Nieto & Sons
	6/4/2014	73.49	33.00	27.75	5.25	44.66	Nieto & Sons
	6/10/2014	73.49	34.53	26.81	7.72	45.10	Nieto & Sons
	7/3/2014	73.49	34.27	26.94	7.33	45.05	Blaine Tech
	7/8/2014	73.49	33.87	26.87	7.00	45.19	Blaine Tech
	7/18/2014	73.49	33.36	27.07	6.29	45.13	Blaine Tech
	7/24/2014	73.49	33.00	26.98	6.02	45.28	Blaine Tech
	8/1/2014	73.49	31.80	26.83	4.97	45.64	Blaine Tech
	8/8/2014	73.49	31.26	26.91	4.35	45.69	Blaine Tech
	8/13/2014	73.49	31.18	26.88	4.30	45.73	Blaine Tech
	8/19/2014	73.49	31.01	26.86	4.15	45.78	Blaine Tech
	8/29/2014	73.49	31.03	26.89	4.14	45.75	Blaine Tech
	9/5/2014	73.49	31.19	26.88	4.31	45.73	Blaine Tech
	9/18/2014	73.49	31.30	26.82	4.48	45.75	Blaine Tech
	9/26/2014	73.49	31.33	26.89	4.44	45.69	Blaine Tech
	10/1/2014	73.49	31.21	26.85	4.36	45.75	Blaine Tech
	10/6/2014	73.49	31.20	29.84	1.36	43.37	Blaine Tech
	10/14/2014	73.49	31.14	26.86	4.28	45.75	Blaine Tech
	10/23/2014	73.49	31.30	26.85	4.45	45.73	Blaine Tech
	10/27/2014	73.49	31.28	26.90	4.38	45.69	Blaine Tech
	11/3/2014	73.49	32.30	26.84	5.46	45.53	Blaine Tech
	11/10/2014	73.49	31.45	26.91	4.54	45.65	Blaine Tech
	11/18/2014	73.49	32.34	26.90	5.44	45.47	Blaine Tech
	11/25/2014	73.49	31.57	27.87	3.70	44.86	Blaine Tech
	12/3/2014	73.49	33.87	28.81	5.06	43.64	Blaine Tech
	12/19/2014	73.49	32.78	26.97	5.81	45.33	Blaine Tech
	4/20/2015	73.49	33.35	26.91	6.44	45.26	Blaine Tech
	4/22/2015	73.49	33.35	26.91	6.44	45.26	Blaine Tech
	5/21/2015	73.49	34.31	27.35	6.96	44.71	Northstar
	5/29/2015	73.49	34.15	27.24	6.91	44.83	Northstar
	6/2/2015	73.49	34.00	27.27	6.73	44.84	Northstar
	6/5/2015	73.49	34.00	27.50	6.50	44.66	Northstar
	6/12/2015	73.49	33.96	27.35	6.61	44.78	Northstar
	6/19/2015	73.49	33.98	27.58	6.40	44.60	Northstar
	6/26/2015	73.49	33.97	28.15	5.82	44.15	Northstar
	7/2/2015	73.49	33.83	28.20	5.63	44.14	Northstar
	7/7/2015	73.49	33.60	27.93	5.67	44.40	Northstar
	7/17/2015	73.49	33.57	27.85	5.72	44.47	Northstar
	7/24/2015	73.49	33.15	28.25	4.90	44.24	Northstar
	7/29/2015	73.49	33.02	28.10	4.92	44.38	Northstar
	8/11/2015	73.49	33.00	28.90	4.10	43.75	Northstar
	8/18/2015	73.49	32.65	28.23	4.42	44.35	Northstar
	8/28/2015	73.49	32.41	28.17	4.24	44.45	Kinder Morgan
	9/1/2015	73.49	33.18	28.65	4.53	43.91	Kinder Morgan
	9/25/2015	73.49	34.69	28.03	6.66	44.09	Kinder Morgan
	10/16/2015	73.49	34.63	27.83	6.80	44.27	Kinder Morgan
	10/19/2015	73.49	34.65	27.82	6.83	44.27	Blaine Tech
	10/30/2015	73.49	39.38	28.11	11.27	43.07	Kinder Morgan

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	3/14/2016	73.49	32.40	31.60	0.80	41.73	Blaine Tech
	4/11/2016	73.49	33.35	26.86	6.49	45.30	Blaine Tech
	6/29/2016	73.49	33.90	33.10	0.80	40.23	Blaine Tech
	8/22/2016	73.49	33.56	31.07	2.49	41.91	Blaine Tech
	10/3/2016	73.49	34.20	31.90	2.30	41.12	Blaine Tech
	4/17/2017	73.49	32.90	28.70	4.20	43.95	Blaine Tech
	10/2/2017	73.49	33.20	32.00	1.20	41.25	Blaine Tech
	4/16/2018	73.49	33.04	31.89	1.15	41.37	Blaine Tech
	11/5/2018	73.49	32.65	32.31	0.34	41.11	Blaine Tech
	4/16/2019	73.49	31.62	31.21	0.41	42.20	Blaine Tech
	10/28/2019	73.49	32.45	31.85	0.60	41.52	Blaine Tech
GMW-O-15	4/30/2007	74.23	23.41	23.30	0.11	50.91	Secor
	11/12/2007	74.23	23.95	23.85	0.10	50.36	Stantec
	4/14/2008	74.23	23.64	---	---	50.59	Stantec
	8/8/2008	74.23	24.60	---	---	49.63	Envent
	8/11/2008	74.23	24.40	24.34	0.06	49.88	Stantec
	10/16/2008	74.23	24.53	---	---	49.70	Envent
	12/18/2008	74.23	24.86	---	---	49.37	Envent
	1/2/2009	74.23	24.82	---	---	49.41	Envent
	1/15/2009	74.23	26.01	---	---	48.22	Envent
	2/20/2009	74.23	24.80	---	---	49.43	Envent
	2/23/2009	74.23	24.76	24.74	0.02	49.49	Blaine Tech
	3/24/2009	74.23	25.55	---	---	48.68	Envent
	4/20/2009	74.23	24.66	24.61	0.05	49.61	Blaine Tech
	7/17/2009	74.23	25.01	---	---	49.22	Envent
	7/20/2009	74.23	24.99	24.94	0.05	49.28	Blaine Tech
	7/22/2009	74.23	24.99	24.94	0.05	49.28	Blaine Tech
	10/19/2009	74.23	25.55	25.43	0.12	48.78	Blaine Tech
	2/4/2010	74.23	25.50	25.48	0.02	48.75	Kinder Morgan
	3/15/2010	74.23	NM	---	---	NC	
	4/16/2010	74.23	23.10	---	---	51.13	Blaine Tech
	5/24/2010	74.23	25.67	---	---	48.56	Blaine Tech
	5/28/2010	74.23	25.35	---	---	48.88	Blaine Tech
	6/22/2010	74.23	25.81	---	---	48.42	Blaine Tech
	7/12/2010	74.23	NM	---	---	NC	
	8/12/2010	74.23	NM	---	---	NC	
	9/20/2010	74.23	NM	---	---	NC	
	10/4/2010	74.23	25.85	25.80	0.05	48.42	Blaine Tech
	11/23/2010	74.23	NM	---	---	NC	Blaine Tech
	12/22/2010	74.23	26.31	---	---	47.92	Blaine Tech
	1/10/2011	74.23	25.97	---	---	48.26	Blaine Tech
	2/24/2011	74.23	NM	---	---	NC	Blaine Tech
	3/23/2011	74.23	NM	---	---	NC	Blaine Tech
	4/12/2011	74.23	22.55	22.53	0.02	51.70	Blaine Tech
	5/13/2011	74.23	NM	---	---	NC	Blaine Tech
	6/22/2011	74.23	NM	---	---	NC	
	7/11/2011	74.23	NM	---	---	NC	
	8/19/2011	74.23	NM	---	---	NC	
	9/22/2011	74.23	NM	---	---	NC	
	10/10/2011	74.23	23.79	23.22	0.57	50.90	Blaine Tech
	11/28/2011	74.23	NM	---	---	NC	
	12/2/2011	74.23	23.92	23.86	0.06	50.36	Kinder Morgan
	12/21/2011	74.23	31.13	---	---	43.10	Blaine Tech
	1/9/2012	74.23	27.67	---	---	46.56	Blaine Tech
	2/23/2012	74.23	31.82	---	---	42.41	Blaine Tech
	3/28/2012	74.23	30.30	---	---	43.93	Blaine Tech
	4/16/2012	74.23	26.56	26.51	0.05	47.71	Blaine Tech
	5/25/2012	74.23	26.64	---	---	47.59	Blaine Tech
	6/15/2012	74.23	26.93	---	---	47.30	Blaine Tech
	7/9/2012	74.23	25.47	---	---	48.76	Blaine Tech
	8/29/2012	74.23	NM	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	9/26/2012	74.23	30.64	---	---	43.59	Blaine Tech
	10/15/2012	74.23	31.82	---	---	42.41	Blaine Tech
	11/29/2012	74.23	NM	---	---	NC	Blaine Tech
	12/26/2012	74.23	27.41	---	---	46.82	Blaine Tech
	1/14/2013	74.23	27.62	---	---	46.61	Blaine Tech
	2/20/2013	74.23	NM	---	---	NC	Blaine Tech
	4/10/2013	74.23	NM	---	---	NC	Blaine Tech
	4/26/2013	74.23	27.90	---	---	46.33	Kinder Morgan
	10/7/2013	74.23	29.03	28.26	0.77	45.82	Blaine Tech
	4/18/2014	74.23	28.40	28.08	0.32	46.09	Blaine Tech
	8/14/2014	74.23	32.59	28.26	4.33	45.10	Blaine Tech
	8/19/2014	74.23	32.34	28.23	4.11	45.18	Blaine Tech
	8/29/2014	74.23	31.84	28.25	3.59	45.26	Blaine Tech
	9/5/2014	74.23	31.91	28.29	3.62	45.22	Blaine Tech
	9/11/2014	74.23	32.16	28.79	3.37	44.77	Blaine Tech
	9/18/2014	74.23	32.50	28.23	4.27	45.15	Blaine Tech
	9/26/2014	74.23	32.20	28.27	3.93	45.17	Blaine Tech
	10/1/2014	74.23	31.93	28.28	3.65	45.22	Blaine Tech
	10/6/2014	74.23	31.91	28.27	3.64	45.23	Blaine Tech
	10/14/2014	74.23	31.85	28.29	3.56	45.23	Blaine Tech
	10/23/2014	74.23	32.10	28.30	3.80	45.17	Blaine Tech
	10/27/2014	74.23	31.89	28.30	3.59	45.21	Blaine Tech
	11/18/2014	74.23	31.86	28.39	3.47	45.15	Blaine Tech
	11/25/2014	74.23	32.36	28.35	4.01	45.08	Blaine Tech
	12/3/2014	74.23	31.73	28.36	3.37	45.20	Blaine Tech
	12/12/2014	74.23	32.61	28.54	4.07	44.88	Blaine Tech
	12/19/2014	74.23	32.62	28.37	4.25	45.01	Blaine Tech
	4/20/2015	74.23	31.93	28.82	3.11	44.79	Blaine Tech
	10/19/2015	74.23	31.91	28.89	3.02	44.74	Blaine Tech
	4/12/2016	74.23	29.78	---	---	44.45	Kinder Morgan
	10/3/2016	74.86	31.00	30.92	0.08	43.92	Kinder Morgan
	3/9/2017	74.86	29.94	---	---	44.92	CH2M
	4/17/2017	74.86	29.65	29.52	0.13	45.31	Blaine Tech
	10/2/2017	74.86	31.92	30.33	1.59	44.21	Blaine Tech
	4/16/2018	74.86	31.79	31.67	0.12	43.17	Blaine Tech
	11/5/2018	74.86	32.38	--	--	42.48	Blaine Tech
	4/23/2019	74.86	29.84	29.84	0.00	45.02	Blaine Tech
	10/31/2019	74.86	29.28	--	--	45.58	Blaine Tech
GMW-O-18	4/30/2007	74.36	24.21	---	---	50.15	Secor
	11/12/2007	74.36	22.46	---	---	51.90	Secor
	4/14/2008	74.36	24.50	---	---	49.86	Secor
	10/13/2008	74.36	25.46	---	---	48.90	Stantec
	4/20/2009	74.36	25.59	---	---	48.77	Blaine Tech
	10/19/2009	74.36	26.31	---	---	48.05	Blaine Tech
	3/15/2010	74.36	26.54	---	---	47.82	Blaine Tech
	4/16/2010	74.36	24.25	---	---	50.11	Blaine Tech
	5/24/2010	74.36	26.26	---	---	48.10	Blaine Tech
	5/28/2010	74.36	26.03	---	---	48.33	Blaine Tech
	6/22/2010	74.36	26.41	---	---	47.95	
	7/12/2010	74.36	NM	---	---	NC	
	8/12/2010	74.36	NM	---	---	NC	
	9/20/2010	74.36	NM	---	---	NC	
	10/4/2010	74.36	29.95	---	---	44.41	Blaine Tech
	11/16/2010	74.36	NM	---	---	NC	
	12/22/2010	74.36	NM	---	---	NC	
	1/10/2011	74.36	NM	---	---	NC	
	2/24/2011	74.36	NM	---	---	NC	Blaine Tech
	3/23/2011	74.36	NM	---	---	NC	Blaine Tech
	4/12/2011	74.36	NM	---	---	NC	Blaine Tech
	5/13/2011	74.36	NM	---	---	NC	Blaine Tech
	6/22/2011	74.36	NM	---	---	NC	

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	7/11/2011	74.36	NM	---	---	NC	
	8/19/2011	74.36	NM	---	---	NC	
	9/22/2011	74.36	NM	---	---	NC	
	10/10/2011	74.36	23.68	---	---	50.68	Blaine Tech
	11/28/2011	74.36	NM	---	---	NC	
	12/2/2011	74.36	24.22	---	---	50.14	Blaine Tech
	12/21/2011	74.36	27.14	---	---	47.22	Blaine Tech
	2/23/2012	74.36	31.18	---	---	43.18	Blaine Tech
	3/28/2012	74.36	NM	---	---	NC	Blaine Tech
	4/16/2012	74.36	27.10	---	---	47.26	Blaine Tech
	5/25/2012	74.36	27.31	---	---	47.05	Blaine Tech
	6/15/2012	74.36	35.13	---	---	39.23	Blaine Tech
	7/9/2012	74.36	29.51	---	---	44.85	Blaine Tech
	8/29/2012	74.36	NM	---	---	NC	Blaine Tech
	9/26/2012	74.36	30.83	---	---	43.53	Blaine Tech
	10/15/2012	74.36	29.73	---	---	44.63	Blaine Tech
	11/29/2012	74.36	NM	---	---	NC	Blaine Tech
	12/26/2012	74.36	28.87	---	---	45.49	Blaine Tech
	1/14/2013	74.36	28.92	---	---	45.44	Blaine Tech
	2/20/2013	74.36	NM	---	---	NC	Blaine Tech
	4/10/2013	74.36	28.10	---	---	46.26	Blaine Tech
	10/7/2013	74.36	26.67	---	---	47.69	Blaine Tech
	4/18/2014	74.36	29.43	29.37	0.06	44.98	Blaine Tech
	8/14/2014	74.36	29.87	29.45	0.42	44.83	Blaine Tech
	8/19/2014	74.36	29.97	29.58	0.39	44.70	Blaine Tech
	8/29/2014	74.36	29.77	29.34	0.43	44.93	Blaine Tech
	9/11/2014	74.36	29.96	29.61	0.35	44.68	Blaine Tech
	9/18/2014	74.36	29.95	29.56	0.39	44.72	Blaine Tech
	9/26/2014	74.36	29.97	29.55	0.42	44.73	Blaine Tech
	10/1/2014	74.36	29.90	29.52	0.38	44.76	Blaine Tech
	10/6/2014	74.36	29.94	29.56	0.38	44.72	Blaine Tech
	10/14/2014	74.36	29.94	29.58	0.36	44.71	Blaine Tech
	10/23/2014	74.36	30.00	29.62	0.38	44.66	Blaine Tech
	10/27/2014	74.36	29.95	29.52	0.43	44.75	Blaine Tech
	4/20/2015	74.36	28.53	---	---	45.83	Blaine Tech
	10/19/2015	74.36	30.90	---	---	43.46	Blaine Tech
	4/12/2016	74.36	31.63	---	---	42.73	Blaine Tech
	12/13/2016	74.32	35.95	31.01	4.94	42.32	Blaine Tech
	12/14/2016	74.32	32.60	---	---	41.72	Blaine Tech
	3/6/2017	74.32	33.40	32.60	0.80	41.56	CH2M
	4/17/2017	74.32	31.83	31.80	0.03	42.51	Blaine Tech
	10/2/2017	74.32	31.32	31.30	0.02	43.02	Blaine Tech
	4/16/2018	74.32	NM	--	--	NC	Blaine Tech
	11/5/2018	74.32	33.03	32.90	0.13	41.39	Blaine Tech
	4/16/2019	74.32	30.89	--	--	43.43	Blaine Tech
	10/28/2019	74.32	32.05	--	--	42.27	Blaine Tech
GMW-O-20	8/15/2008	73.32	25.90	---	---	47.42	Envent
	10/17/2008	73.32	25.82	---	---	47.50	Envent
	12/19/2008	73.32	27.15	---	---	46.17	Envent
	1/15/2009	73.32	26.53	26.09	0.44	47.15	Envent
	2/24/2009	73.32	27.85	---	---	45.47	Envent
	3/20/2009	73.32	28.81	---	---	44.51	Envent
	3/27/2009	73.32	27.84	---	---	45.48	Envent
	4/21/2009	73.32	28.70	---	---	44.62	Envent
	7/21/2009	73.32	24.10	---	---	49.22	Envent
	10/19/2009	73.32	NM	---	---	NC	Blaine Tech
	11/9/2009	73.32	25.60	25.40	0.20	47.88	Kinder Morgan
	6/22/2010	73.32	24.76	24.66	0.10	48.64	Blaine Tech
	10/4/2010	73.32	31.20	31.10	0.10	42.20	Blaine Tech
	1/10/2011	73.32	26.62	26.48	0.14	46.81	Blaine Tech
	4/11/2011	73.32	23.82	---	---	49.50	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	7/11/2011	73.32	NM	---	---	NC	
	10/10/2011	73.32	24.05	---	---	49.27	Blaine Tech
	1/9/2012	73.32	24.68	---	---	48.64	Blaine Tech
	4/16/2012	73.32	26.18	---	---	47.14	Blaine Tech
	7/9/2012	73.32	32.92	---	---	40.40	Blaine Tech
	10/15/2012	73.32	32.97	32.95	0.02	40.37	Blaine Tech
	1/14/2013	73.32	32.98	32.93	0.05	40.38	Blaine Tech
	4/8/2013	73.32	29.63	26.46	3.17	46.27	Blaine Tech
	9/24/2013	73.32	31.10	27.20	3.90	45.40	Blaine Tech
	10/7/2013	73.32	32.09	27.06	5.03	45.33	Blaine Tech
	4/25/2014	73.32	28.48	28.40	0.08	44.91	Blaine Tech
	9/18/2014	73.32	30.71	27.72	2.99	45.05	Blaine Tech
	9/26/2014	73.32	30.87	27.75	3.12	44.99	Blaine Tech
	10/1/2014	73.32	30.52	27.65	2.87	45.14	Blaine Tech
	10/6/2014	73.32	30.50	27.66	2.84	45.13	Blaine Tech
	10/14/2014	73.32	30.63	27.62	3.01	45.14	Blaine Tech
	10/23/2014	73.32	30.80	27.70	3.10	45.05	Blaine Tech
	10/27/2014	73.32	30.70	27.76	2.94	45.02	Blaine Tech
	11/3/2014	73.32	30.81	27.62	3.19	45.11	Blaine Tech
	11/10/2014	73.32	30.94	27.75	3.19	44.98	Blaine Tech
	11/18/2014	73.32	30.91	27.65	3.26	45.07	Blaine Tech
	11/25/2014	73.32	30.95	27.65	3.30	45.06	Blaine Tech
	12/3/2014	73.32	32.56	27.83	4.73	44.61	Blaine Tech
	12/19/2014	73.32	31.72	27.93	3.79	44.69	Blaine Tech
	4/22/2015	73.32	32.25	27.98	4.27	44.55	Blaine Tech
	10/22/2015	73.32	31.36	29.38	1.98	43.57	Kinder Morgan
	3/16/2016	73.32	32.54	---	---	40.78	Kinder Morgan
	4/12/2016	73.32	32.48	---	---	40.84	Kinder Morgan
	6/29/2016	73.32	32.50	---	---	40.82	Blaine Tech
	8/22/2016	73.32	32.18	---	---	41.14	Blaine Tech
	10/3/2016	73.32	33.12	---	---	40.20	Blaine Tech
	3/23/2017	73.32	30.35	---	---	42.97	CH2M
	4/17/2017	73.32	29.70	---	---	43.62	Blaine Tech
	10/2/2017	73.32	33.03	---	---	40.29	Blaine Tech
	4/16/2018	73.32	32.67	---	---	40.65	Blaine Tech
	11/5/2018	73.32	32.92	---	---	40.40	Blaine Tech
	4/23/2019	73.32	30.55	---	---	42.77	Blaine Tech
	11/1/2019	73.32	32.53	32.50	0.03	40.81	Blaine Tech
GMW-O-21	12/28/2007	71.43	27.67	---	---	43.76	Geomatrix
	8/15/2008	73.94	NM	---	---	NC	Envent
	10/17/2008	71.43	26.00	---	---	45.43	Envent
	12/19/2008	71.43	24.82	---	---	46.61	Envent
	3/27/2009	71.43	26.41	---	---	45.02	Envent
	7/21/2009	71.43	24.88	---	---	46.55	Envent
	10/19/2009	71.43	NM	---	---	NC	Blaine Tech
	11/9/2009	71.43	25.02	---	---	46.41	Kinder Morgan
	10/4/2010	71.43	25.40	---	---	46.03	Blaine Tech
	4/13/2011	71.43	23.72	---	---	47.71	Blaine Tech
	10/10/2011	71.43	24.65	---	---	46.78	Blaine Tech
	4/16/2012	71.43	NM	---	---	NC	Blaine Tech
	7/9/2012	71.43	NM	---	---	NC	Blaine Tech
	10/15/2012	71.43	32.50	---	---	38.93	Blaine Tech
	4/8/2013	71.43	NM	---	---	NC	Blaine Tech
	9/25/2013	71.43	29.25	---	---	42.18	Blaine Tech
	10/7/2013	71.43	NM	---	---	NC	Blaine Tech
	4/14/2014	71.43	28.65	28.61	0.04	42.81	Blaine Tech
	9/5/2014	71.43	29.61	28.78	0.83	42.48	Blaine Tech
	9/26/2014	71.43	29.85	28.77	1.08	42.44	Blaine Tech
	10/1/2014	71.43	29.79	28.64	1.15	42.56	Blaine Tech
	10/6/2014	71.43	29.40	28.72	0.68	42.57	Blaine Tech
	10/27/2014	71.43	29.75	28.93	0.82	42.34	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	11/10/2014	71.43	29.98	28.95	1.03	42.27	Blaine Tech
	11/18/2014	71.43	30.05	28.92	1.13	42.28	Blaine Tech
	11/25/2014	71.43	29.73	28.85	0.88	42.40	Blaine Tech
	12/12/2014	71.43	30.61	29.02	1.59	42.09	Blaine Tech
	12/19/2014	71.43	30.62	29.04	1.58	42.07	Blaine Tech
	4/20/2015	71.43	30.15	28.99	1.16	42.21	Blaine Tech
	6/10/2015	71.43	31.00	30.70	0.30	40.67	Blaine Tech
	7/2/2015	71.43	32.30	29.88	2.42	41.07	Northstar
	7/7/2015	71.43	30.65	30.06	0.59	41.25	Northstar
	7/17/2015	71.43	30.40	30.10	0.30	41.27	Northstar
	7/29/2015	71.43	30.40	30.10	0.30	41.27	Northstar
	8/11/2015	71.43	31.00	30.70	0.30	40.67	Northstar
	10/19/2015	71.43	31.43	31.20	0.23	40.18	Blaine Tech
	3/14/2016	71.43	33.20	33.17	0.03	38.25	Blaine Tech
	4/11/2016	71.43	32.17	31.84	0.33	39.52	Blaine Tech
	6/29/2016	71.43	33.03	32.83	0.20	38.56	Blaine Tech
	8/22/2016	71.43	33.72	---	---	37.71	Blaine Tech
	10/3/2016	71.43	33.45	---	---	37.98	Blaine Tech
	4/17/2017	71.43	30.48	---	---	40.95	Blaine Tech
	10/2/2017	71.43	33.45	---	---	37.98	Blaine Tech
	4/16/2018	71.43	33.13	---	---	38.30	Blaine Tech
	11/5/2018	71.43	33.68	---	---	37.75	Blaine Tech
	4/16/2019	71.43	32.34	---	---	39.09	Blaine Tech
	11/1/2019	71.43	33.00	---	---	38.43	Blaine Tech
GMW-O-23	8/14/2007	73.63	23.33	---	---	50.30	Geomatrix
	8/21/2007	73.63	23.31	---	---	50.32	Geomatrix
	8/28/2007	73.63	23.00	---	---	50.63	Stantec
	9/11/2007	73.63	23.42	---	---	50.21	Geomatrix
	10/5/2007	73.63	27.79	---	---	45.84	Geomatrix
	11/2/2007	73.63	25.15	---	---	48.48	Geomatrix
	11/13/2007	73.63	23.90	---	---	49.73	Stantec
	12/28/2007	73.63	24.91	---	---	48.72	Geomatrix
	8/15/2008	73.63	26.28	---	---	47.35	Envent
	10/17/2008	73.63	27.16	---	---	46.47	Envent
	12/19/2008	73.63	27.60	---	---	46.03	Envent
	1/15/2009	73.63	27.54	---	---	46.09	Envent
	2/24/2009	73.63	26.19	---	---	47.44	Envent
	3/27/2009	73.63	23.74	---	---	49.89	Envent
	4/21/2009	73.63	27.30	---	---	46.33	Envent
	10/19/2009	73.63	NM	---	---	NC	Blaine Tech
	11/9/2009	73.63	27.50	---	---	46.13	Kinder Morgan
	6/22/2010	73.63	32.10	---	---	41.53	Blaine Tech
	10/4/2010	73.63	25.92	---	---	47.71	Blaine Tech
	1/10/2011	73.63	27.45	---	---	46.18	Blaine Tech
	4/11/2011	73.63	25.03	---	---	48.60	Blaine Tech
	7/11/2011	73.63	NM	---	---	NC	
	10/10/2011	73.63	25.25	---	---	48.38	Blaine Tech
	1/9/2012	73.63	25.91	---	---	47.72	Blaine Tech
	4/16/2012	73.63	27.38	---	---	46.25	Blaine Tech
	7/9/2012	73.63	27.41	---	---	46.22	Blaine Tech
	10/15/2012	73.63	26.48	---	---	47.15	Blaine Tech
	1/14/2013	73.63	29.35	---	---	44.28	Blaine Tech
	4/8/2013	73.63	29.81	27.74	2.07	45.48	Blaine Tech
	9/23/2013	73.63	29.90	---	---	43.73	Blaine Tech
	10/7/2013	73.63	32.86	28.30	4.56	44.42	Blaine Tech
	4/25/2014	73.63	29.81	29.66	0.15	43.94	Blaine Tech
	9/5/2014	73.63	32.57	28.76	3.81	44.11	Blaine Tech
	9/11/2014	73.63	32.94	28.63	4.31	44.14	Blaine Tech
	9/18/2014	73.63	32.80	28.65	4.15	44.15	Blaine Tech
	9/26/2014	73.63	32.87	28.70	4.17	44.10	Blaine Tech
	10/1/2014	73.63	32.56	28.75	3.81	44.12	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	10/6/2014	73.63	32.50	28.73	3.77	44.15	Blaine Tech
	10/14/2014	73.63	32.75	28.20	4.55	44.52	Blaine Tech
	10/23/2014	73.63	32.80	28.69	4.11	44.12	Blaine Tech
	10/27/2014	73.63	32.51	28.80	3.71	44.09	Blaine Tech
	11/3/2014	73.63	32.82	29.68	3.14	43.32	Blaine Tech
	11/10/2014	73.63	32.80	28.78	4.02	44.05	Blaine Tech
	11/18/2014	73.63	32.78	29.78	3.00	43.25	Blaine Tech
	11/25/2014	73.63	32.64	28.78	3.86	44.08	Blaine Tech
	12/3/2014	73.63	33.25	28.94	4.31	43.83	Blaine Tech
	12/12/2014	73.63	32.58	29.33	3.25	43.65	Blaine Tech
	12/19/2014	73.63	32.71	29.37	3.34	43.59	Blaine Tech
	3/17/2015	73.63	30.40	30.00	0.40	43.55	Kinder Morgan
	4/22/2015	73.63	33.08	30.36	2.72	42.73	Blaine Tech
	10/22/2015	73.63	32.82	30.46	2.36	42.70	Kinder Morgan
	3/16/2016	73.63	34.43	---	---	39.20	Kinder Morgan
	4/12/2016	73.63	32.59	---	---	41.04	Kinder Morgan
	6/29/2016	73.63	33.90	---	---	39.73	Blaine Tech
	8/22/2016	73.63	33.89	---	---	39.74	Blaine Tech
	10/3/2016	73.63	34.90	---	---	38.73	Blaine Tech
	3/23/2017	73.63	31.65	---	---	41.98	CH2M
	4/17/2017	73.63	30.88	---	---	42.75	Blaine Tech
	10/2/2017	73.63	34.70	---	---	38.93	Blaine Tech
	4/16/2018	73.63	34.05	---	---	39.58	Blaine Tech
	11/5/2018	73.63	34.31	---	---	39.32	Blaine Tech
	4/16/2019	73.63	32.99	---	---	40.64	Blaine Tech
	10/28/2019	73.63	34.40	34.39	0.01	39.24	Blaine Tech
GMW-SF-9	4/21/2009	73.00	24.19	---	---	48.81	Envent
	5/24/2010	73.00	28.31	---	---	44.69	Blaine Tech
	5/28/2010	73.00	28.37	---	---	44.63	Blaine Tech
	10/4/2010	73.00	25.28	---	---	47.72	Blaine Tech
	4/11/2011	73.00	23.90	---	---	49.10	Blaine Tech
	10/10/2011	73.00	24.70	---	---	48.30	Blaine Tech
	4/16/2012	73.00	26.99	---	---	46.01	Blaine Tech
	7/9/2012	73.00	NM	---	---	NC	Blaine Tech
	10/15/2012	73.05	34.21	---	---	38.84	Blaine Tech
	1/14/2013	73.05	34.32	---	---	38.73	Blaine Tech
	4/10/2013	73.05	27.37	---	---	45.68	Blaine Tech
	8/14/2014	73.05	29.35	28.37	0.98	44.48	Blaine Tech
	8/19/2014	73.05	28.46	28.44	0.02	44.61	Blaine Tech
	8/29/2014	73.05	29.32	28.31	1.01	44.54	Blaine Tech
	9/5/2014	73.05	29.33	28.29	1.04	44.55	Blaine Tech
	9/11/2014	73.05	29.49	28.47	1.02	44.38	Blaine Tech
	9/18/2014	73.05	28.95	28.91	0.04	44.13	Blaine Tech
	9/26/2014	73.05	28.93	28.59	0.34	44.39	Blaine Tech
	4/20/2015	73.05	29.01	---	---	44.04	Blaine Tech
	10/21/2015	73.05	29.69	---	---	43.36	Blaine Tech
	3/6/2017	73.05	28.88	---	---	44.17	CH2M
GMW-SF-10	4/21/2009	75.77	27.10	---	---	48.67	Envent
	10/4/2010	75.77	28.03	---	---	47.74	Blaine Tech
	4/11/2011	75.77	26.80	---	---	48.97	Blaine Tech
	10/10/2011	75.77	27.60	---	---	48.17	Blaine Tech
	4/16/2012	75.77	28.81	---	---	46.96	Blaine Tech
	7/9/2012	75.77	NM	---	---	NC	Blaine Tech
	10/15/2012	75.77	29.88	---	---	45.89	Blaine Tech
	4/8/2013	75.77	DRY	---	---	NC	Blaine Tech
GWR-3	4/30/2007	74.93	27.97	---	---	46.96	Secor
	11/12/2007	74.93	27.90	---	---	47.03	Stantec
	10/17/2008	74.93	29.88	---	---	45.05	Envent
	12/17/2008	74.93	19.71	---	---	55.22	Envent
	1/15/2009	74.93	29.27	29.26	0.26	45.88	Envent
	3/27/2009	74.93	27.18	---	---	47.75	Envent

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	4/21/2009	74.93	29.97	---	---	44.96	Envent
	7/21/2009	74.93	28.77	---	---	46.16	Envent
	10/19/2009	74.93	NM	---	---	NC	Blaine Tech
	10/4/2010	74.93	30.67	---	---	44.26	Blaine Tech
	4/11/2011	74.93	29.94	---	---	44.99	Blaine Tech
	10/10/2011	74.93	29.22	---	---	45.71	Blaine Tech
	4/16/2012	74.93	29.56	---	---	45.37	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	77.6	31.21	---	---	46.39	Blaine Tech
	4/8/2013	77.6	29.21	29.18	0.03	48.41	Blaine Tech
	10/7/2013	77.6	36.20	31.67	4.53	45.16	Blaine Tech
	4/14/2014	77.6	38.80	32.23	6.57	44.25	Blaine Tech
	5/5/2014	77.6	38.81	32.31	6.50	44.18	Nieto & Sons
	5/12/2014	77.6	36.34	32.77	3.57	44.22	Nieto & Sons
	5/27/2014	77.6	36.11	33.20	2.91	43.91	Nieto & Sons
	6/4/2014	77.6	34.57	31.61	2.96	45.49	Nieto & Sons
	8/8/2014	77.6	37.92	33.38	4.54	43.45	Blaine Tech
	8/13/2014	77.6	35.38	33.18	2.20	44.05	Blaine Tech
	8/19/2014	77.6	35.28	33.25	2.03	44.00	Blaine Tech
	8/29/2014	77.6	35.72	33.12	2.60	44.04	Blaine Tech
	9/5/2014	77.6	35.68	33.19	2.49	43.99	Blaine Tech
	9/11/2014	77.6	36.05	33.04	3.01	44.05	Blaine Tech
	9/18/2014	77.60	35.34	33.27	2.07	43.98	Blaine Tech
	9/26/2014	77.60	35.25	33.24	2.01	44.02	Blaine Tech
	10/1/2014	77.60	36.44	34.01	2.43	43.18	Blaine Tech
	10/6/2014	77.60	34.71	33.33	1.38	44.04	Blaine Tech
	10/14/2014	77.60	35.15	33.20	1.95	44.07	Blaine Tech
	10/23/2014	77.60	35.36	33.20	2.16	44.03	Blaine Tech
	10/27/2014	77.60	34.68	33.49	1.19	43.91	Blaine Tech
	11/3/2014	77.60	35.43	33.18	2.25	44.04	Blaine Tech
	11/10/2014	77.60	35.02	33.32	1.70	43.99	Blaine Tech
	11/18/2014	77.60	35.05	33.34	1.71	43.97	Blaine Tech
	11/25/2014	77.60	35.04	33.36	1.68	43.95	Blaine Tech
	12/3/2014	77.60	34.95	33.34	1.61	43.99	Blaine Tech
	12/12/2014	77.60	35.11	33.64	1.47	43.71	Blaine Tech
	12/19/2014	77.60	35.55	33.67	1.88	43.61	Blaine Tech
	4/20/2015	77.60	37.25	33.34	3.91	43.60	Blaine Tech
	7/24/2015	77.60	41.30	33.95	7.35	42.40	Northstar
	8/12/2015	77.60	37.03	34.42	2.61	42.74	Northstar
	10/20/2015	77.60	35.98	34.65	1.33	42.72	Blaine Tech
	3/16/2016	77.60	38.60	---	---	39.00	Kinder Morgan
	4/11/2016	77.60	36.90	---	---	40.70	Blaine Tech
	6/29/2016	77.60	37.77	---	---	39.83	Blaine Tech
	8/22/2016	77.60	38.24	---	---	39.36	Blaine Tech
	10/3/2016	77.60	39.20	39.15	0.05	38.44	Blaine Tech
	3/7/2017	77.60	35.62	---	---	41.98	CH2M
	4/17/2017	77.60	34.88	--	--	42.72	Blaine Tech
	10/2/2017	77.60	38.92	---	---	38.68	Blaine Tech
	4/16/2018	77.60	38.73	---	---	38.87	Blaine Tech
	11/5/2018	77.60	38.42	---	---	39.18	Blaine Tech
	4/16/2019	77.60	37.16	---	---	40.44	Blaine Tech
	10/28/2019	77.60	38.58	---	---	39.02	Blaine Tech
MW-18 (MID)	4/30/2007	75.67	29.77	---	---	45.90	Secor
	11/12/2007	75.67	30.23	---	---	45.44	Secor
	4/14/2008	75.67	30.45	---	---	45.22	Secor
	10/13/2008	75.67	31.15	---	---	44.52	Stantec
	4/20/2009	75.67	31.49	---	---	44.18	Blaine Tech
	10/19/2009	75.67	32.62	---	---	43.05	Blaine Tech
	5/24/2010	75.67	32.26	---	---	43.41	Blaine Tech
	5/28/2010	75.67	32.17	---	---	43.50	Blaine Tech
	10/4/2010	75.67	32.30	---	---	43.37	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	4/11/2011	75.67	31.28	---	---	44.39	Blaine Tech
	10/10/2011	75.67	31.51	---	---	44.16	Blaine Tech
	4/16/2012	75.67	31.75	---	---	43.92	Blaine Tech
	7/9/2012	75.67	NM	---	---	NC	Blaine Tech
	10/15/2012	75.67	33.41	---	---	42.26	Blaine Tech
	4/8/2013	75.67	30.68	---	---	44.99	Blaine Tech
	10/7/2013	75.67	35.33	---	---	40.34	Blaine Tech
	4/14/2014	75.67	35.40	---	---	40.27	Blaine Tech
	10/27/2014	75.67	35.81	---	---	39.86	Blaine Tech
	4/20/2015	75.67	36.29	---	---	39.38	Blaine Tech
	10/19/2015	75.67	36.99	---	---	38.68	Blaine Tech
	3/14/2016	75.67	40.70	---	---	34.97	Blaine Tech
	4/11/2016	75.67	38.89	---	---	36.78	Blaine Tech
	6/29/2016	75.67	39.94	---	---	35.73	Blaine Tech
	8/22/2016	75.67	40.14	---	---	35.53	Blaine Tech
	10/3/2016	75.67	40.93	---	---	34.74	Blaine Tech
	4/17/2017	75.67	37.50	---	---	38.17	Blaine Tech
	10/2/2017	75.67	40.26	---	---	35.41	Blaine Tech
	4/16/2018	75.67	40.46	---	---	35.21	Blaine Tech
	11/5/2018	75.67	40.50	---	---	35.17	Blaine Tech
	4/16/2019	75.67	38.39	---	---	37.28	Blaine Tech
	10/28/2019	75.67	40.42	---	---	35.25	Blaine Tech
MW-O-1	4/30/2007	75.48	24.10	23.98	0.12	51.48	Secor
	8/14/2007	75.48	25.31	23.78	1.53	51.39	Geomatrix
	8/21/2007	75.48	23.84	23.58	0.26	51.85	Geomatrix
	8/28/2007	75.48	23.07	23.06	0.01	52.42	Stantec
	9/11/2007	75.48	23.86	23.48	0.38	51.92	Geomatrix
	10/5/2007	75.48	24.67	---	---	50.81	Geomatrix
	11/2/2007	75.48	24.25	---	---	51.23	Geomatrix
	11/12/2007	75.48	24.27	24.25	0.02	51.23	Stantec
	12/28/2007	75.48	25.54	25.51	0.03	49.96	Geomatrix
	8/15/2008	75.48	NM	---	---	NC	Envent
	8/19/2008	75.48	25.18	25.13	0.05	50.34	Envent
	10/17/2008	75.48	25.30	---	---	50.18	Envent
	12/19/2008	75.48	26.31	---	---	49.17	Envent
	1/15/2009	75.48	25.84	---	---	49.64	Envent
	4/21/2009	75.48	25.41	---	---	50.07	Envent
	10/19/2009	75.48	26.30	---	---	49.18	Blaine Tech
	10/4/2010	75.48	26.90	---	---	48.58	Blaine Tech
	4/11/2011	75.48	25.59	---	---	49.89	Blaine Tech
	10/10/2011	75.48	26.52	---	---	48.96	Blaine Tech
	4/16/2012	75.48	27.25	---	---	48.23	Blaine Tech
	7/9/2012	75.48	NM	---	---	NC	Blaine Tech
	10/15/2012	75.48	28.94	---	---	46.54	Blaine Tech
	4/8/2013	75.48	28.81	---	---	46.67	Blaine Tech
	10/7/2013	75.48	29.21	---	---	46.27	Blaine Tech
	4/14/2014	75.48	29.82	---	---	45.66	Blaine Tech
	10/27/2014	75.48	29.92	---	---	45.56	Blaine Tech
	4/20/2015	75.48	30.39	---	---	45.09	Blaine Tech
	10/27/2015	75.48	27.67	---	---	47.81	Blaine Tech
	3/14/2016	75.48	DRY	---	---	NC	Blaine Tech
	4/11/2016	75.48	DRY	---	---	NC	Blaine Tech
	6/29/2016	75.48	DRY	---	---	NC	Blaine Tech
	8/22/2016	75.48	DRY	---	---	NC	Blaine Tech
	10/3/2016	75.48	DRY	---	---	NC	Blaine Tech
	4/17/2017	75.48	DRY	---	---	NC	Blaine Tech
	10/2/2017	75.48	DRY	---	---	NC	Blaine Tech
	4/16/2018	75.48	DRY	---	---	NC	Blaine Tech
	11/5/2018	75.48	DRY	---	---	NC	Blaine Tech
	4/16/2019	75.48	32.09	---	---	43.39	Blaine Tech
	10/28/2019	75.48	DRY	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-O-2	4/30/2007	74.31	22.53	---	---	51.78	Secor
	11/12/2007	71.90	23.10	---	---	48.80	Stantec
	8/15/2008	71.90	NM	---	---	NC	Envent
	10/17/2008	71.90	24.85	---	---	47.05	Envent
	12/19/2008	71.90	25.51	---	---	46.39	Envent
	3/27/2009	71.90	25.22	---	---	46.68	Envent
	4/21/2009	71.90	NM	---	---	NC	Envent
	7/21/2009	71.90	23.63	---	---	48.27	Envent
	10/19/2009	71.90	NM	---	---	NC	Blaine Tech
	11/9/2009	71.90	25.39	---	---	46.51	Kinder Morgan
	10/4/2010	71.90	26.05	---	---	45.85	Blaine Tech
	4/13/2011	71.90	23.31	---	---	48.59	Blaine Tech
	10/10/2011	71.90	27.53	---	---	44.37	Blaine Tech
	1/9/2012	71.90	28.13	---	---	43.77	Blaine Tech
	4/16/2012	71.90	NM	---	---	NC	Blaine Tech
	7/9/2012	71.90	26.53	---	---	45.37	Blaine Tech
	10/15/2012	71.90	26.89	---	---	45.01	Blaine Tech
	1/14/2013	71.90	26.93	---	---	44.97	Blaine Tech
	4/8/2013	71.90	NM	---	---	NC	Blaine Tech
	6/6/2013	71.90	28.99	---	---	42.91	Blaine Tech
	10/7/2013	71.90	29.06	---	---	42.84	Blaine Tech
	4/14/2014	71.90	29.36	---	---	42.54	Blaine Tech
	10/27/2014	71.90	29.81	29.65	0.16	42.22	Blaine Tech
	4/20/2015	71.90	30.94	29.34	1.60	42.24	Blaine Tech
	5/21/2015	71.90	32.50	27.31	5.19	43.55	Northstar
	5/29/2015	71.90	31.52	30.20	1.32	41.44	Northstar
	6/5/2015	71.90	31.45	30.57	0.88	41.15	Northstar
	6/12/2015	71.90	31.05	30.60	0.45	41.21	Northstar
	6/19/2015	71.90	31.10	30.90	0.20	40.96	Northstar
	6/26/2015	71.90	31.66	31.37	0.29	40.47	Northstar
	10/19/2015	71.90	32.39	30.53	1.86	41.00	Blaine Tech
	3/14/2016	71.90	35.49	34.86	0.63	36.91	Blaine Tech
	4/11/2016	71.90	33.03	32.54	0.49	39.26	Blaine Tech
	6/30/2016	71.90	34.20	---	---	37.70	Kinder Morgan
	8/22/2016	71.90	33.93	---	---	37.97	Kinder Morgan
	10/3/2016	71.90	34.30	34.22	0.08	37.66	Blaine Tech
	4/17/2017	71.90	30.91	30.85	0.06	41.04	Blaine Tech
	10/2/2017	71.90	34.67	---	---	37.23	Blaine Tech
	4/16/2018	71.90	34.18	34.16	0.02	37.74	Blaine Tech
	11/5/2018	71.90	34.30	--	--	37.60	Blaine Tech
	4/16/2019	71.90	31.44	--	--	40.46	Blaine Tech
	10/28/2019	71.90	NM	--	--	NC	Blaine Tech
MW-SF-1	3/12/2007	78.93	28.71	---	---	50.22	Secor
	4/30/2007	78.93	28.44	---	---	50.49	Secor
	8/28/2007	78.93	27.94	---	---	50.99	Stantec
	11/12/2007	78.93	28.76	---	---	50.17	Stantec
	2/19/2008	78.93	29.50	---	---	49.43	Stantec
	4/14/2008	78.93	29.16	---	---	49.77	Stantec
	8/11/2008	78.93	29.75	---	---	49.18	Stantec
	10/13/2008	78.93	29.86	---	---	49.07	Stantec
	2/23/2009	78.93	30.00	---	---	48.93	Blaine Tech
	4/20/2009	78.93	29.97	---	---	48.96	Blaine Tech
	7/20/2009	78.93	30.98	---	---	47.95	Blaine Tech
	7/22/2009	78.93	30.98	---	---	47.95	Blaine Tech
	10/19/2009	78.93	31.11	---	---	47.82	Blaine Tech
	3/15/2010	78.93	31.74	---	---	47.19	Blaine Tech
	5/24/2010	78.93	30.79	---	---	48.14	Blaine Tech
	5/28/2010	78.93	30.57	---	---	48.36	Blaine Tech
	6/22/2010	78.93	30.84	---	---	48.09	Blaine Tech
	7/12/2010	78.93	30.51	---	---	48.42	Blaine Tech
	10/4/2010	78.93	30.88	---	---	48.05	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	1/10/2011	78.93	32.51	---	---	46.42	Blaine Tech
	4/11/2011	78.93	29.87	---	---	49.06	Blaine Tech
	7/11/2011	78.93	29.84	---	---	49.09	Blaine Tech
	10/10/2011	78.93	29.60	---	---	49.33	Blaine Tech
	1/9/2012	78.93	31.25	---	---	47.68	Blaine Tech
	4/16/2012	78.93	32.59	---	---	46.34	Blaine Tech
	7/9/2012	78.93	31.24	---	---	47.69	Blaine Tech
	10/15/2012	78.93	32.23	---	---	46.70	Blaine Tech
	1/14/2013	78.93	33.88	---	---	45.05	Blaine Tech
	4/8/2013	78.93	33.38	---	---	45.55	Blaine Tech
	10/7/2013	78.93	37.14	31.72	5.42	46.13	Blaine Tech
	4/14/2014	78.93	37.40	32.69	4.71	45.30	Blaine Tech
	5/6/2014	78.93	39.99	32.82	7.17	44.68	Nieto & Sons
	5/12/2014	78.93	37.31	33.55	3.76	44.63	Nieto & Sons
	5/20/2014	78.93	37.10	34.60	2.50	43.83	Nieto & Sons
	5/27/2014	78.93	36.62	34.30	2.32	44.17	Nieto & Sons
	6/4/2014	78.93	35.98	35.27	0.71	43.52	Nieto & Sons
	6/10/2014	78.93	36.91	34.48	2.43	43.96	Nieto & Sons
	7/3/2014	78.93	36.72	34.71	2.01	43.82	Nieto & Sons
	7/8/2014	78.93	36.60	34.45	2.15	44.05	Blaine Tech
	7/18/2014	78.93	35.18	34.77	0.41	44.08	Blaine Tech
	7/24/2014	78.93	35.30	34.62	0.68	44.17	Blaine Tech
	8/1/2014	78.93	34.74	34.44	0.30	44.43	Blaine Tech
	8/14/2014	78.93	34.75	34.41	0.34	44.45	Blaine Tech
	8/19/2014	78.93	34.66	34.37	0.29	44.50	Blaine Tech
	8/29/2014	78.93	35.65	35.38	0.27	43.50	Blaine Tech
	9/18/2014	78.93	34.85	34.49	0.36	44.37	Blaine Tech
	9/26/2014	78.93	34.78	34.45	0.33	44.41	Blaine Tech
	10/1/2014	78.93	34.77	34.41	0.36	44.45	Blaine Tech
	10/6/2014	78.93	34.78	34.42	0.36	44.44	Blaine Tech
	10/14/2014	78.93	34.65	34.41	0.24	44.47	Blaine Tech
	10/23/2014	78.93	34.84	34.45	0.39	44.40	Blaine Tech
	10/27/2014	78.93	34.80	34.43	0.37	44.43	Blaine Tech
	11/10/2014	78.93	34.91	34.51	0.40	44.34	Blaine Tech
	11/18/2014	78.93	34.80	34.43	0.37	44.43	Blaine Tech
	11/25/2014	78.93	34.53	34.51	0.02	44.42	Blaine Tech
	12/12/2014	78.93	35.18	34.78	0.40	44.07	Blaine Tech
	12/19/2014	78.93	35.34	34.88	0.46	43.96	Blaine Tech
	4/20/2015	78.93	34.89	34.48	0.41	44.37	Blaine Tech
	5/19/2015	78.93	38.45	34.55	3.90	43.60	Northstar
	5/29/2015	78.93	36.36	35.22	1.14	43.48	Northstar
	6/5/2015	78.93	36.50	35.43	1.07	43.29	Northstar
	6/12/2015	78.93	35.80	35.41	0.39	43.44	Northstar
	6/19/2015	78.93	36.02	35.42	0.60	43.39	Northstar
	6/26/2015	78.93	36.60	36.45	0.15	42.45	Northstar
	10/19/2015	78.93	36.35	35.53	0.82	43.24	Blaine Tech
	11/17/2015	78.93	35.65	---	---	43.28	Kinder Morgan
	3/14/2016	78.93	40.40	---	---	38.53	Blaine Tech
	4/11/2016	78.93	37.96	---	---	40.97	Blaine Tech
	6/29/2016	78.93	39.05	---	---	39.88	Blaine Tech
	8/22/2016	78.93	39.04	---	---	39.87	Blaine Tech
	10/3/2016	78.93	39.20	---	---	39.73	Blaine Tech
	4/17/2017	78.93	35.75	---	---	43.18	Blaine Tech
	10/2/2017	78.93	39.98	---	---	38.95	Blaine Tech
	4/16/2018	78.93	39.43	---	---	39.50	Blaine Tech
	11/5/2018	78.93	39.20	---	---	39.73	Blaine Tech
	4/16/2019	78.93	37.94	---	---	40.99	Blaine Tech
	10/28/2019	78.93	39.41	---	---	39.52	Blaine Tech
MW-SF-2	4/30/2007	78.45	28.35	28.34	0.01	50.11	Secor
	11/12/2007	78.45	29.18	28.71	0.47	49.65	Stantec
	8/12/2008	78.45	31.11	---	---	47.34	Envent

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	10/17/2008	78.45	31.55	31.50	0.05	46.94	Envent
	12/18/2008	78.53	32.75	32.55	0.20	45.94	Envent
	1/15/2009	78.53	30.84	30.57	0.27	47.91	Envent
	3/24/2009	78.53	28.85	---	---	49.68	Envent
	4/21/2009	78.53	29.98	---	---	48.55	Envent
	7/21/2009	78.53	29.85	---	---	48.68	Envent
	10/19/2009	78.53	NM	---	---	NC	Blaine Tech
	12/9/2009	78.53	31.45	---	---	47.08	Kinder Morgan
	10/4/2010	78.53	30.96	30.75	0.21	47.74	Blaine Tech
	1/10/2011	78.53	32.62	32.50	0.12	46.01	Blaine Tech
	4/11/2011	78.53	29.83	---	---	48.70	Blaine Tech
	7/11/2011	78.53	NM	---	---	NC	
	10/10/2011	78.53	29.82	---	---	48.71	Blaine Tech
	1/9/2012	78.53	30.52	---	---	48.01	Blaine Tech
	4/16/2012	78.53	31.28	---	---	47.25	Blaine Tech
	7/9/2012	78.53	33.18	---	---	45.35	Blaine Tech
	10/15/2012	78.53	32.11	---	---	46.42	Blaine Tech
	1/14/2013	78.53	33.59	---	---	44.94	Blaine Tech
	4/8/2013	78.53	33.32	---	---	45.21	Blaine Tech
	10/7/2013	78.53	34.58	33.08	1.50	45.15	Blaine Tech
	4/14/2014	78.53	37.50	33.27	4.23	44.41	Blaine Tech
	5/6/2014	78.53	37.71	33.24	4.47	44.40	Nieto & Sons
	5/12/2014	78.53	37.53	33.34	4.19	44.35	Nieto & Sons
	5/20/2014	78.53	37.62	33.51	4.11	44.20	Nieto & Sons
	5/27/2014	78.53	38.24	33.77	4.47	43.87	Nieto & Sons
	6/4/2014	78.53	34.63	---	---	43.90	Nieto & Sons
	6/10/2014	78.53	38.49	34.00	4.49	43.63	Nieto & Sons
	8/8/2014	78.53	36.23	33.82	2.41	44.23	Blaine Tech
	8/13/2014	78.53	36.75	33.59	3.16	44.31	Blaine Tech
	8/19/2014	78.53	36.90	33.60	3.30	44.27	Blaine Tech
	8/29/2014	78.53	37.11	33.53	3.58	44.28	Blaine Tech
	9/5/2014	78.53	37.09	33.51	3.58	44.30	Blaine Tech
	9/11/2014	78.53	37.12	33.51	3.61	44.30	Blaine Tech
	9/18/2014	78.53	36.89	33.60	3.29	44.27	Blaine Tech
	9/26/2014	78.53	37.28	33.54	3.74	44.24	Blaine Tech
	10/1/2014	78.53	37.18	33.56	3.62	44.25	Blaine Tech
	10/6/2014	78.53	37.16	33.59	3.57	44.23	Blaine Tech
	10/14/2014	78.53	37.15	33.64	3.51	44.19	Blaine Tech
	10/23/2014	78.53	37.24	33.61	3.63	44.19	Blaine Tech
	10/27/2014	78.53	37.04	33.54	3.50	44.29	Blaine Tech
	11/3/2014	78.53	37.14	33.55	3.59	44.26	Blaine Tech
	11/10/2014	78.53	37.33	33.56	3.77	44.22	Blaine Tech
	11/18/2014	78.53	37.21	33.64	3.57	44.18	Blaine Tech
	11/25/2014	78.53	37.40	33.69	3.71	44.10	Blaine Tech
	12/3/2014	78.53	37.16	33.60	3.56	44.22	Blaine Tech
	12/12/2014	78.53	38.05	33.91	4.14	43.79	Blaine Tech
	12/19/2014	78.53	38.40	33.95	4.45	43.69	Blaine Tech
	4/20/2015	78.53	36.15	34.73	1.42	43.52	Blaine Tech
	6/25/2015	78.53	38.95	35.57	3.38	42.28	Blaine Tech
	10/21/2015	78.53	36.32	36.13	0.19	42.36	Kinder Morgan
	3/16/2016	78.53	39.27	---	---	39.26	Kinder Morgan
	4/11/2016	78.53	37.47	---	---	41.06	Blaine Tech
	6/29/2016	78.53	38.08	---	---	40.45	Blaine Tech
	8/22/2016	78.53	38.83	---	---	39.70	Blaine Tech
	10/3/2016	78.53	39.60	---	---	38.93	Blaine Tech
	3/10/2017	78.53	36.47	---	---	42.06	CH2M
	4/17/2017	78.53	35.78	---	---	42.75	Blaine Tech
	10/2/2017	78.53	39.68	---	---	38.85	Blaine Tech
	4/16/2018	78.53	39.47	---	---	39.06	Blaine Tech
	11/5/2018	78.53	39.55	---	---	38.98	Blaine Tech
	4/16/2019	78.53	37.95	---	---	40.58	Blaine Tech
	10/28/2019	78.53	39.26	---	---	39.27	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-3	4/30/2007	77.62	27.72	27.45	0.27	50.12	Secor
	11/12/2007	77.62	29.34	28.28	1.06	49.13	Stantec
	8/12/2008	77.62	30.30	29.05	1.25	48.32	Envent
	10/17/2008	77.62	29.45	---	---	48.17	Envent
	12/18/2008	78.12	31.08	30.82	0.26	47.25	Envent
	1/15/2009	78.12	29.96	29.94	0.02	48.18	Envent
	3/20/2009	78.12	31.10	---	---	47.02	Envent
	3/24/2009	78.12	27.82	---	---	50.30	Envent
	4/21/2009	78.12	29.51	29.50	0.01	48.62	Envent
	7/21/2009	78.12	30.07	---	---	48.05	Envent
	10/19/2009	78.12	NM	---	---	NC	Blaine Tech
	11/6/2009	78.12	30.37	30.35	0.02	47.77	Kinder Morgan
	12/9/2009	78.12	30.53	---	---	47.59	Kinder Morgan
	9/3/2010	78.12	30.97	30.42	0.55	47.59	Kinder Morgan
	10/4/2010	78.12	30.88	30.30	0.58	47.70	Blaine Tech
	4/12/2011	78.12	29.44	---	---	48.68	Blaine Tech
	10/10/2011	78.12	30.75	---	---	47.37	Blaine Tech
	4/16/2012	78.12	NM	---	---	NC	Blaine Tech
	7/9/2012	78.12	NM	---	---	NC	Blaine Tech
	10/15/2012	78.12	32.47	---	---	45.65	Blaine Tech
	5/24/2013	78.12	33.35	32.51	0.84	45.44	Blaine Tech
	9/25/2013	78.12	34.40	---	---	43.72	Blaine Tech
	10/7/2013	78.12	NM	---	---	NC	Blaine Tech
	11/14/2013	78.12	33.26	---	---	44.86	Blaine Tech
	4/18/2014	78.12	33.72	33.62	0.10	44.48	Blaine Tech
	8/8/2014	78.12	34.07	33.71	0.36	44.34	Blaine Tech
	10/14/2014	78.12	34.55	33.92	0.63	44.07	Blaine Tech
	10/23/2014	78.12	34.57	33.94	0.63	44.05	Blaine Tech
	10/27/2014	78.12	34.49	33.85	0.64	44.14	Blaine Tech
	11/10/2014	78.12	34.65	33.94	0.71	44.04	Blaine Tech
	11/18/2014	78.12	34.62	33.88	0.74	44.09	Blaine Tech
	11/25/2014	78.12	34.22	33.94	0.28	44.12	Blaine Tech
	12/12/2014	78.12	34.89	34.38	0.51	43.64	Blaine Tech
	12/19/2014	78.12	35.04	34.43	0.61	43.57	Blaine Tech
	4/20/2015	78.12	34.52	---	---	43.60	Blaine Tech
	10/21/2015	78.12	35.18	---	---	42.94	Kinder Morgan
	3/14/2016	78.12	39.43	39.40	0.03	38.71	Blaine Tech
	4/11/2016	78.12	37.17	---	---	40.95	Blaine Tech
	6/30/2016	78.12	38.28	---	---	39.84	Kinder Morgan
	8/22/2016	78.12	38.33	---	---	39.79	Kinder Morgan
	10/3/2016	78.12	39.40	---	---	38.72	Kinder Morgan
	3/8/2017	78.12	35.75	---	---	42.37	CH2M
	4/17/2017	78.12	35.15	---	---	42.97	Blaine Tech
	10/2/2017	78.12	39.20	---	---	38.92	Blaine Tech
	4/16/2018	78.12	38.81	---	---	39.31	Blaine Tech
	11/5/2018	78.12	38.69	---	---	39.43	Blaine Tech
	4/16/2019	78.12	NM	---	---	NC	Blaine Tech
	10/28/2019	78.12	38.77	---	---	39.35	Blaine Tech
MW-SF-4	3/12/2007	79.38	30.01	29.41	0.60	49.85	Secor
	4/30/2007	79.38	29.96	29.11	0.85	50.10	Secor
	8/14/2007	79.38	30.34	28.38	1.96	50.60	Geomatrix
	8/28/2007	79.38	29.95	28.30	1.65	50.74	Stantec
	9/11/2007	79.38	29.98	28.43	1.55	50.63	Geomatrix
	10/5/2007	79.38	30.68	28.85	1.83	50.15	Geomatrix
	10/12/2007	79.38	30.27	29.96	0.31	49.36	Geomatrix
	10/19/2007	79.38	30.28	---	---	49.10	Geomatrix
	10/26/2007	79.38	30.52	---	---	48.86	Geomatrix
	11/2/2007	79.38	30.68	---	---	48.70	Geomatrix
	11/12/2007	79.38	29.70	29.69	0.01	49.69	Stantec
	12/21/2007	79.38	30.69	---	---	48.69	Geomatrix

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	2/19/2008	79.38	30.22	---	---	49.16	Stantec
	3/21/2008	79.38	30.07	---	---	49.31	Envent
	4/14/2008	79.38	29.95	---	---	49.43	Stantec
	8/8/2008	79.38	30.51	---	---	48.87	Envent
	8/11/2008	79.38	30.57	---	---	48.81	Stantec
	10/16/2008	79.38	30.77	---	---	48.61	Envent
	1/15/2009	79.38	31.14	---	---	48.24	Envent
	2/20/2009	79.38	30.84	---	---	48.54	Envent
	2/23/2009	79.38	30.96	---	---	48.42	Blaine Tech
	4/20/2009	79.38	30.02	29.94	0.08	49.42	Blaine Tech
	4/28/2009	79.38	30.78	---	---	48.60	Envent
	7/17/2009	79.38	31.85	---	---	47.53	Envent
	7/20/2009	79.38	31.65	31.61	0.04	47.76	Blaine Tech
	7/22/2009	79.38	31.65	31.61	0.04	47.76	Blaine Tech
	10/19/2009	79.38	31.93	31.90	0.03	47.47	Blaine Tech
	3/15/2010	79.38	31.95	31.91	0.04	47.46	Blaine Tech
	5/24/2010	79.38	31.60	---	---	47.78	Blaine Tech
	5/28/2010	79.38	26.40	---	---	52.98	Blaine Tech
	6/22/2010	79.38	31.63	---	---	47.75	Blaine Tech
	7/12/2010	79.38	31.37	---	---	48.01	Blaine Tech
	10/4/2010	79.38	31.81	---	---	47.57	Blaine Tech
	1/10/2011	79.38	32.99	---	---	46.39	Blaine Tech
	4/11/2011	79.38	30.85	---	---	48.53	Blaine Tech
	7/11/2011	79.38	30.35	---	---	49.03	Blaine Tech
	10/10/2011	79.38	NM	---	---	NC	Blaine Tech
	1/9/2012	79.38	32.07	---	---	47.31	Blaine Tech
	4/16/2012	79.38	33.35	---	---	46.03	Blaine Tech
	7/9/2012	79.38	32.11	---	---	47.27	Blaine Tech
	10/15/2012	79.38	34.04	---	---	45.34	Blaine Tech
	1/14/2013	79.38	34.52	---	---	44.86	Blaine Tech
	4/8/2013	79.38	DRY	---	---	NC	Blaine Tech
	10/7/2013	79.38	DRY	---	---	NC	Blaine Tech
	4/25/2014	79.38	40.03	34.23	5.80	43.96	Blaine Tech
	5/6/2014	79.38	39.78	33.91	5.87	44.27	Nieto & Sons
	5/12/2014	79.38	37.02	34.64	2.38	44.25	Nieto & Sons
	5/20/2014	79.38	36.60	35.60	1.00	43.58	Nieto & Sons
	5/27/2014	79.38	36.12	35.45	0.67	43.79	Nieto & Sons
	6/4/2014	79.38	36.54	35.91	0.63	43.34	Nieto & Sons
	6/10/2014	79.38	37.02	35.38	1.64	43.66	Nieto & Sons
	7/3/2014	79.38	36.98	35.63	1.35	43.47	Nieto & Sons
	7/8/2014	79.38	36.78	35.34	1.44	43.74	Blaine Tech
	7/18/2014	79.38	35.88	35.55	0.33	43.76	Blaine Tech
	7/24/2014	79.38	35.98	35.42	0.56	43.85	Blaine Tech
	8/1/2014	79.38	35.57	35.30	0.27	44.02	Blaine Tech
	8/14/2014	79.38	35.42	35.23	0.19	44.11	Blaine Tech
	8/19/2014	79.38	35.36	35.21	0.15	44.14	Blaine Tech
	8/29/2014	79.38	35.32	35.20	0.12	44.16	Blaine Tech
	9/18/2014	79.38	35.55	35.30	0.25	44.03	Blaine Tech
	9/26/2014	79.38	35.56	35.30	0.26	44.03	Blaine Tech
	10/1/2014	79.38	35.56	35.24	0.32	44.07	Blaine Tech
	10/6/2014	79.38	35.48	35.22	0.26	44.11	Blaine Tech
	10/14/2014	79.38	35.33	35.20	0.13	44.15	Blaine Tech
	10/23/2014	79.38	35.51	35.22	0.29	44.10	Blaine Tech
	10/27/2014	79.38	35.54	35.25	0.29	44.07	Blaine Tech
	11/18/2014	79.38	35.56	35.25	0.31	44.07	Blaine Tech
	11/25/2014	79.38	35.66	35.32	0.34	43.99	Blaine Tech
	12/12/2014	79.38	35.81	35.58	0.23	43.75	Blaine Tech
	12/19/2014	79.38	35.75	35.62	0.13	43.73	Blaine Tech
	4/20/2015	79.38	37.78	35.29	2.49	43.58	Blaine Tech
	5/19/2015	79.38	39.22	35.28	3.94	43.29	Northstar

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	5/29/2015	79.38	37.10	35.80	1.30	43.31	Northstar
	6/5/2015	79.38	36.85	36.15	0.70	43.09	Northstar
	6/12/2015	79.38	36.55	36.15	0.40	43.15	Northstar
	6/19/2015	79.38	36.68	36.42	0.26	42.91	Northstar
	6/26/2015	79.38	37.23	36.96	0.27	42.36	Northstar
	10/19/2015	79.38	38.12	36.25	1.87	42.75	Blaine Tech
	11/17/2015	79.38	37.83	35.98	1.85	43.02	Kinder Morgan
	3/14/2016	79.38	40.80	---	---	38.58	Kinder Morgan
	4/11/2016	79.38	37.76	---	---	41.62	Blaine Tech
	6/29/2016	79.38	39.54	---	---	39.84	Blaine Tech
	8/22/2016	79.38	39.76	---	---	39.62	Blaine Tech
	10/3/2016	79.38	41.05	---	---	38.33	Blaine Tech
	4/17/2017	79.38	36.67	---	---	42.71	Blaine Tech
	10/2/2017	79.38	40.07	---	---	39.31	Blaine Tech
	4/16/2018	79.38	39.90	---	---	39.48	Blaine Tech
	11/5/2018	79.38	39.78	---	---	39.60	Blaine Tech
	4/16/2019	79.38	38.45	---	---	40.93	Blaine Tech
	10/28/2019	79.38	39.75	---	---	39.63	Blaine Tech
MW-SF-5	4/30/2007	79.74	29.54	---	---	50.20	Secor
	8/21/2007	79.74	28.36	---	---	51.38	Geomatrix
	8/28/2007	79.74	28.84	---	---	50.90	Stantec
	10/5/2007	79.74	29.50	---	---	50.24	Geomatrix
	11/2/2007	79.74	31.50	---	---	48.24	Geomatrix
	11/12/2007	79.74	29.93	---	---	49.81	Stantec
	12/21/2007	79.74	31.00	---	---	48.74	Geomatrix
	4/14/2008	79.74	30.20	---	---	49.54	Stantec
	8/11/2008	79.74	30.85	---	---	48.89	Stantec
	10/13/2008	79.74	30.93	---	---	48.81	Stantec
	4/20/2009	79.74	30.99	---	---	48.75	Blaine Tech
	10/19/2009	79.74	NM	---	---	NC	Blaine Tech
	5/24/2010	79.74	31.55	---	---	48.19	Blaine Tech
	5/28/2010	79.74	31.44	---	---	48.30	Blaine Tech
	6/22/2010	79.74	31.57	---	---	48.17	Blaine Tech
	10/4/2010	79.74	31.39	---	---	48.35	Blaine Tech
	1/10/2011	79.74	33.80	---	---	45.94	Blaine Tech
	4/11/2011	79.74	31.03	---	---	48.71	Blaine Tech
	7/11/2011	79.74	NM	---	---	NC	
	10/10/2011	79.74	31.28	---	---	48.46	Blaine Tech
	1/9/2012	79.74	32.12	---	---	47.62	Blaine Tech
	4/16/2012	79.74	33.30	---	---	46.44	Blaine Tech
	7/9/2012	79.74	34.45	---	---	45.29	Blaine Tech
	10/15/2012	79.74	33.28	---	---	46.46	Blaine Tech
	1/14/2013	79.74	33.37	---	---	46.37	Blaine Tech
	4/8/2013	79.74	34.28	---	---	45.46	Blaine Tech
	10/7/2013	79.74	34.58	---	---	45.16	Blaine Tech
	4/14/2014	79.74	35.33	---	---	44.41	Blaine Tech
	10/27/2014	79.74	35.48	---	---	44.26	Blaine Tech
	4/20/2015	79.74	36.05	---	---	43.69	Blaine Tech
	10/19/2015	79.74	36.82	---	---	42.92	Blaine Tech
	3/14/2016	79.74	DRY	---	---	NC	Blaine Tech
	4/11/2016	79.74	DRY	---	---	NC	Blaine Tech
	6/29/2016	79.74	DRY	---	---	NC	Blaine Tech
	8/22/2016	79.74	DRY	---	---	NC	Blaine Tech
	10/3/2016	79.74	DRY	---	---	NC	Blaine Tech
	4/17/2017	79.74	36.88	---	---	42.86	Blaine Tech
	10/2/2017	79.74	DRY	---	---	NC	Blaine Tech
	4/16/2018	79.74	DRY	---	---	NC	Blaine Tech
	11/5/2018	79.74	DRY	---	---	NC	Blaine Tech
	4/16/2019	79.74	DRY	---	---	NC	Blaine Tech
	10/28/2019	79.74	DRY	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
MW-SF-6	4/30/2007	79.96	27.44	27.20	0.24	52.71	Secor
	11/12/2007	79.96	27.14	---	---	52.82	Stantec
	8/12/2008	79.96	29.82	---	---	50.14	Envent
	10/17/2008	79.96	29.75	---	---	50.21	Envent
	12/18/2008	76.8	30.73	---	---	46.07	Envent
	1/15/2009	76.8	31.35	---	---	45.45	Envent
	3/24/2009	76.80	30.50	---	---	46.30	Envent
	4/21/2009	76.80	28.45	---	---	48.35	Envent
	7/21/2009	76.80	27.22	---	---	49.58	Envent
	10/19/2009	76.80	NM	---	---	NC	Blaine Tech
	11/6/2009	76.80	29.10	---	---	47.70	Kinder Morgan
	12/9/2009	76.80	31.35	---	---	45.45	Kinder Morgan
	10/4/2010	76.80	29.09	---	---	47.71	Blaine Tech
	1/10/2011	76.80	30.87	---	---	45.93	Blaine Tech
	4/11/2011	76.80	28.16	---	---	48.64	Blaine Tech
	7/11/2011	76.80	NM	---	---	NC	
	10/10/2011	76.80	28.21	---	---	48.59	Blaine Tech
	1/9/2012	76.80	29.03	---	---	47.77	Blaine Tech
	4/16/2012	76.80	29.66	---	---	47.14	Blaine Tech
	7/9/2012	76.80	31.46	---	---	45.34	Blaine Tech
	10/15/2012	76.80	31.44	---	---	45.36	Blaine Tech
	1/14/2013	76.80	31.53	---	---	45.27	Blaine Tech
	4/8/2013	76.80	30.21	28.81	1.40	47.71	Blaine Tech
	10/7/2013	76.80	NM	---	---	NC	Blaine Tech
	11/14/2013	76.80	31.90	---	---	44.90	Blaine Tech
	4/18/2014	76.80	33.30	32.15	1.15	44.42	Blaine Tech
	8/8/2014	76.8	34.50	33.31	1.19	43.25	Blaine Tech
	8/13/2014	76.8	32.95	32.54	0.41	44.18	Blaine Tech
	8/19/2014	76.8	32.87	32.62	0.25	44.13	Blaine Tech
	8/29/2014	76.8	32.79	32.56	0.23	44.19	Blaine Tech
	9/5/2014	76.8	32.81	32.59	0.22	44.17	Blaine Tech
	9/18/2014	76.8	32.95	32.65	0.30	44.09	Blaine Tech
	9/26/2014	76.8	32.94	32.61	0.33	44.12	Blaine Tech
	10/1/2014	76.8	32.91	32.60	0.31	44.14	Blaine Tech
	10/6/2014	76.8	32.90	32.61	0.29	44.13	Blaine Tech
	10/14/2014	76.8	33.72	33.60	0.12	43.18	Blaine Tech
	10/23/2014	76.8	34.57	33.94	0.63	42.73	Blaine Tech
	10/27/2014	76.8	32.92	32.58	0.34	44.15	Blaine Tech
	11/18/2014	76.8	32.99	32.62	0.37	44.11	Blaine Tech
	11/25/2014	76.8	32.66	32.58	0.08	44.20	Blaine Tech
	12/12/2014	76.8	33.45	33.07	0.38	43.65	Blaine Tech
	12/19/2014	76.8	33.60	33.15	0.45	43.56	Blaine Tech
	4/20/2015	76.8	33.23	33.11	0.12	43.67	Blaine Tech
	10/21/2015	76.8	34.28	---	---	42.52	Kinder Morgan
	3/14/2016	76.8	38.10	38.08	0.02	38.72	Blaine Tech
	4/11/2016	76.8	35.83	---	---	40.97	Blaine Tech
	6/29/2016	76.8	36.89	---	---	39.91	Blaine Tech
	8/22/2016	76.8	37.11	---	---	39.69	Blaine Tech
	10/3/2016	76.8	38.45	---	---	38.35	Blaine Tech
	4/17/2017	76.8	34.03	---	---	42.77	Blaine Tech
	10/2/2017	76.8	37.89	---	---	38.91	Blaine Tech
	4/16/2018	76.8	37.65	---	---	39.15	Blaine Tech
	11/5/2018	76.8	37.70	---	---	39.10	Blaine Tech
	4/16/2019	76.8	36.13	---	---	40.67	Blaine Tech
	10/28/2019	76.8	37.41	---	---	39.39	Blaine Tech
MW-SF-9	4/30/2007	74.1	22.66	---	---	51.44	Secor
	8/14/2007	74.1	28.73	28.61	0.12	45.47	Geomatrix
	8/21/2007	74.1	26.55	---	---	47.55	Geomatrix
	8/28/2007	74.1	20.55	---	---	53.55	Stantec
	9/11/2007	74.1	19.40	---	---	54.70	Geomatrix
	10/5/2007	74.1	26.84	---	---	47.26	Geomatrix
	11/2/2007	74.1	22.76	---	---	51.34	Geomatrix

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	11/12/2007	74.1	22.96	---	---	51.14	Stantec
	12/21/2007	74.1	24.05	---	---	50.05	Geomatrix
	4/14/2008	74.1	24.23	---	---	49.87	Stantec
	10/13/2008	74.1	24.83	---	---	49.27	Stantec
	4/20/2009	74.10	25.27	---	---	48.83	Blaine Tech
	10/19/2009	74.10	26.45	---	---	47.65	Blaine Tech
	5/24/2010	74.10	25.80	---	---	48.30	Blaine Tech
	5/28/2010	74.10	25.66	---	---	48.44	Blaine Tech
	6/22/2010	74.10	25.84	---	---	48.26	Blaine Tech
	10/4/2010	74.10	26.10	---	---	48.00	Blaine Tech
	1/10/2011	74.10	27.41	---	---	46.69	Blaine Tech
	4/11/2011	74.10	24.16	---	---	49.94	Blaine Tech
	7/11/2011	74.10	NM	---	---	NC	
	10/10/2011	74.10	25.02	---	---	49.08	Blaine Tech
	1/9/2012	74.10	25.98	---	---	48.12	Blaine Tech
	4/16/2012	74.10	25.92	---	---	48.18	Blaine Tech
	7/9/2012	74.10	26.44	---	---	47.66	Blaine Tech
	10/15/2012	74.10	NM	---	---	NC	Blaine Tech
	4/8/2013	74.10	DRY	---	---	NC	Blaine Tech
	6/6/2013	74.10	28.53	---	---	45.57	Blaine Tech
	10/7/2013	74.10	28.95	---	---	45.15	Blaine Tech
	4/25/2014	74.10	34.75	27.95	6.80	44.89	Blaine Tech
	5/5/2014	74.10	37.81	31.76	6.05	41.22	Nieto & Sons
	5/12/2014	74.10	32.32	29.11	3.21	44.40	Nieto & Sons
	5/20/2014	74.10	30.75	29.95	0.80	44.00	Nieto & Sons
	5/27/2014	74.1	38.08	32.32	5.76	40.71	Nieto & Sons
	6/4/2014	74.1	32.19	28.61	3.58	44.83	Nieto & Sons
	6/10/2014	74.1	36.27	28.85	7.42	43.88	Nieto & Sons
	7/3/2014	74.1	39.26	32.59	6.67	40.28	Nieto & Sons
	7/8/2014	74.1	36.40	28.60	7.80	44.06	Blaine Tech
	7/18/2014	74.1	31.04	29.66	1.38	44.18	Blaine Tech
	7/24/2014	74.1	31.15	29.85	1.30	44.01	Blaine Tech
	8/1/2014	74.1	30.25	29.85	0.40	44.18	Blaine Tech
	8/14/2014	74.1	30.13	29.82	0.31	44.22	Blaine Tech
	8/19/2014	74.1	30.08	29.85	0.23	44.21	Blaine Tech
	8/29/2014	74.1	30.10	29.81	0.29	44.24	Blaine Tech
	9/5/2014	74.1	30.13	29.84	0.29	44.21	Blaine Tech
	9/11/2014	74.1	29.49	28.47	1.02	45.44	Blaine Tech
	9/18/2014	74.1	30.29	29.90	0.39	44.13	Blaine Tech
	9/26/2014	74.1	30.25	29.84	0.41	44.18	Blaine Tech
	10/1/2014	74.1	30.24	29.84	0.40	44.19	Blaine Tech
	10/6/2014	74.1	30.24	29.83	0.41	44.19	Blaine Tech
	10/14/2014	74.1	30.12	29.81	0.31	44.23	Blaine Tech
	10/23/2014	74.1	30.27	29.85	0.42	44.17	Blaine Tech
	10/27/2014	74.1	30.29	29.89	0.40	44.14	Blaine Tech
	11/18/2014	74.1	30.35	29.86	0.49	44.15	Blaine Tech
	11/25/2014	74.1	30.42	29.91	0.51	44.10	Blaine Tech
	12/12/2014	74.1	30.65	30.10	0.55	43.90	Blaine Tech
	12/19/2014	74.1	30.80	30.13	0.67	43.85	Blaine Tech
	4/20/2015	74.1	36.69	27.67	9.02	44.76	Blaine Tech
	5/19/2015	74.1	35.68	26.83	8.85	45.63	Blaine Tech
	5/21/2015	74.1	32.50	27.31	5.19	45.83	Northstar
	5/29/2015	74.1	32.95	30.10	2.85	43.47	Northstar
	6/2/2015	74.1	31.67	30.45	1.22	43.42	Northstar
	6/5/2015	74.10	31.85	30.60	1.25	43.27	Northstar
	6/12/2015	74.10	31.28	30.75	0.53	43.25	Northstar
	6/19/2015	74.10	31.30	31.00	0.30	43.04	Northstar
	6/26/2015	74.10	31.20	29.50	1.70	44.29	Northstar
	8/11/2015	74.10	36.90	29.90	7.00	42.90	Northstar
	8/18/2015	74.10	35.19	30.25	4.94	42.94	Northstar
	8/28/2015	74.10	31.60	30.75	0.85	43.19	Kinder Morgan

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	9/1/2015	74.10	31.78	30.90	0.88	43.04	Kinder Morgan
	10/16/2015	74.10	31.60	31.09	0.51	42.92	Blaine Tech
	10/19/2015	74.10	31.44	31.04	0.40	42.99	Kinder Morgan
	10/30/2015	74.10	32.60	32.06	0.54	41.94	Kinder Morgan
	11/17/2015	74.10	31.71	31.68	0.03	42.41	Kinder Morgan
	3/14/2016	74.10	34.14	---	---	39.96	Blaine Tech
	4/11/2016	74.10	32.89	---	---	41.21	Blaine Tech
	6/29/2016	74.10	34.00	---	---	40.10	Blaine Tech
MW-SF-10	10/17/2008	76.53	27.49	---	---	49.04	Envent
	10/19/2009	76.53	28.61	---	---	47.92	Blaine Tech
	10/4/2010	76.53	28.50	28.36	0.14	48.14	Blaine Tech
	4/11/2011	76.53	27.41	27.37	0.04	49.15	Blaine Tech
	10/10/2011	76.53	27.60	---	---	48.93	Blaine Tech
	4/16/2012	76.53	28.81	---	---	47.72	Blaine Tech
	7/9/2012	76.53	NM	---	---	NC	Blaine Tech
	10/15/2012	76.53	29.27	---	---	47.26	Blaine Tech
	4/8/2013	76.53	DRY	---	---	NC	Blaine Tech
	10/7/2013	76.53	DRY	---	---	NC	Blaine Tech
	4/14/2014	76.53	DRY	---	---	NC	Blaine Tech
	10/27/2014	76.53	DRY	---	---	NC	Blaine Tech
	4/20/2015	76.53	DRY	---	---	NC	Blaine Tech
	10/19/2015	76.53	DRY	---	---	NC	Blaine Tech
	3/14/2016	76.53	DRY	---	---	NC	Blaine Tech
	4/11/2016	76.53	DRY	---	---	NC	Blaine Tech
	6/29/2016	76.53	DRY	---	---	NC	Blaine Tech
	8/22/2016	76.53	DRY	---	---	NC	Blaine Tech
	10/3/2016	76.53	DRY	---	---	NC	Blaine Tech
	4/17/2017	76.53	DRY	---	---	NC	Blaine Tech
	10/2/2017	76.53	DRY	---	---	NC	Blaine Tech
	4/16/2018	76.53	DRY	---	---	NC	Blaine Tech
	11/5/2018	76.53	DRY	---	---	NC	Blaine Tech
	4/16/2019	76.53	DRY	---	---	NC	Blaine Tech
	10/28/2019	76.53	DRY	---	---	NC	Blaine Tech
MW-SF-11	8/14/2007	78.56	28.58	28.30	0.28	50.20	Geomatrix
	8/21/2007	78.56	28.76	28.63	0.13	49.90	Geomatrix
	8/28/2007	78.56	28.22	---	---	50.34	Stantec
	9/11/2007	78.56	26.90	---	---	51.66	Geomatrix
	10/5/2007	78.56	28.43	---	---	50.13	Geomatrix
	11/2/2007	78.56	29.48	29.38	0.10	49.16	Geomatrix
	11/12/2007	78.56	29.03	---	---	49.53	Stantec
	8/15/2008	78.56	30.13	---	---	48.43	Envent
	10/17/2008	78.56	30.50	---	---	48.06	Envent
	12/18/2008	78.56	29.92	---	---	48.64	Envent
	1/15/2009	78.56	30.32	---	---	48.24	Envent
	3/24/2009	78.56	31.05	---	---	47.51	Envent
	4/21/2009	78.56	30.03	---	---	48.53	Envent
	7/21/2009	78.56	30.89	---	---	47.67	Envent
	10/19/2009	78.56	NM	---	---	NC	Blaine Tech
	11/9/2009	78.56	31.00	---	---	47.56	Kinder Morgan
	9/3/2010	78.56	31.22	---	---	47.34	Kinder Morgan
	10/4/2010	78.56	30.94	---	---	47.62	Blaine Tech
	4/12/2011	78.56	30.82	---	---	47.74	Blaine Tech
	10/10/2011	78.56	30.10	---	---	48.46	Blaine Tech
	4/16/2012	78.56	NM	---	---	NC	Blaine Tech
	7/9/2012	78.56	NM	---	---	NC	Blaine Tech
	10/15/2012	78.56	33.28	---	---	45.28	Blaine Tech
	4/8/2013	78.56	33.11	---	---	45.45	Blaine Tech
	10/7/2013	78.56	33.91	---	---	44.65	Blaine Tech
	4/14/2014	78.56	35.20	34.95	0.25	43.56	Blaine Tech
	5/5/2014	78.56	36.52	33.71	2.81	44.29	Nieto & Sons
	5/12/2014	78.56	35.45	33.87	1.58	44.37	Nieto & Sons

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	5/27/2014	78.56	35.38	34.65	0.73	43.76	Nieto & Sons
	6/4/2014	78.56	35.40	35.32	0.08	43.22	Nieto & Sons
	8/8/2014	78.56	36.22	33.11	3.11	44.83	Blaine Tech
	8/13/2014	78.56	36.22	33.47	2.75	44.54	Blaine Tech
	8/19/2014	78.56	36.46	33.94	2.52	44.12	Blaine Tech
	8/29/2014	78.56	36.68	33.83	2.85	44.16	Blaine Tech
	9/5/2014	78.56	36.62	33.80	2.82	44.20	Blaine Tech
	9/11/2014	78.56	37.15	33.78	3.37	44.11	Blaine Tech
	9/18/2014	78.56	36.79	33.93	2.86	44.06	Blaine Tech
	9/26/2014	78.56	36.89	33.88	3.01	44.08	Blaine Tech
	10/1/2014	78.56	34.95	33.32	1.63	44.91	Blaine Tech
	10/6/2014	78.56	36.36	33.95	2.41	44.13	Blaine Tech
	10/14/2014	78.56	36.67	33.86	2.81	44.14	Blaine Tech
	10/23/2014	78.56	36.86	33.86	3.00	44.10	Blaine Tech
	10/27/2014	78.56	36.20	33.99	2.21	44.13	Blaine Tech
	11/3/2014	78.56	36.91	33.84	3.07	44.11	Blaine Tech
	11/18/2014	78.56	36.78	33.95	2.83	44.04	Blaine Tech
	11/25/2014	78.56	36.65	34.03	2.62	44.01	Blaine Tech
	12/3/2014	78.56	36.71	33.94	2.77	44.07	Blaine Tech
	12/12/2014	78.56	37.29	34.08	3.21	43.84	Blaine Tech
	12/19/2014	78.56	38.03	34.04	3.99	43.72	Blaine Tech
	3/17/2015	78.56	35.94	35.50	0.44	42.97	Kinder Morgan
	4/20/2015	78.56	38.89	34.86	4.03	42.89	Kinder Morgan
	10/20/2015	78.56	37.42	35.38	2.04	42.77	Kinder Morgan
	3/16/2016	78.56	39.56	---	---	39.00	Kinder Morgan
	4/11/2016	78.56	37.62	---	---	40.94	Blaine Tech
	6/29/2016	78.56	37.06	---	---	41.50	Blaine Tech
	8/22/2016	78.56	39.25	---	---	39.31	Blaine Tech
	10/3/2016	78.56	40.05	---	---	38.51	Blaine Tech
	3/10/2017	78.56	36.56	---	---	42.00	CH2M
	4/17/2017	78.56	35.91	---	---	42.65	Blaine Tech
	10/2/2017	78.56	40.09	---	---	38.47	Blaine Tech
	4/16/2018	78.56	39.90	---	---	38.66	Blaine Tech
	11/5/2018	78.56	39.52	---	---	39.04	Blaine Tech
	4/16/2019	78.56	38.52	---	---	40.04	Blaine Tech
	10/28/2019	78.56	39.13	---	---	39.43	Blaine Tech
MW-SF-12	8/14/2007	78.07	27.76	---	---	50.31	Geomatrix
	8/21/2007	78.07	27.43	---	---	50.64	Geomatrix
	8/28/2007	78.07	27.58	---	---	50.49	Stantec
	9/11/2007	78.07	27.73	---	---	50.34	Geomatrix
	10/5/2007	78.07	28.06	---	---	50.01	Geomatrix
	11/2/2007	78.07	29.59	---	---	48.48	Geomatrix
	11/12/2007	78.07	28.33	---	---	49.74	Stantec
	8/12/2008	78.07	30.02	---	---	48.05	Envent
	10/17/2008	78.07	30.42	---	---	47.65	Envent
	12/18/2008	78.07	31.55	---	---	46.52	Envent
	1/15/2009	78.07	30.11	---	---	47.96	Envent
	3/24/2009	78.07	29.41	---	---	48.66	Envent
	4/21/2009	78.07	29.52	---	---	48.55	Envent
	7/21/2009	78.07	28.58	---	---	49.49	Envent
	10/19/2009	78.07	NM	---	---	NC	Blaine Tech
	11/4/2009	78.07	30.36	---	---	47.71	Kinder Morgan
	2/4/2010	78.07	29.20	---	---	48.87	Kinder Morgan
	10/4/2010	78.07	30.70	---	---	47.37	Blaine Tech
	4/11/2011	78.07	29.47	---	---	48.60	Blaine Tech
	10/10/2011	78.07	26.60	---	---	51.47	Blaine Tech
	4/16/2012	78.07	31.40	---	---	46.67	Blaine Tech
	7/9/2012	78.07	NM	---	---	NC	Blaine Tech
	10/15/2012	78.07	32.12	---	---	45.95	Blaine Tech
	4/8/2013	78.07	DRY	---	---	NC	Blaine Tech
	10/7/2013	78.07	NM	---	---	NC	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	4/14/2014	78.07	38.04	32.67	5.37	44.33	Blaine Tech
	5/20/2014	78.07	37.80	32.90	4.90	44.19	Nieto & Sons
	5/27/2014	78.07	33.27	---	---	44.80	Nieto & Sons
	6/4/2014	78.07	32.78	---	---	45.29	Nieto & Sons
	6/10/2014	78.07	33.76	---	---	44.31	Nieto & Sons
	7/3/2014	78.07	NM	33.58	---	NC	Nieto & Sons
	7/24/2014	78.07	NM	33.35	3.97	NC	Blaine Tech
	8/1/2014	78.07	37.20	33.17	4.03	44.09	Blaine Tech
	9/5/2014	78.07	38.52	32.93	5.59	44.02	Blaine Tech
	9/11/2014	78.07	38.56	32.98	5.58	43.97	Blaine Tech
	9/18/2014	78.07	38.25	33.09	5.16	43.95	Blaine Tech
	9/26/2014	78.07	38.03	33.03	5.00	44.04	Blaine Tech
	10/1/2014	78.07	37.82	33.08	4.74	44.04	Blaine Tech
	10/6/2014	78.07	37.63	33.07	4.56	44.09	Blaine Tech
	10/14/2014	78.07	37.56	33.13	4.43	44.05	Blaine Tech
	10/23/2014	78.07	37.56	33.06	4.50	44.11	Blaine Tech
	10/27/2014	78.07	37.40	33.08	4.32	44.13	Blaine Tech
	11/3/2014	78.07	37.48	33.09	4.39	44.10	Blaine Tech
	11/18/2014	78.07	37.44	33.15	4.29	44.06	Blaine Tech
	11/25/2014	78.07	37.35	33.21	4.14	44.03	Blaine Tech
	12/3/2014	78.07	37.31	33.12	4.19	44.11	Blaine Tech
	12/12/2014	78.07	37.92	33.45	4.47	43.73	Blaine Tech
	12/19/2014	78.07	38.25	33.50	4.75	43.62	Blaine Tech
	3/17/2015	78.07	36.42	34.05	2.37	43.55	Kinder Morgan
	4/20/2015	78.07	36.42	34.05	2.37	43.55	Blaine Tech
	10/20/2015	78.07	36.78	34.84	1.94	42.84	Kinder Morgan
	3/16/2016	78.07	39.03	---	---	39.04	Kinder Morgan
	4/11/2016	78.07	37.13	---	---	40.94	Blaine Tech
	6/29/2016	78.07	38.34	38.28	0.06	39.78	Blaine Tech
	8/22/2016	78.07	38.60	---	---	39.47	Blaine Tech
	10/3/2016	78.07	39.45	---	---	38.62	Blaine Tech
	3/10/2017	78.07	36.09	---	---	41.98	CH2M
	4/17/2017	78.07	35.12	---	---	42.95	Blaine Tech
	10/2/2017	78.07	39.31	---	---	38.76	Blaine Tech
	4/16/2018	78.07	39.09	---	---	38.98	Blaine Tech
	11/5/2018	78.07	38.96	---	---	39.11	Blaine Tech
	4/16/2019	78.07	37.53	---	---	40.54	Blaine Tech
	10/28/2019	78.07	38.78	---	---	39.29	Blaine Tech
MW-SF-13	8/14/2007	73.40	22.98	---	---	50.42	Geomatrix
	8/21/2007	73.40	23.11	---	---	50.29	Geomatrix
	8/28/2007	73.40	22.85	---	---	50.55	Stantec
	9/11/2007	73.40	23.10	---	---	50.30	Geomatrix
	10/5/2007	73.40	28.11	---	---	45.29	Geomatrix
	11/2/2007	73.40	25.43	25.41	0.02	47.99	Geomatrix
	11/12/2007	73.40	23.70	---	---	49.70	Stantec
	12/21/2007	73.40	24.45	24.42	0.03	48.97	Geomatrix
	8/15/2008	73.40	27.38	24.11	3.27	48.47	Envent
	10/17/2008	73.40	27.28	24.33	2.95	48.33	Envent
	10/21/2008	73.40	27.14	24.26	2.88	48.42	Envent
	12/17/2008	73.40	26.21	24.70	1.51	48.32	Envent
	1/15/2009	73.40	26.90	24.80	2.10	48.08	Envent
	3/27/2009	73.40	26.46	25.49	0.97	47.67	Envent
	4/21/2009	73.40	24.86	24.78	0.08	48.60	Envent
	7/21/2009	73.40	25.72	25.48	0.24	47.86	Envent
	10/19/2009	73.40	NM	---	---	NC	Blaine Tech
	11/6/2009	73.40	25.72	---	---	47.68	Kinder Morgan
	2/4/2010	73.40	25.43	25.30	0.13	48.07	Kinder Morgan
	9/3/2010	73.40	27.40	25.71	1.69	47.27	Kinder Morgan
	10/4/2010	73.40	26.95	25.92	1.03	47.22	Blaine Tech
	4/12/2011	73.40	24.79	24.78	0.01	48.62	Blaine Tech
	10/10/2011	73.40	26.00	---	---	47.40	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	4/16/2012	73.40	27.19	---	---	46.21	Blaine Tech
	7/9/2012	73.40	NM	---	---	NC	Blaine Tech
	10/15/2012	73.40	27.01	---	---	46.39	Blaine Tech
	4/8/2013	73.40	27.90	---	---	45.50	Blaine Tech
	10/7/2013	73.40	NM	---	---	NC	Blaine Tech
	11/14/2013	73.40	29.95	28.25	1.70	44.73	Blaine Tech
	4/14/2014	73.40	31.36	28.47	2.89	44.21	Blaine Tech
	5/5/2014	73.40	31.62	28.49	3.13	44.13	Nieto & Sons
	5/12/2014	73.40	30.02	28.88	1.14	44.24	Nieto & Sons
	5/20/2014	73.40	31.10	29.77	1.33	43.30	Nieto & Sons
	5/27/2014	73.40	30.17	29.48	0.69	43.75	Nieto & Sons
	6/4/2014	73.40	30.22	---	---	43.18	Nieto & Sons
	6/10/2014	73.40	30.20	29.76	0.44	43.53	Nieto & Sons
	7/3/2014	73.40	30.49	29.88	0.61	43.37	Nieto & Sons
	7/24/2014	73.40	30.50	29.54	0.96	43.62	Blaine Tech
	8/1/2014	73.40	29.82	29.25	0.57	44.01	Blaine Tech
	8/8/2014	73.40	34.07	33.71	0.36	39.60	Blaine Tech
	8/14/2014	73.40	29.96	29.13	0.83	44.06	Blaine Tech
	8/19/2014	73.40	29.91	29.15	0.76	44.06	Blaine Tech
	8/29/2014	73.40	30.15	29.02	1.13	44.10	Blaine Tech
	9/5/2014	73.40	30.19	29.08	1.11	44.04	Blaine Tech
	9/11/2014	73.40	30.66	28.91	1.75	44.05	Blaine Tech
	9/18/2014	73.40	30.41	29.15	1.26	43.94	Blaine Tech
	9/26/2014	73.40	30.18	29.14	1.04	44.00	Blaine Tech
	10/1/2014	73.40	30.38	29.05	1.33	44.02	Blaine Tech
	10/6/2014	73.40	30.10	29.12	0.98	44.04	Blaine Tech
	10/13/2014	73.40	30.28	29.07	1.21	44.03	Blaine Tech
	10/23/2014	73.40	30.72	28.95	1.77	44.01	Blaine Tech
	10/27/2014	73.40	30.21	29.06	1.15	44.05	Blaine Tech
	11/3/2014	73.40	30.62	28.93	1.69	44.05	Blaine Tech
	11/18/2014	73.40	30.54	29.11	1.43	43.93	Blaine Tech
	11/25/2014	73.40	29.48	29.14	0.34	44.18	Blaine Tech
	12/3/2014	73.40	31.02	28.93	2.09	43.95	Blaine Tech
	12/12/2014	73.40	31.05	29.40	1.65	43.59	Blaine Tech
	12/19/2014	73.40	31.11	29.40	1.71	43.57	Blaine Tech
	4/20/2015	73.40	32.44	29.04	3.40	43.51	Blaine Tech
	10/19/2015	73.40	35.16	29.31	5.85	42.63	Blaine Tech
	3/14/2016	73.40	34.72	---	---	38.68	Blaine Tech
	4/11/2016	73.40	32.28	---	---	41.12	Blaine Tech
	6/29/2016	73.40	33.62	---	---	39.78	Blaine Tech
	8/22/2016	73.40	33.66	---	---	39.74	Blaine Tech
	10/3/2016	73.40	34.20	---	---	39.20	Blaine Tech
	3/24/2017	73.40	31.25	---	---	42.15	CH2M
	4/17/2017	73.40	30.40	---	---	43.00	Blaine Tech
	10/2/2017	73.40	34.52	---	---	38.88	Blaine Tech
	4/16/2018	73.40	34.26	---	---	39.14	Blaine Tech
	11/5/2018	73.40	34.43	---	---	38.97	Blaine Tech
	4/16/2019	73.40	32.29	---	---	41.11	Blaine Tech
	11/1/2019	73.40	33.76	---	---	39.64	Blaine Tech
MW-SF-14	8/14/2007	78.16	27.68	---	---	50.48	Geomatrix
	8/21/2007	78.16	27.60	---	---	50.56	Geomatrix
	8/28/2007	78.16	27.53	---	---	50.63	Stantec
	9/11/2007	78.16	27.66	---	---	50.50	Geomatrix
	10/5/2007	78.16	27.75	---	---	50.41	Geomatrix
	11/2/2007	78.16	29.83	---	---	48.33	Geomatrix
	11/12/2007	78.16	NM	---	---	NC	Secor
	8/15/2008	78.16	29.77	29.24	0.53	48.81	Envent
	10/17/2008	78.16	29.52	29.50	0.02	48.66	Envent
	12/18/2008	78.16	30.62	---	---	47.54	Envent
	1/15/2009	78.16	30.08	---	---	48.08	Envent
	3/24/2009	78.16	29.73	---	---	48.43	Envent

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	4/21/2009	78.16	29.61	---	---	48.55	Envent
	7/21/2009	78.16	29.20	---	---	48.96	Envent
	10/19/2009	78.16	NM	---	---	NC	Blaine Tech
	11/6/2009	78.16	30.48	---	---	47.68	Kinder Morgan
	12/9/2009	78.16	30.68	---	---	47.48	Kinder Morgan
	6/22/2010	78.16	26.17	---	---	51.99	Blaine Tech
	10/4/2010	78.16	30.54	---	---	47.62	Blaine Tech
	4/12/2011	78.16	29.55	---	---	48.61	Blaine Tech
	10/10/2011	78.16	29.84	---	---	48.32	Blaine Tech
	4/16/2012	78.16	NM	---	---	NC	Blaine Tech
	7/9/2012	78.16	NM	---	---	NC	Blaine Tech
	10/15/2012	78.16	30.02	---	---	48.14	Blaine Tech
	4/8/2013	78.16	32.75	---	---	45.41	Blaine Tech
	5/24/2013	78.16	32.75	---	---	45.41	Blaine Tech
	9/26/2013	78.16	34.50	34.25	0.25	43.86	Blaine Tech
	10/7/2013	78.16	NM	---	---	NC	Blaine Tech
	11/14/2013	78.16	33.57	33.19	0.38	44.89	Blaine Tech
	4/14/2014	78.16	34.81	33.56	1.25	44.35	Blaine Tech
	8/8/2014	78.16	34.24	33.98	0.26	44.13	Blaine Tech
	10/14/2014	78.16	34.36	33.80	0.56	44.25	Blaine Tech
	10/23/2014	78.16	34.49	34.43	0.06	43.72	Blaine Tech
	10/27/2014	78.16	34.40	33.97	0.43	44.10	Blaine Tech
	11/18/2014	78.16	34.27	34.07	0.20	44.05	Blaine Tech
	4/20/2015	78.16	34.48	---	---	43.68	Blaine Tech
	10/21/2015	78.16	35.25	---	---	42.91	Blaine Tech
	3/14/2016	78.16	36.21	---	---	41.95	Blaine Tech
	4/11/2016	78.16	37.14	---	---	41.02	Blaine Tech
	6/29/2016	78.16	37.36	---	---	40.80	Blaine Tech
	8/22/2016	78.16	DRY	---	---	NC	Blaine Tech
	10/3/2016	78.16	DRY	---	---	NC	Blaine Tech
	4/17/2017	78.16	35.40	---	---	42.76	Blaine Tech
	10/2/2017	78.16	DRY	---	---	NC	Blaine Tech
	4/16/2018	78.16	DRY	---	---	NC	Blaine Tech
	11/5/2018	78.16	DRY	---	---	NC	Blaine Tech
	4/16/2019	78.16	DRY	---	---	NC	Blaine Tech
	4/16/2019	78.16	DRY	---	---	NC	Blaine Tech
MW-SF-15	8/14/2007	78.27	27.78	27.75	0.03	50.51	Geomatrix
	8/21/2007	78.27	27.69	27.65	0.04	50.61	Geomatrix
	8/28/2007	78.27	27.65	27.61	0.04	50.65	Stantec
	9/11/2007	78.27	27.62	---	---	50.65	Geomatrix
	10/5/2007	78.27	28.15	---	---	50.12	Geomatrix
	11/2/2007	78.27	30.45	30.20	0.25	48.02	Geomatrix
	11/12/2007	78.27	28.75	---	---	49.52	Stantec
	8/15/2008	78.27	30.12	29.35	0.77	48.77	Envent
	10/17/2008	78.27	30.80	29.44	1.36	48.56	Envent
	10/21/2008	78.27	30.80	29.31	1.49	48.66	Envent
	12/18/2008	78.27	32.11	30.56	1.55	47.40	Envent
	1/15/2009	78.27	31.75	29.70	2.05	48.16	Envent
	3/24/2009	78.27	30.32	29.93	0.39	48.26	Envent
	4/21/2009	78.27	29.96	29.60	0.36	48.60	Envent
	7/21/2009	78.27	30.45	---	---	47.82	Envent
	10/19/2009	78.27	NM	---	---	NC	Blaine Tech
	11/4/2009	78.27	31.10	30.45	0.36	47.46	Kinder Morgan
	12/9/2009	78.27	30.87	---	---	47.40	Kinder Morgan
	10/4/2010	78.27	30.66	30.65	0.01	47.62	Blaine Tech
	4/12/2011	78.27	30.50	29.40	1.10	48.65	Blaine Tech
	10/10/2011	78.27	29.60	---	---	48.67	Blaine Tech
	12/2/2011	78.27	31.40	30.05	1.35	47.95	Blaine Tech
	4/16/2012	78.27	32.48	32.39	0.09	45.86	Blaine Tech
	7/9/2012	78.27	NM	---	---	NC	Blaine Tech
	10/15/2012	78.16	33.04	---	---	45.12	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	4/8/2013	78.27	33.90	---	---	44.37	Blaine Tech
	5/24/2013	78.27	33.90	---	---	44.37	Blaine Tech
	10/7/2013	78.27	NM	---	---	NC	Blaine Tech
	11/14/2013	78.27	33.41	33.38	0.03	44.88	Blaine Tech
	4/18/2014	78.27	33.85	---	---	44.42	Blaine Tech
	8/8/2014	78.27	34.87	33.96	0.91	44.13	Blaine Tech
	8/13/2014	78.27	34.89	33.95	0.94	44.13	Blaine Tech
	8/19/2014	78.27	34.90	33.94	0.96	44.14	Blaine Tech
	8/29/2014	78.27	35.65	35.38	0.27	42.84	Blaine Tech
	10/27/2014	78.27	35.82	---	---	42.45	Blaine Tech
	4/20/2015	78.27	36.63	34.12	2.51	43.65	Blaine Tech
	10/19/2015	78.27	37.90	34.87	3.03	42.79	Blaine Tech
	11/17/2015	78.27	37.71	35.36	2.35	42.44	Kinder Morgan
	3/14/2016	78.27	39.70	---	---	38.57	Blaine Tech
	4/11/2016	78.27	37.24	---	---	41.03	Blaine Tech
	6/29/2016	78.27	38.70	---	---	39.57	Blaine Tech
	8/22/2016	78.27	38.78	---	---	39.49	Blaine Tech
	10/3/2016	78.27	39.56	---	---	38.71	Blaine Tech
	3/23/2017	78.27	36.10	---	---	42.17	CH2M
	4/17/2017	78.27	35.39	---	---	42.88	Blaine Tech
	10/2/2017	78.27	39.40	---	---	38.87	Blaine Tech
	4/16/2018	78.27	39.10	---	---	39.17	Blaine Tech
	11/5/2018	78.27	39.00	---	---	39.27	Blaine Tech
	4/23/2019	78.27	36.15	---	---	42.12	Blaine Tech
	10/28/2019	78.27	38.92	---	---	39.35	Blaine Tech
MW-SF-16	8/14/2007	78.21	27.68	---	---	50.53	Geomatrix
	8/21/2007	78.21	27.33	---	---	50.88	Geomatrix
	8/28/2007	78.21	27.51	---	---	50.70	Stantec
	9/11/2007	78.21	27.59	---	---	50.62	Geomatrix
	10/5/2007	78.21	28.10	---	---	50.11	Geomatrix
	11/2/2007	78.21	29.81	---	---	48.40	Geomatrix
	11/12/2007	78.21	28.40	---	---	49.81	Stantec
	8/15/2008	78.21	29.36	---	---	48.85	Envent
	10/17/2008	78.21	29.51	---	---	48.70	Envent
	12/18/2008	78.21	30.94	---	---	47.27	Envent
	1/15/2009	78.21	30.01	30.00	0.01	48.21	Envent
	3/24/2009	78.21	29.82	---	---	48.39	Envent
	4/21/2009	78.21	29.60	---	---	48.61	Envent
	7/21/2009	78.21	30.36	---	---	47.85	Envent
	10/19/2009	78.21	NM	---	---	NC	Blaine Tech
	11/4/2009	78.21	30.58	---	---	47.63	Kinder Morgan
	2/4/2010	78.21	30.36	---	---	47.85	Kinder Morgan
	9/3/2010	78.21	30.25	---	---	47.96	Kinder Morgan
	10/4/2010	78.21	30.49	---	---	47.72	Blaine Tech
	4/12/2011	78.21	29.52	---	---	48.69	Blaine Tech
	10/10/2011	78.21	29.85	---	---	48.36	Blaine Tech
	4/16/2012	78.21	NM	---	---	NC	Blaine Tech
	7/9/2012	78.21	NM	---	---	NC	Blaine Tech
	10/15/2012	78.21	32.47	---	---	45.74	Blaine Tech
	4/8/2013	78.21	32.97	32.73	0.24	45.43	Blaine Tech
	5/24/2013	78.21	32.97	32.73	0.24	45.43	Blaine Tech
	10/7/2013	78.21	NM	---	---	NC	Blaine Tech
	11/14/2013	78.21	33.80	33.21	0.59	44.88	Blaine Tech
	4/18/2014	78.21	34.20	33.65	0.55	44.45	Blaine Tech
	8/8/2014	78.21	34.06	34.05	0.01	44.16	Blaine Tech
	10/27/2014	78.21	34.25	---	---	43.96	Blaine Tech
	4/20/2015	78.21	34.52	---	---	43.69	Blaine Tech
	6/8/2015	78.21	35.17	35.00	0.17	43.18	Blaine Tech
	10/21/2015	78.21	34.56	---	---	43.65	Kinder Morgan
	3/14/2016	78.21	39.60	---	---	38.61	Blaine Tech
	4/11/2016	78.21	37.15	---	---	41.06	Blaine Tech

Table 9. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells

SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation (feet msl)	Measured Depth to Groundwater (feet btoc)	Measured Depth to Product (feet btoc)	Apparent Product Thickness (feet)	Corrected Groundwater Elevation (feet msl)	Gauged By
	6/29/2016	78.21	38.35	---	---	39.86	Blaine Tech
	8/22/2016	78.21	38.51	---	---	39.70	Blaine Tech
	10/3/2016	78.21	39.35	---	---	38.86	Blaine Tech
	4/17/2017	78.21	35.20	---	---	43.01	Blaine Tech
	10/2/2017	78.21	DRY	---	---	NC	Blaine Tech
	4/16/2018	78.21	DRY	---	---	NC	Blaine Tech
	11/5/2018	78.21	DRY	---	---	NC	Blaine Tech
	4/16/2019	78.21	DRY	---	---	NC	Blaine Tech
	10/28/2019	78.21	DRY	---	---	NC	Blaine Tech

Notes:

Corrected groundwater elevations are based on specific gravity data collected during baildown testing, or a default value of 0.8 foot msl was used for wells not tested.

--- = not detected or not applicable

DRY = no measurable water observed in the well

feet btoc = feet below top of casing

feet msl = feet above mean sea level based on National Geodetic Vertical Datum of 1929

NC = not calculated

NM = not measured

Figures

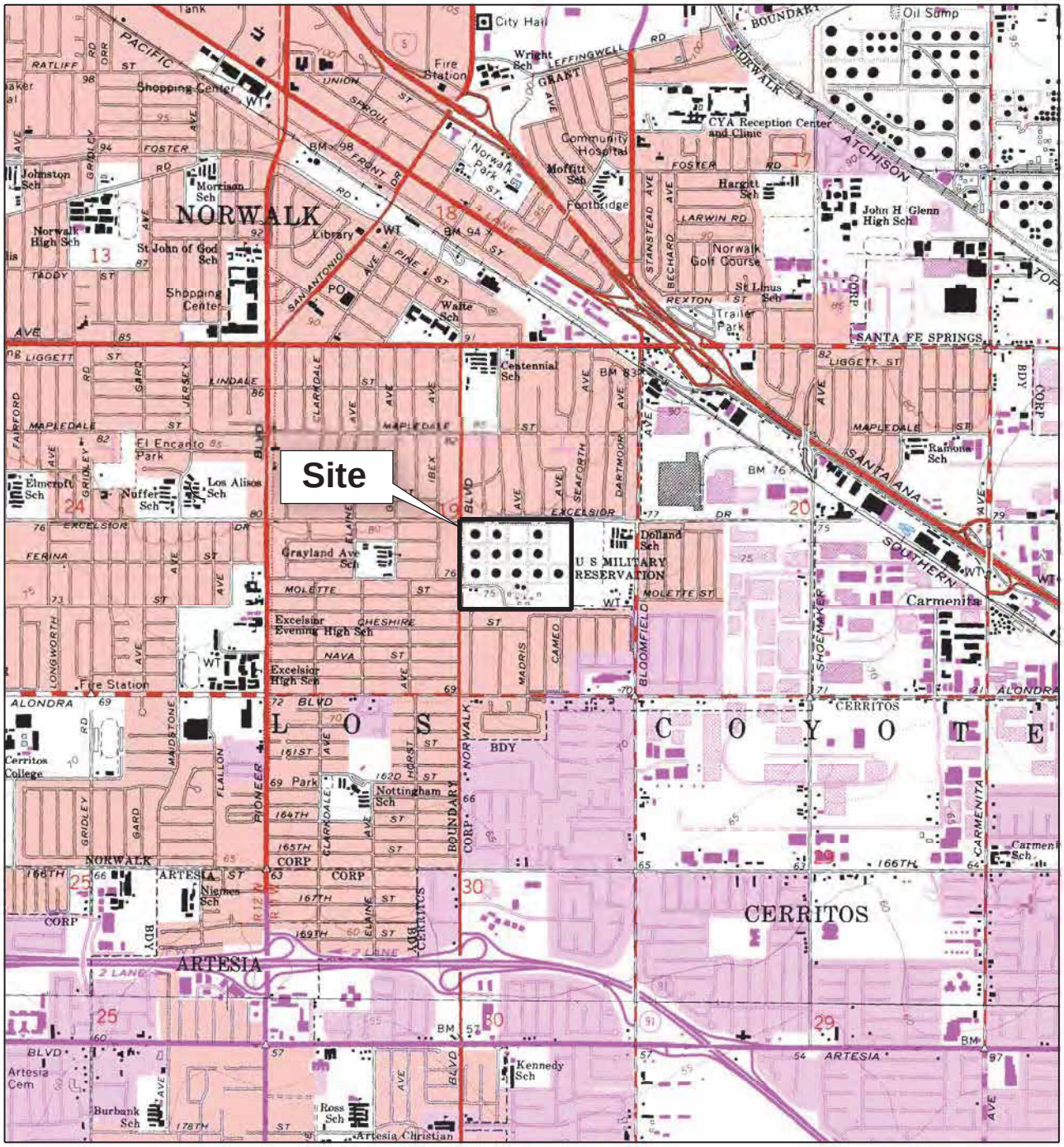

Figure 1. Site Location Map
SFPP Norwalk Pump Station
Norwalk, California

BASEMAP MODIFIED FROM U.S.G.S. 7.5 MINUTE QUADRANGLE MAP
LOS ALAMITOS 1964, CALIFORNIA. PHOTO-REVISED 1981.
WHITTIER 1965, CALIFORNIA. PHOTO-REVISED 1981.

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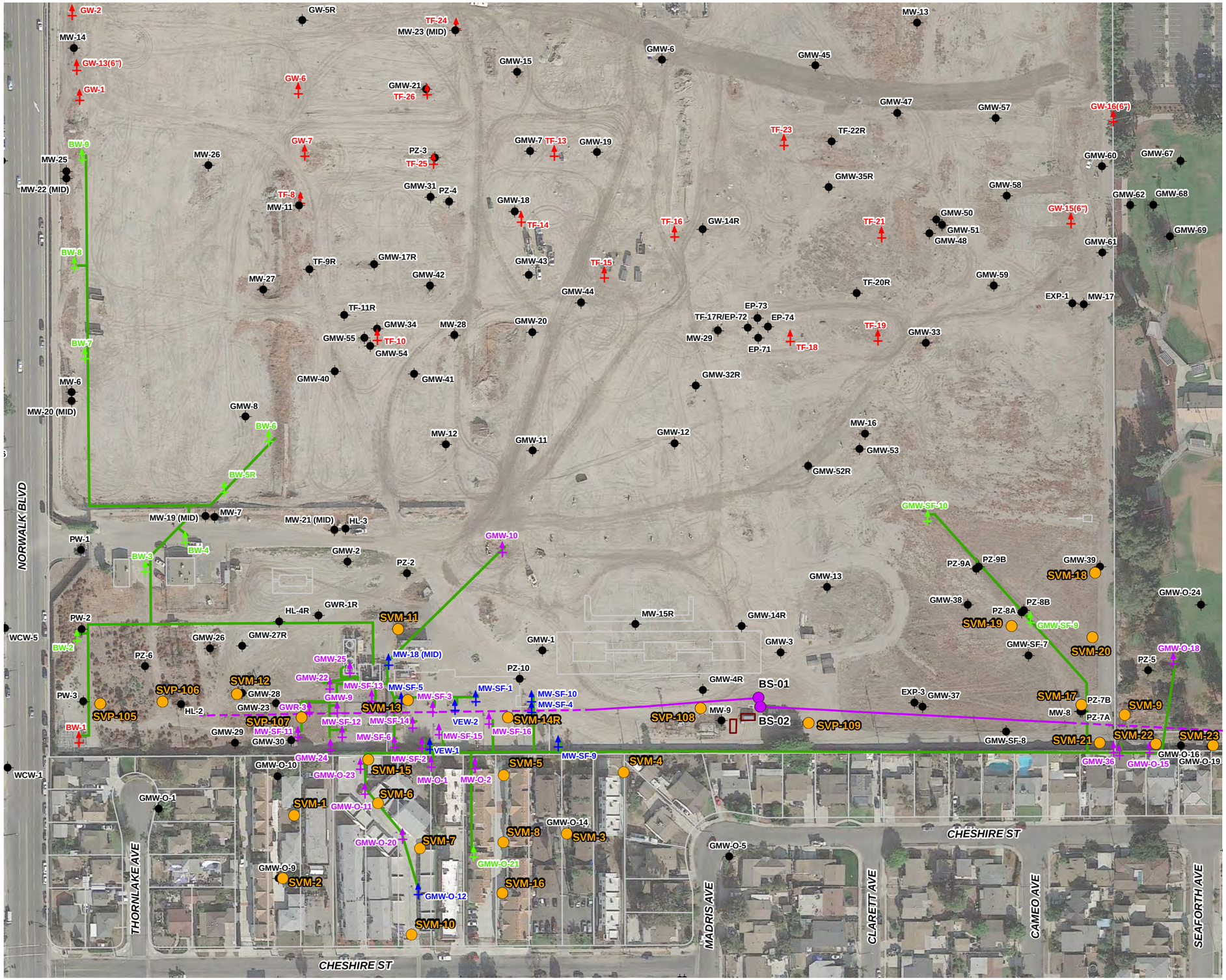

LEGEND

- Soil Vapor Probe/Soil Vapor Monitoring Probe
- Horizontal Biosparge Well Entry Point
- Existing Groundwater Monitoring Well
- Existing Remediation Well
- Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells
- Kinder Morgan Soil Vapor Extraction Wells
- Kinder Morgan Total Fluids and/or Groundwater Extraction Wells
- Kinder Morgan Remediation Piping Layout (Above Ground and Below Ground)
- Horizontal Biosparge Well (Dashed Line Depicts Approximate Lateral Extent of Well Screen)
- Air Compressor System

Imagery Source:
Google Earth December 3, 2017.

N

0 75 150 300
Feet

1 inch = 150 feet

Figure 2. Remediation System Layout
SFPP Norwalk Pump Station
Norwalk, California

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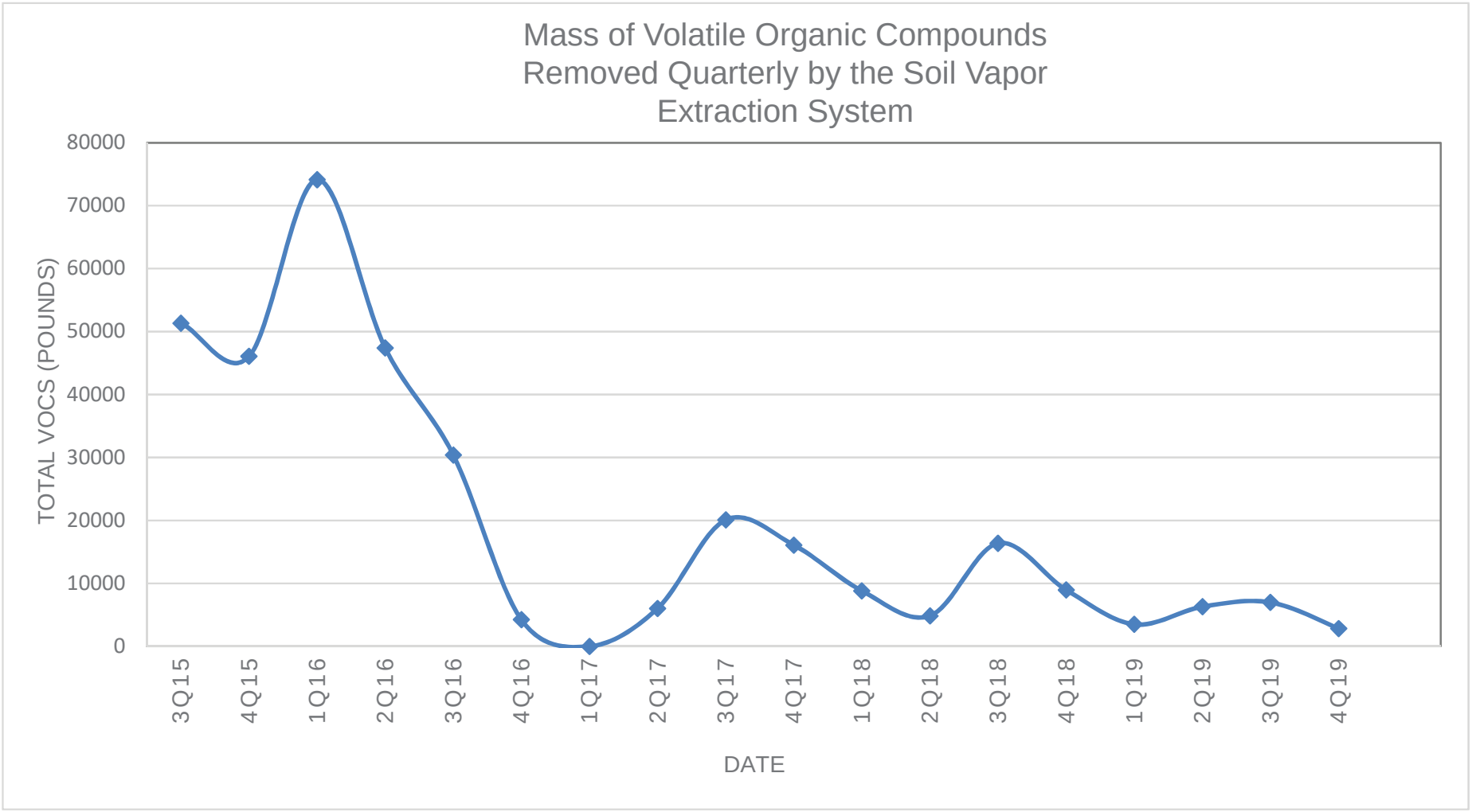
\\BROOKSIDEFILES\GIS_SHARE\ENBG\00_PROJ\K\KINDERMORGAN\NORWALK\MAPFILES\2019\FIGURE_2_REMEDIATION_SYSTEM_LAYOUT.MXD AESPEJO 10/9/2019



Note:
VOC = volatile organic compound

Figure 3. Mass of VOCs Removed Quarterly by the Soil Vapor Extraction System
SFPP Norwalk Pump Station
Norwalk, California

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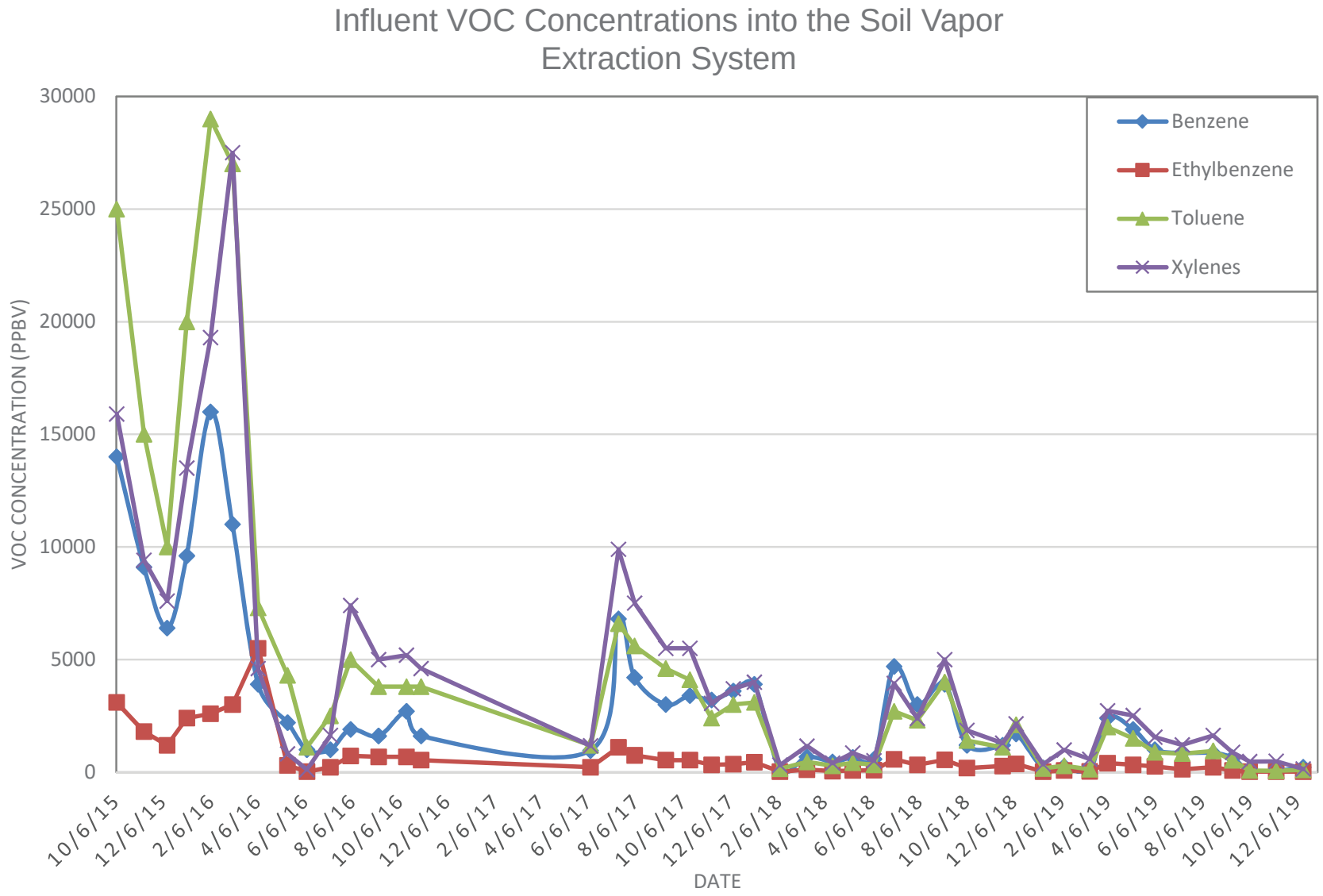

Notes:
PPBV = parts per billion by volume
VOC = volatile organic compound

Figure 4. Influent VOC Concentrations into the Soil Vapor Extraction System
SFPP Norwalk Pump Station
Norwalk, California

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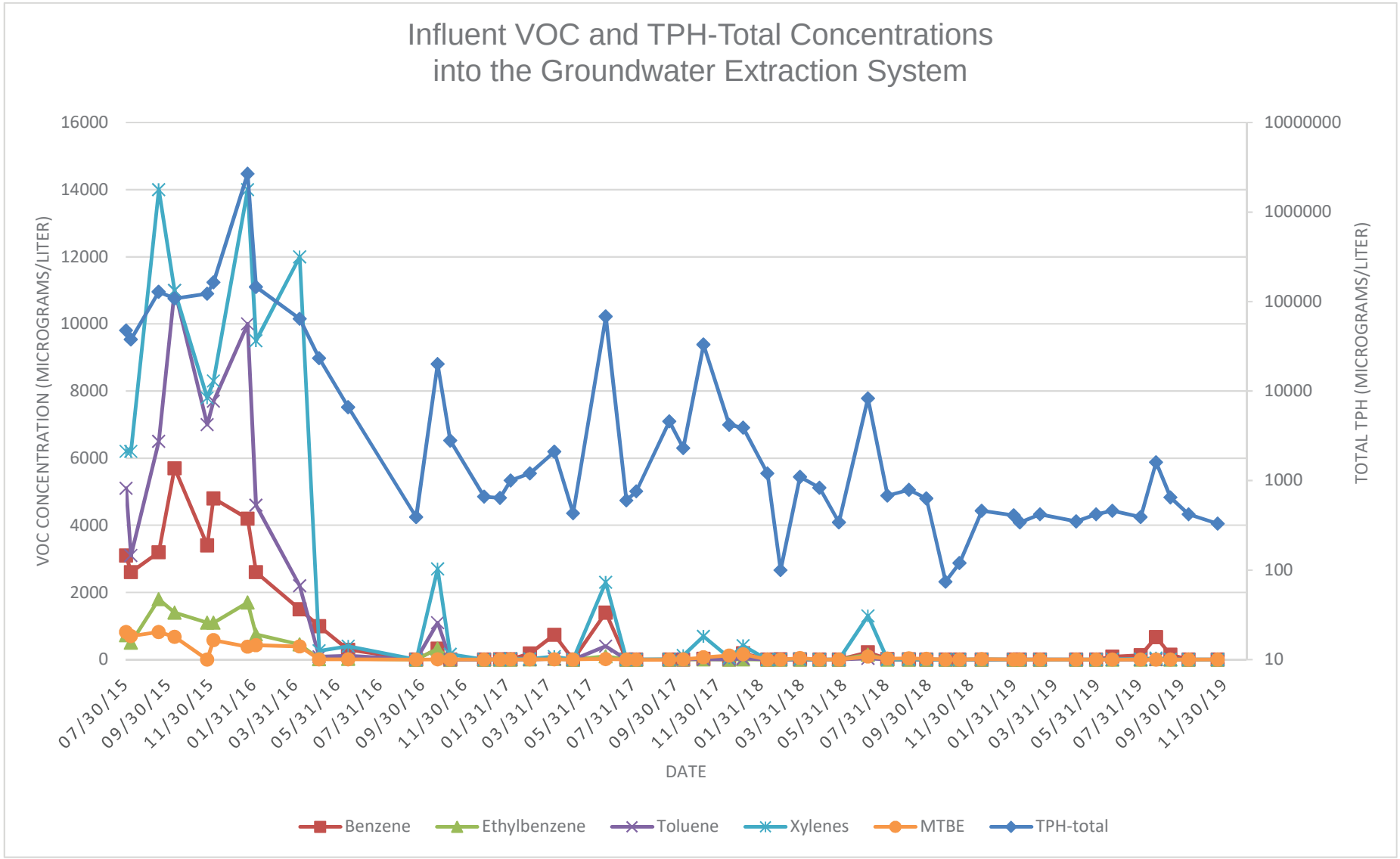

Notes:
TPH = total petroleum hydrocarbons
VOC = volatile organic compound

Figure 5. Influent VOC and TPH-Total Concentrations into the Groundwater Extraction System
SFPP Norwalk Pump Station
Norwalk, California

PPS0109201309SCO

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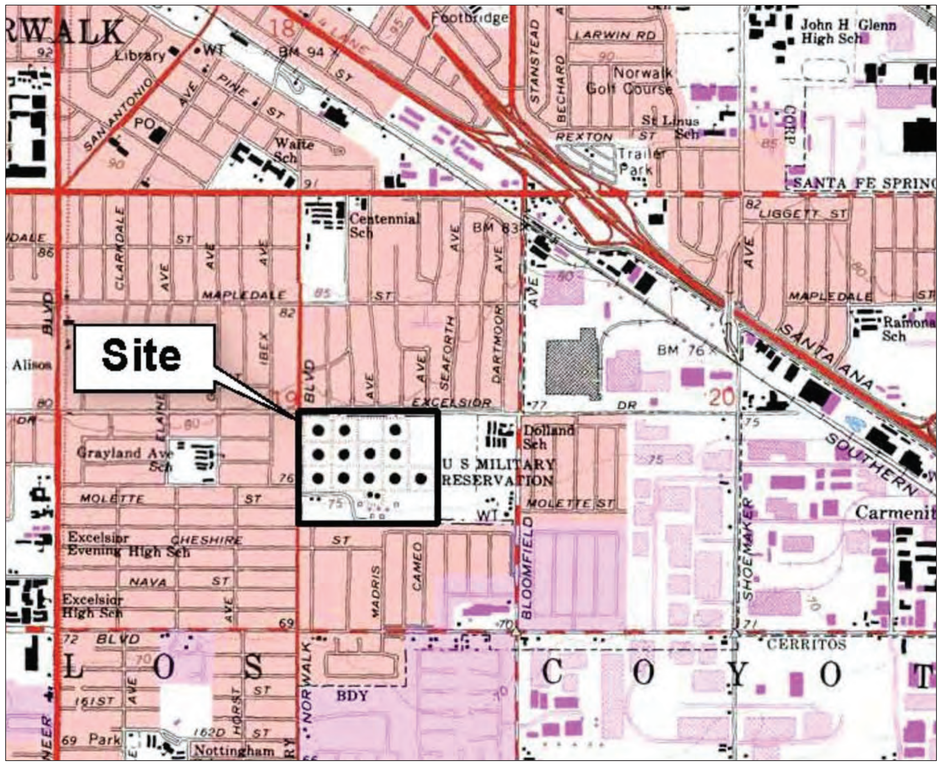
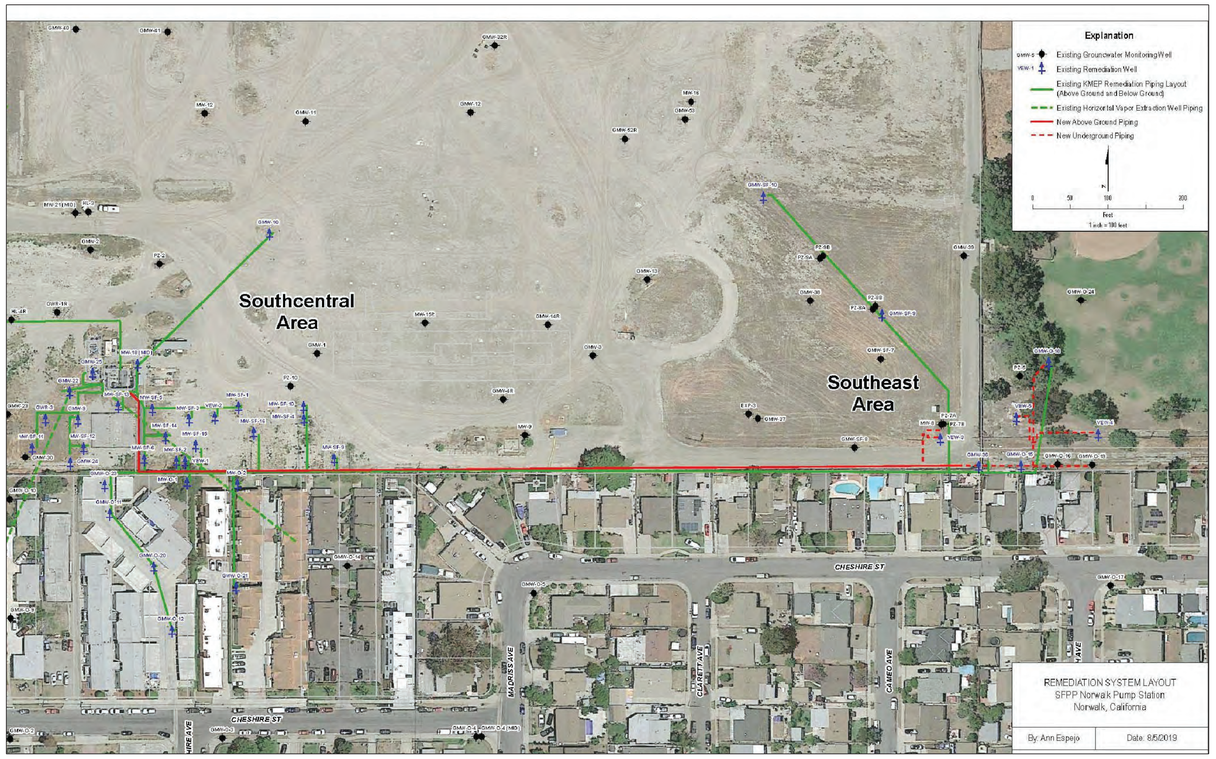
Appendix A
Upgrade to the Southeastern Soil Vapor Extraction System

UPGRADE TO THE SOUTHEAST
SOIL VAPOR EXTRACTION SYSTEM
NORWALK, CALIFORNIA



AREA MAP



SITE VICINITY MAP

CONTENTS

OCCUPANCY GROUP: U (UNKOWN) - LOCATION IS IN AN EXISTING PARK, AN EASEMENT, AND A FORMER DEFENSE FUEL SUPPORT POINT FACILITY.

USE: THE SOIL VAPOR EXTRACTION (SVE) SYSTEM IS TO REMOVE VOLATILE ORGANIC COMPOUNDS FROM THE SOIL VAPOR AND MITIGATE OFFSITE MIGRATION OF VOCS DURING SPARGING OPERATIONS. REMEDIAL ACTIVITIES AT THE SITE ARE UNDER THE OVERSIGHT OF THE REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION.

☐ AS-BUILT
☒ PERMIT August 2019
☐ BID
☐ CONSTRUCTION

PREPARED FOR:
KINDER MORGAN, INC

REGISTERED PROFESSIONAL ENGINEER
GINO NGUYEN
No. C 62140
CIVIL
STATE OF CALIFORNIA

08/13/2019

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
			D. BAYLIS	XXX			
			REVISION				

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15306 NORWALK BOULEVARD
KINDER MORGAN, INC.
NORWALK, CALIFORNIA

JACOBS

COVER SHEET
DRAWING INDEX
LOCATION MAP

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	G-01
SHEET	1 of 13

Project Location PW: 660076 - KMEP Norwalk 2015 Startup Test / DESIGN/ D3155500-SFPP NORWALK VAULTS AND PIPING

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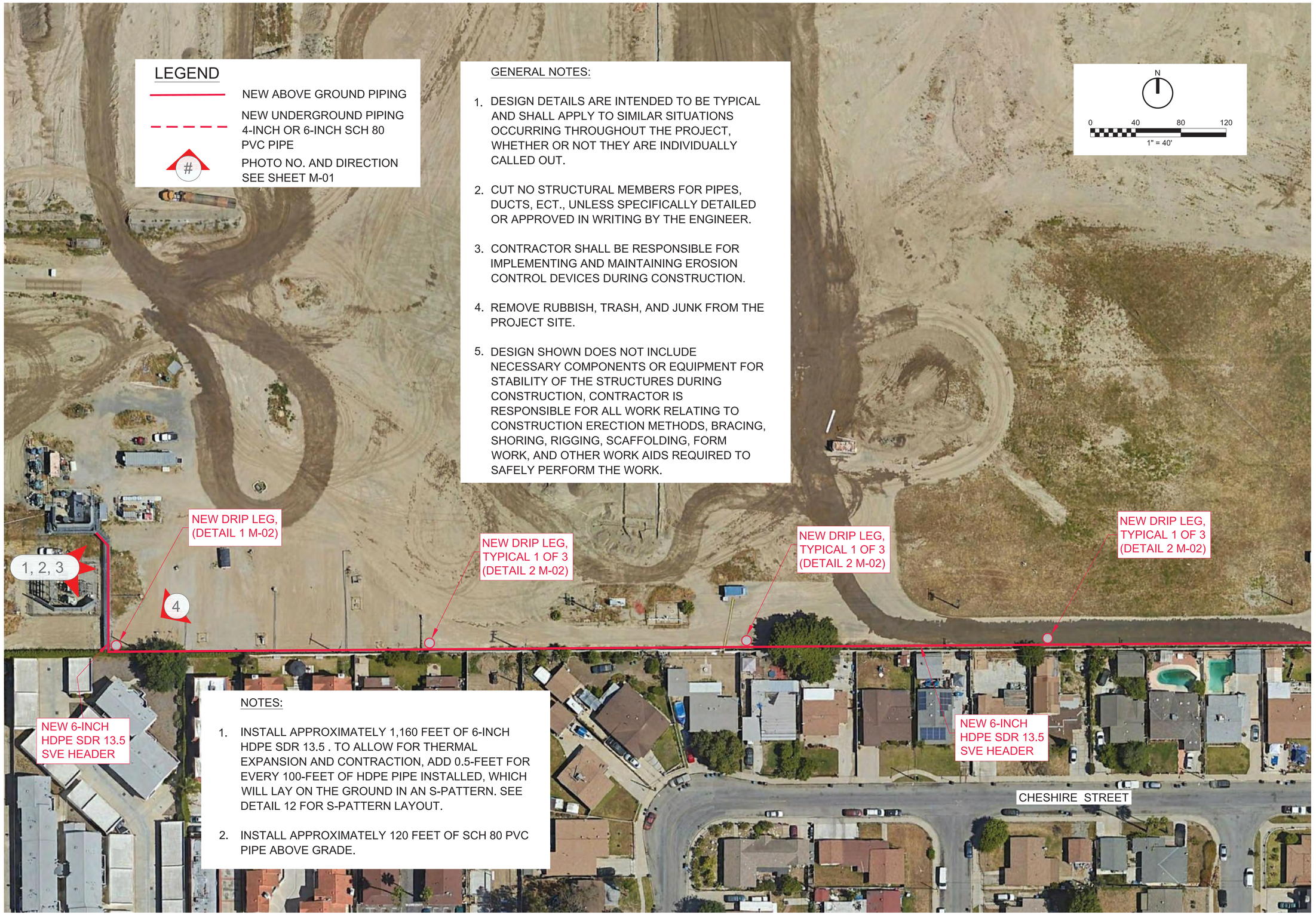

GENERAL NOTES:

1. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
2. CUT NO STRUCTURAL MEMBERS FOR PIPES, DUCTS, ECT., UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION CONTROL DEVICES DURING CONSTRUCTION.
4. REMOVE RUBBISH, TRASH, AND JUNK FROM THE PROJECT SITE.
5. DESIGN SHOWN DOES NOT INCLUDE NECESSARY COMPONENTS OR EQUIPMENT FOR STABILITY OF THE STRUCTURES DURING CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR ALL WORK RELATING TO CONSTRUCTION ERECTION METHODS, BRACING, SHORING, RIGGING, SCAFFOLDING, FORM WORK, AND OTHER WORK AIDS REQUIRED TO SAFELY PERFORM THE WORK.

NOTES:

1. INSTALL APPROXIMATELY 1,160 FEET OF 6-INCH HDPE SDR 13.5 . TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION, ADD 0.5-FEET FOR EVERY 100-FEET OF HDPE PIPE INSTALLED, WHICH WILL LAY ON THE GROUND IN AN S-PATTERN. SEE DETAIL 12 FOR S-PATTERN LAYOUT.
2. INSTALL APPROXIMATELY 120 FEET OF SCH 80 PVC PIPE ABOVE GRADE.

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NORWALK, CALIFORNIA

JACOBS

SITE PLAN PIPING LAYOUT - 1
SOUTHCENTRAL AREA

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	C-01
SHEET	2 of 13

Project Location PW: 660076 - KMEP Norwalk 2015 Startup Test / DESIGN/ D3155500-SFPP NORWALK VAULTS AND PIPING

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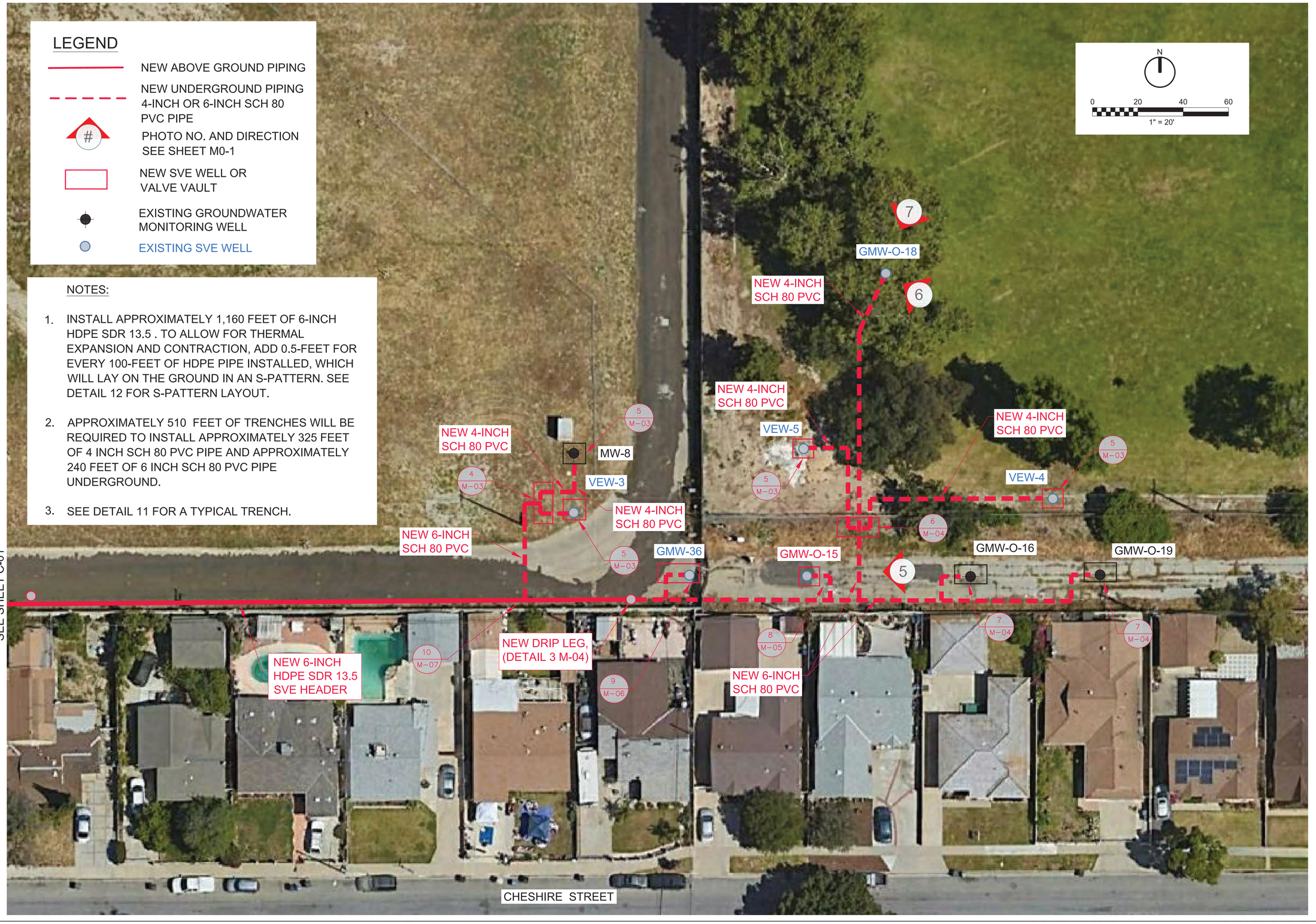

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NORWALK, CALIFORNIA

JACOBS

SITE PLAN PIPING LAYOUT - 2
SOUTHEAST AREA

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	C-02
SHEET	3 of 13

Project Location PW: 660078 - KMEP Norwalk 2015 Startup Test / DESIGN/ D3155500-SFPP NORWALK VAULTS AND PIPING
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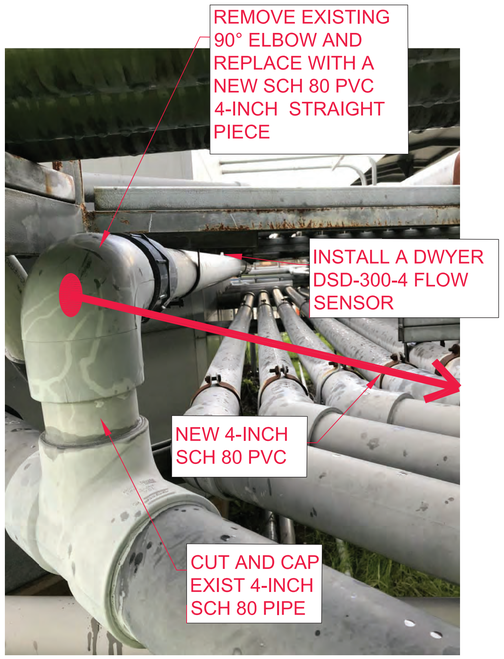

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

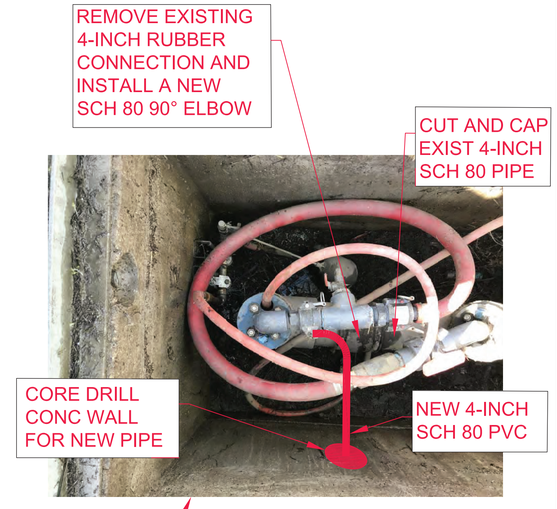

PHOTO 5

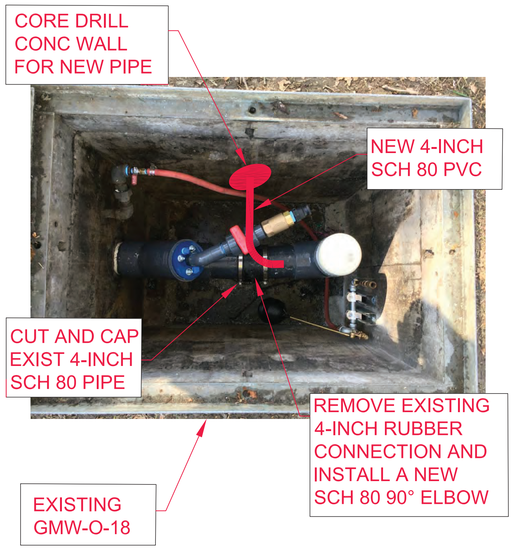

PHOTO 6

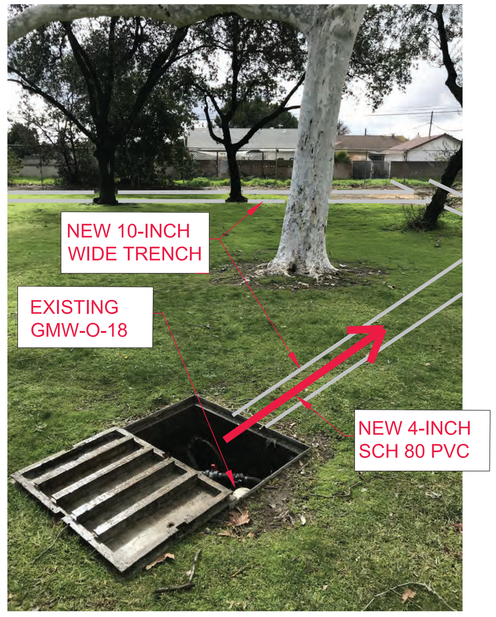

PHOTO 7

MECHANICAL NOTES:

1. GENERAL MECHANICAL NOTES APPLY TO ALL MECHANICAL DRAWINGS.
2. NOT ALL THE PIPE SUPPORTS ARE SHOWN IN THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED PIPE SUPPORTS TO INSTALL PIPING.
3. THE CONTRACTOR SHALL PROVIDE ALL PIPE FITTINGS SHOWN AND NOT SHOWN FOR A COMPLETE PIPING SYSTEM.
4. PIPING IS SHOWN DIAGRAMMATICALLY ON THE DRAWINGS. NOT EVERY OFFSET AND FITTING OR STRUCTURAL DIFFICULTY THAT MAY BE ENCOUNTERED HAS BEEN SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL MAKE MODIFICATIONS TO PIPING ALIGNMENT WHERE NECESSARY. MODIFICATIONS SHALL BE DONE AT NO ADDITIONAL COST TO THE OWNER AND SHALL BE DONE AFTER OWNER'S APPROVAL.
5. VERIFY LOCATION, SIZES, AND CONNECTION MATERIALS OF EXISTING PIPING AND EQUIPMENT BEFORE FABRICATING OR INSTALLING NEW PIPE.
6. PROTECTIVE COATING FOR ALL PIPES SHALL BE PER KINDER MORGAN SPECIFICATION 3.2 (INSTALLATION OF PRODUCT AND UTILITY PIPING)

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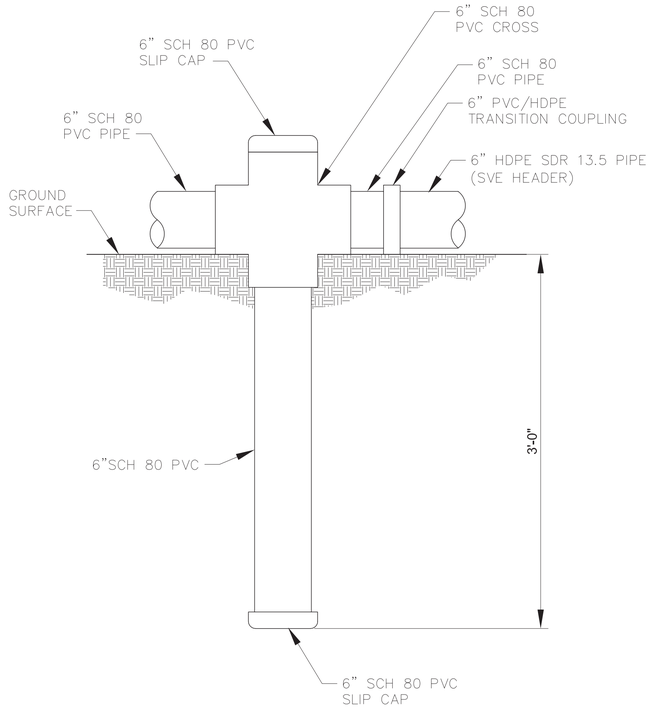
NORWALK, CALIFORNIA

JACOBS

MECHANICAL PIPE
ROUTING DETAILS & PHOTOS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

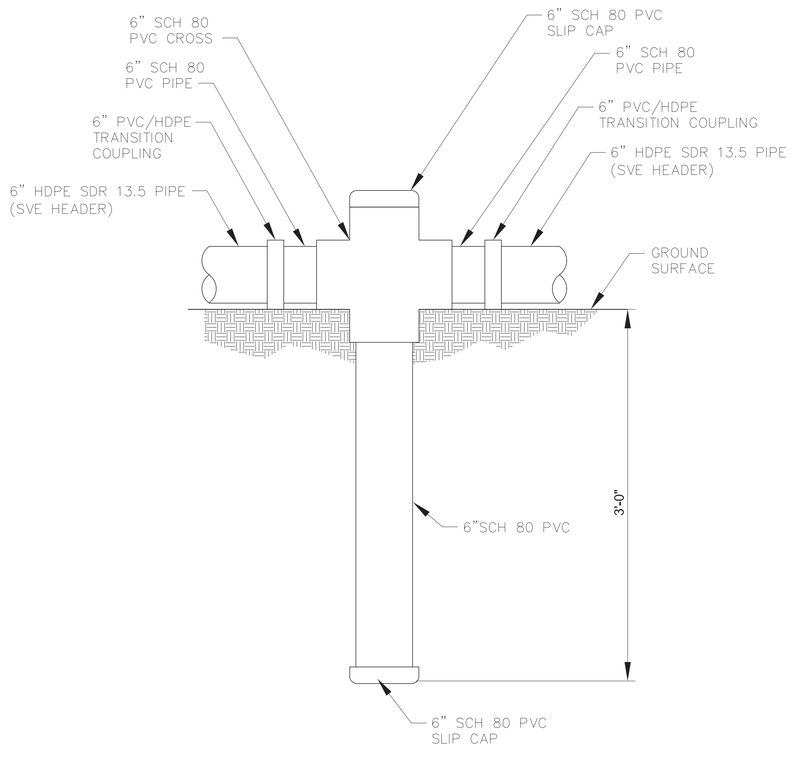
DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	M-01
SHEET	4 of 13



NOTE:

1. INSTAL ON WEST END OF HDPE HEADER WHERE PVC REACHES GRADE LEVEL FROM THE OVERHEAD PIPE RACKS NEAR SYSTEM PAD.

DRIP LEG DETAIL 1
NTS — C-01

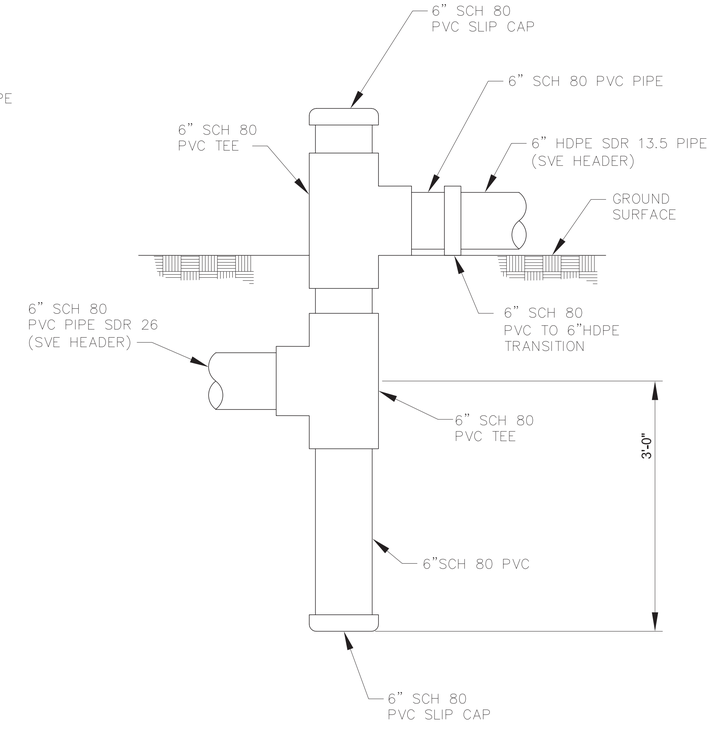


NOTE:

1. INSTALL 3 DRIP LEGS APPROXIMATELY 300-FEET APART AS SHOWN IN C-01

DRIP LEG DETAIL 2
NTS — C-01

(TYPICAL 1 OF 3)



NOTE:

1. DRIP LEG SHALL BE LOCATED AT LEAST 3'-0" WEST OF WHERE THE 4-INCH SCH 80 PVC PIPE FROM GMW-36 CONNECTS TO THE 6-INCH SCH 80 SVE HEADER.

DRIP LEG DETAIL 3
NTS — C-01

REGISTERED PROFESSIONAL ENGINEER
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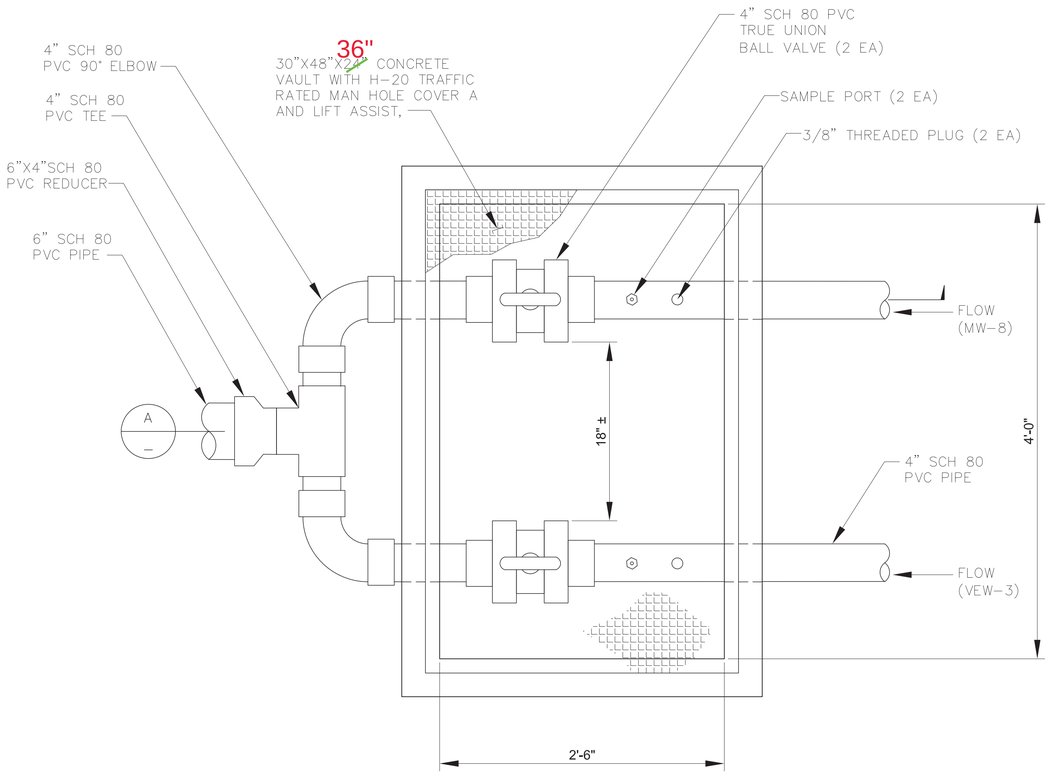
KINDER MORGAN, INC.
NORWALK, CALIFORNIA

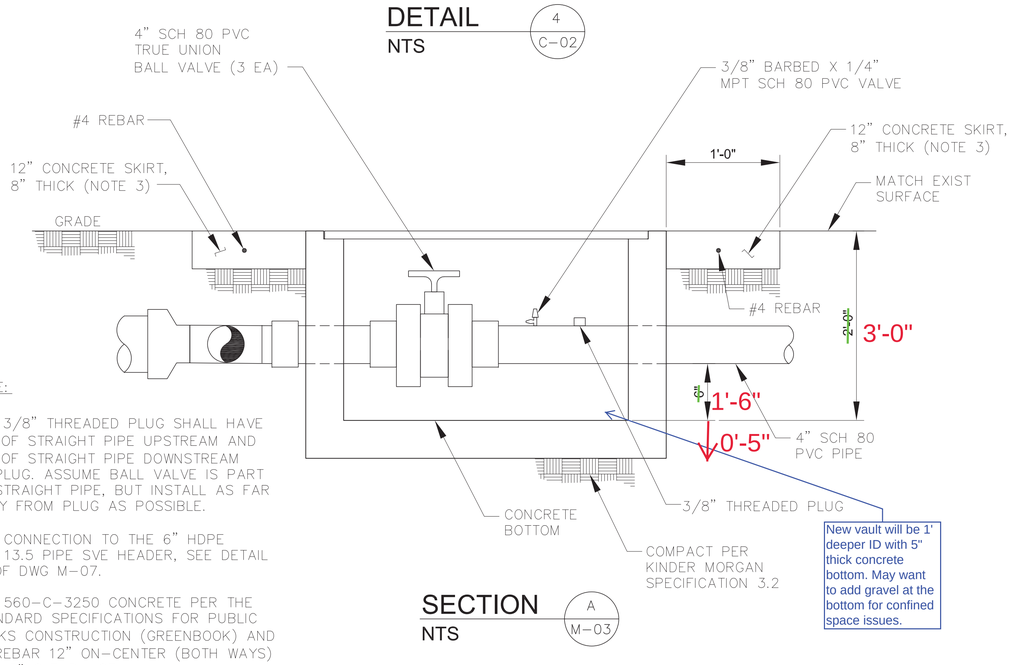
DRIP LEG DETAILS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	M-02
SHEET	5 of 13



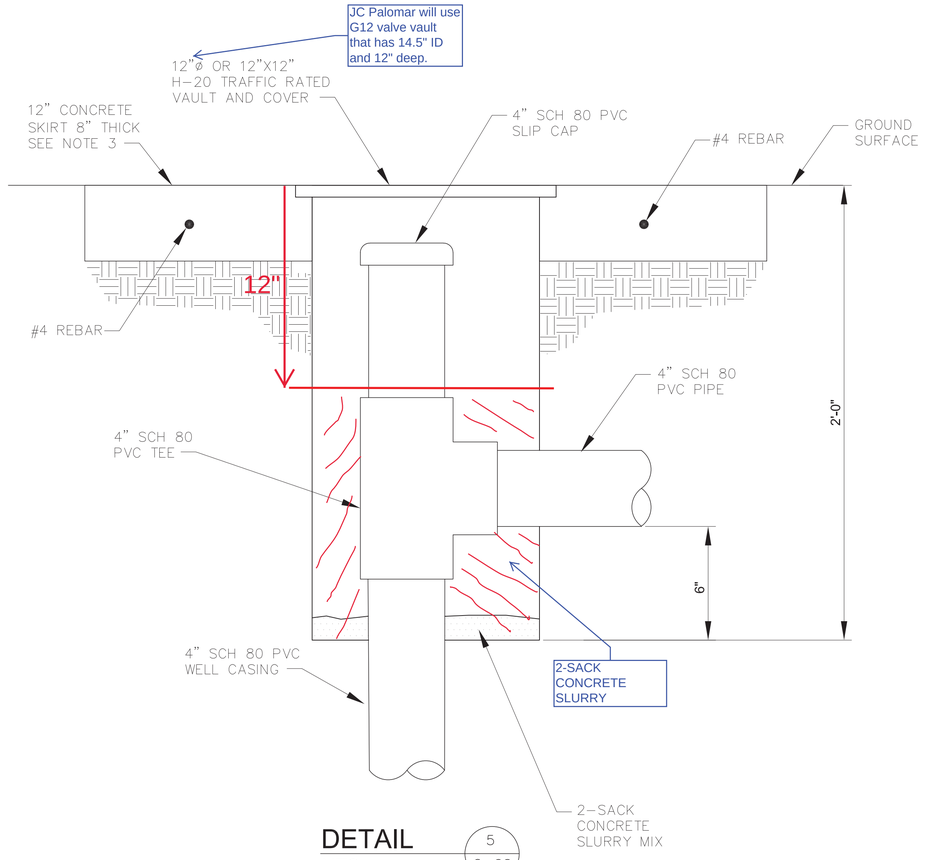
DETAIL 4 C-02
NTS



SECTION A M-03
NTS

NOTE:

1. THE 3/8" THREADED PLUG SHALL HAVE 40" OF STRAIGHT PIPE UPSTREAM AND 20" OF STRAIGHT PIPE DOWNSTREAM OF PLUG. ASSUME BALL VALVE IS PART OF STRAIGHT PIPE, BUT INSTALL AS FAR AWAY FROM PLUG AS POSSIBLE.
2. FOR CONNECTION TO THE 6" HDPE SDR 13.5 PIPE SVE HEADER, SEE DETAIL 10 OF DWG M-07.
3. USE 560-C-3250 CONCRETE PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) AND #4 REBAR 12" ON-CENTER (BOTH WAYS) WITH 3" CLEARANCE.



DETAIL 5 C-02
NTS

NOTES:

1. TYPICAL 1 OF 4 THE 4 LOCATIONS ARE VEW-3, VEW-4, VEW-5 AND MW-8
2. MW-8 IS AN EXISTING MONITORING WELL IN A WELL MONUMENT. REMOVE WELL MONUMENT AND MODIFY TO MATCH DETAIL 5.
3. USE 560-C-3250 CONCRETE PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) AND #4 REBAR 12" ON-CENTER (BOTH WAYS) WITH 3" CLEARANCE.

REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA
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KINDER MORGAN, INC.
NORWALK, CALIFORNIA

SVE WELL & VALVE VAULT DETAILS - 1

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	M-03
SHEET	6 of 13

Project Location PW: 660076 - KMEP Norwalk 2015 Startup Test / DESIGN/ D3155500-SFPP NORWALK VAULTS AND PIPING
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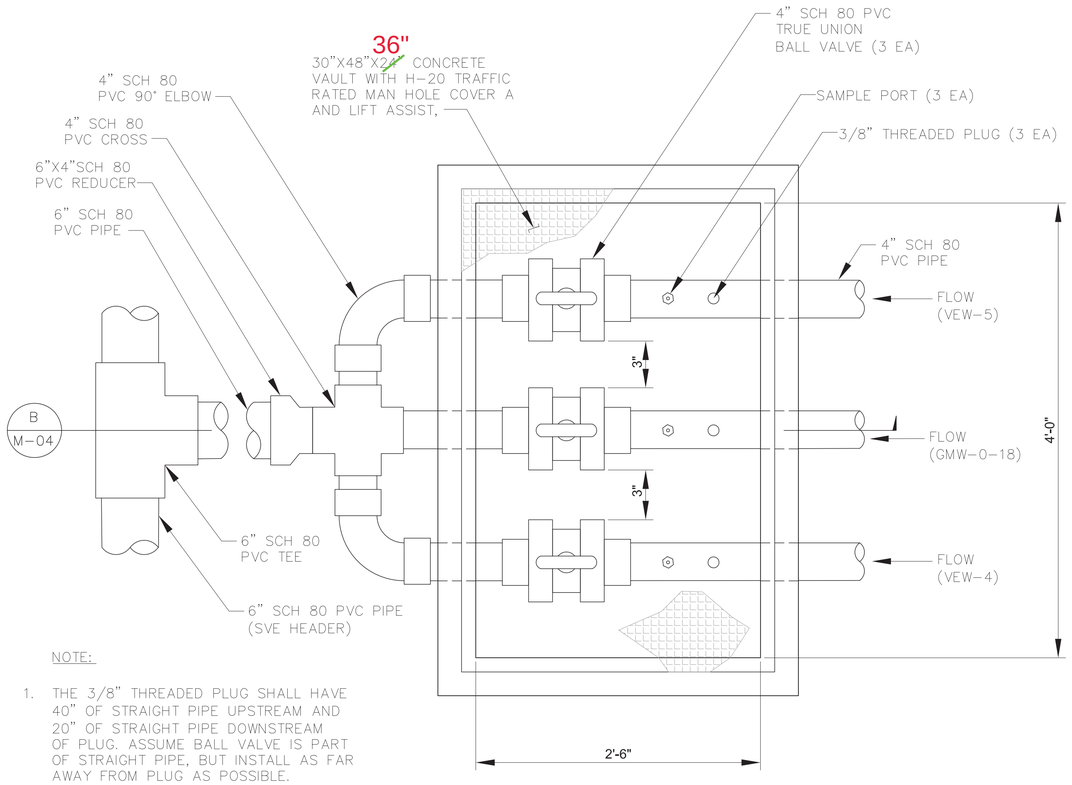
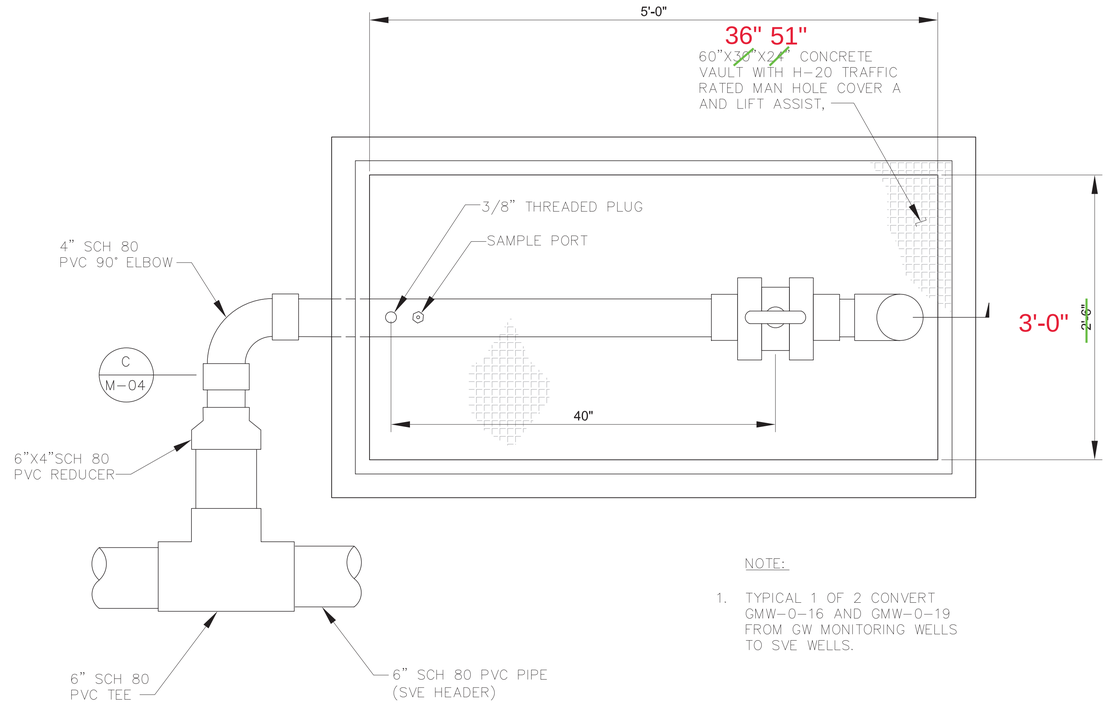


NOTE:

1. THE 3/8" THREADED PLUG SHALL HAVE 40" OF STRAIGHT PIPE UPSTREAM AND 20" OF STRAIGHT PIPE DOWNSTREAM OF PLUG. ASSUME BALL VALVE IS PART OF STRAIGHT PIPE, BUT INSTALL AS FAR AWAY FROM PLUG AS POSSIBLE.

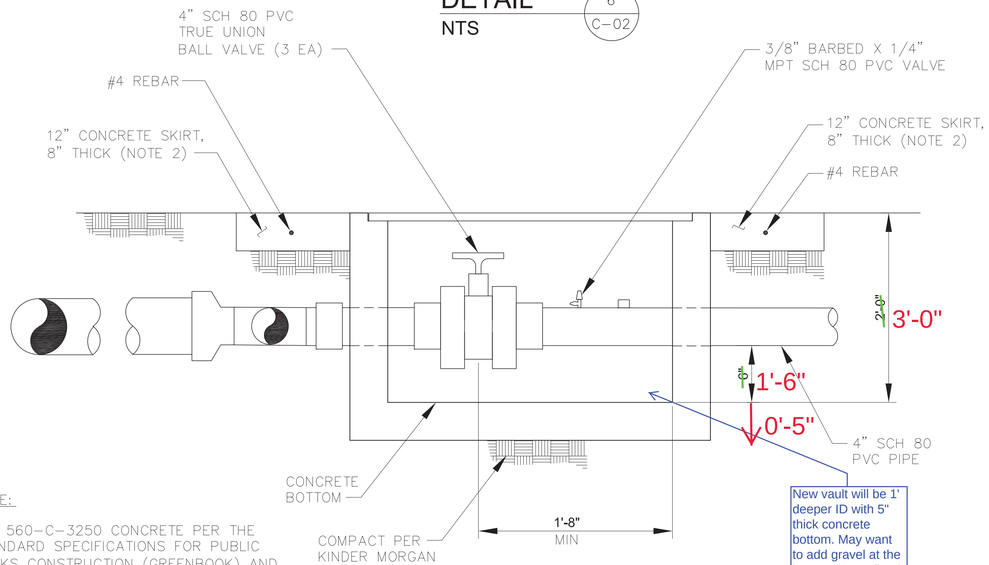
DETAIL 6 C-02
NTS



NOTE:

1. TYPICAL 1 OF 2 CONVERT GMW-0-16 AND GMW-0-19 FROM GW MONITORING WELLS TO SVE WELLS.

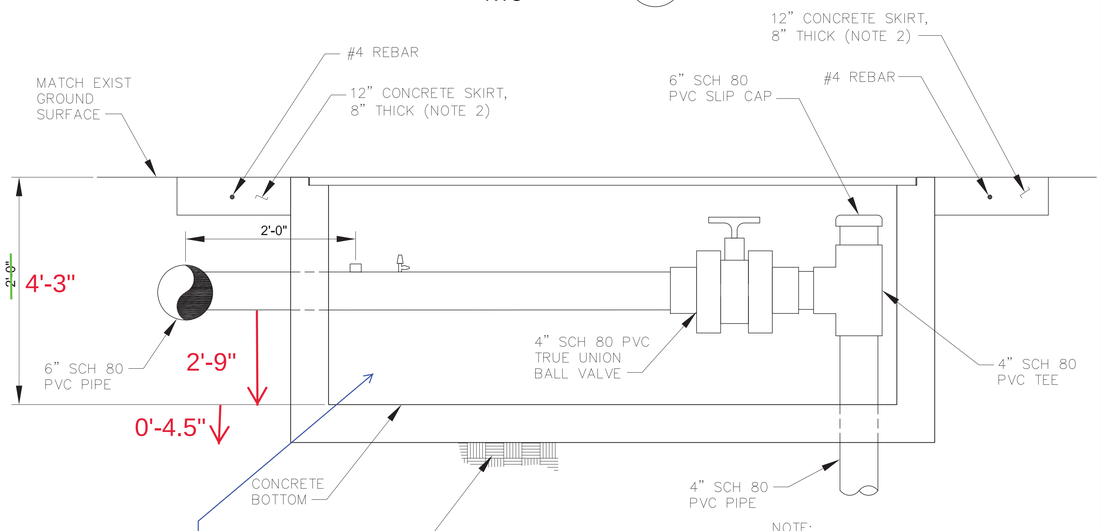
DETAIL 7 C-02
NTS



NOTE:

2. USE 560-C-3250 CONCRETE PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) AND #4 REBAR 12" ON-CENTER (BOTH WAYS) WITH 3" CLEARANCE.

SECTION B M-04
NTS



NOTE:

2. USE 560-C-3250 CONCRETE PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) AND #4 REBAR 12" ON-CENTER (BOTH WAYS) WITH 3" CLEARANCE.

SECTION C M-04
NTS

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STATE OF CALIFORNIA
08/13/2019

NO.	DATE	DSGN	DR	REVISION	CHK	BY
			D. BAYLIS	XXX	APVD	APVD

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NORWALK, CALIFORNIA

JACOBS

SVE WELL & VALVE VAULT DETAILS - 2

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	M-04
SHEET	7 of 13

Project Location PW: 660076 - KMEP Norwalk 2015 Startup Test / DESIGN/ D3155500-SFPP NORWALK VAULTS AND PIPING

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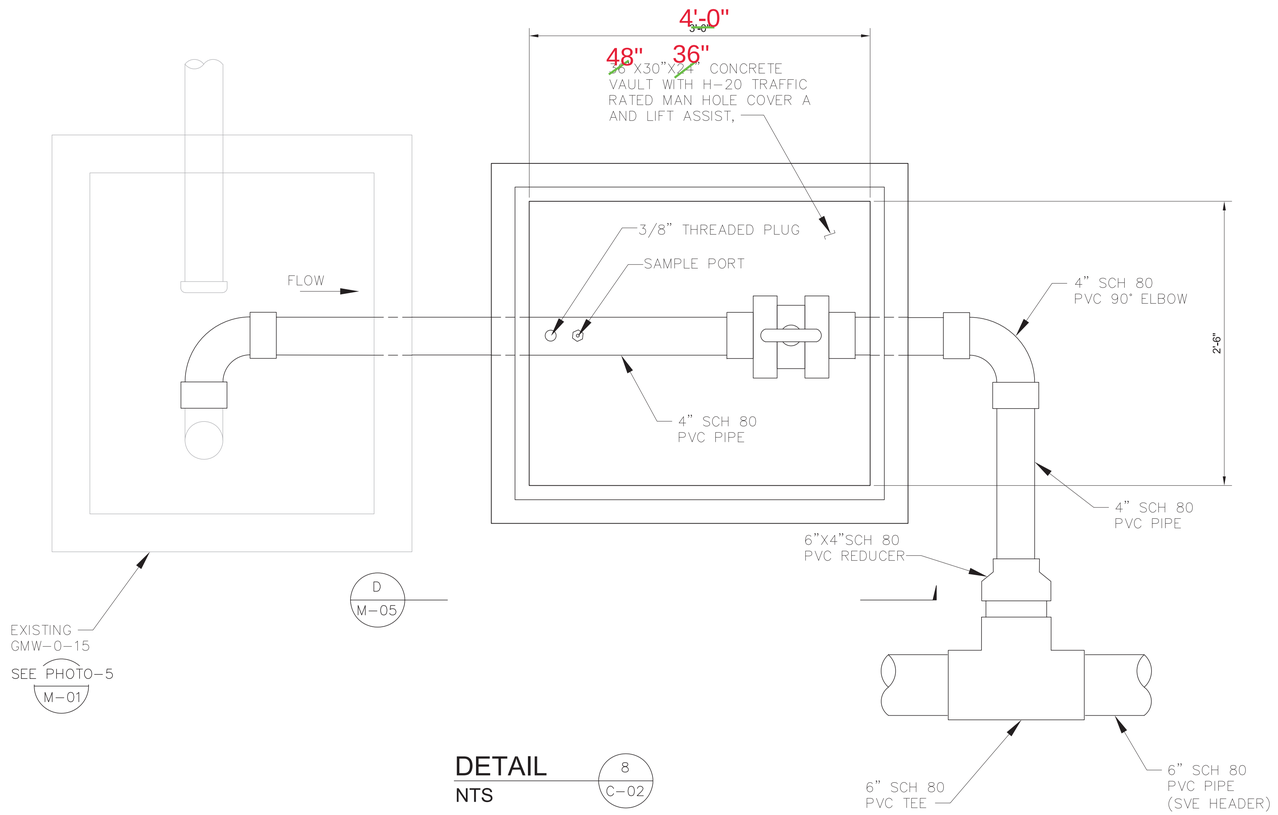
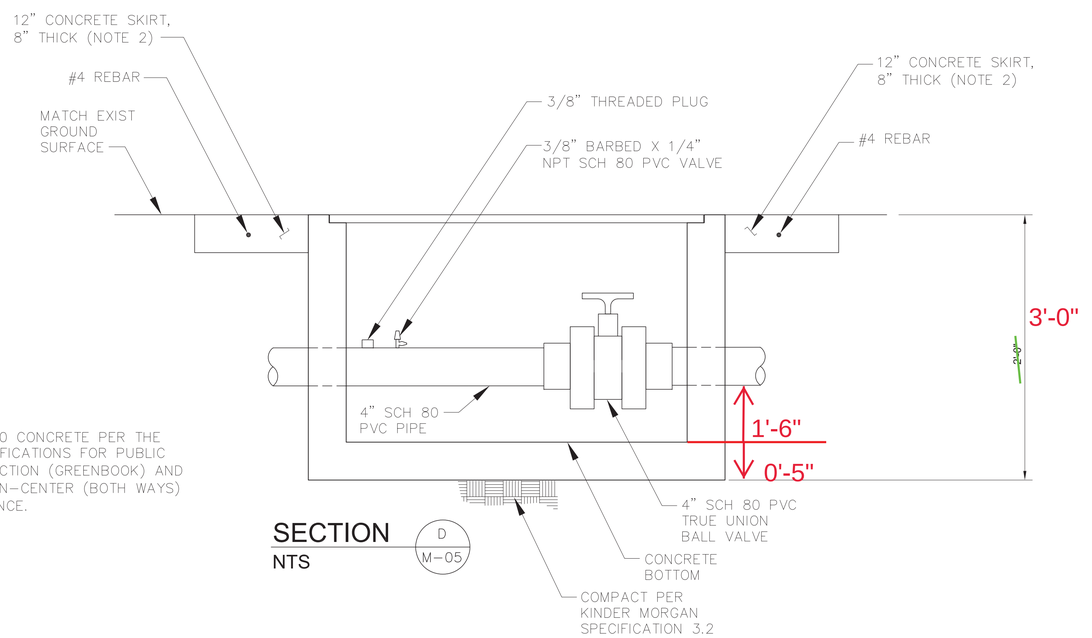


DETAIL 8 / C-02
NTS



SECTION D / M-05
NTS

NOTE:

1. THE 3/8" THREADED PLUG SHALL HAVE 40" OF STRAIGHT PIPE UPSTREAM AND 20" OF STRAIGHT PIPE DOWNSTREAM. ASSUME THE 4" SCH 80 PVC TRUE UNION BALL VALVE IS PART OF THE STRAIGHT PIPE, BUT INSTALL AS FAR AWAY FROM THE PLUG AS POSSIBLE.

NOTE:

2. USE 560-C-3250 CONCRETE PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) AND #4 REBAR 12" ON-CENTER (BOTH WAYS) WITH 3" CLEARANCE.

REGISTERED PROFESSIONAL ENGINEER
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08/13/2019

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
			D. BAYLIS	XXX			

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NORWALK, CALIFORNIA

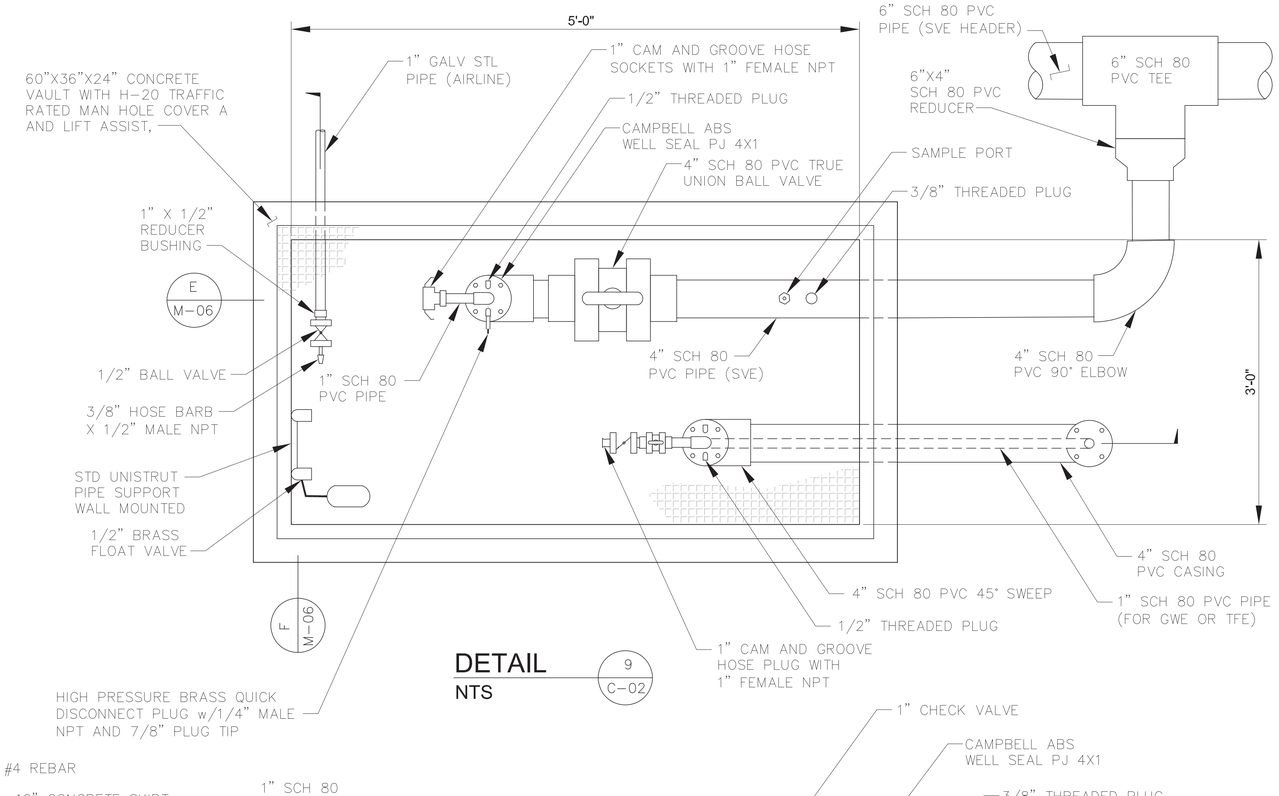
GMW-0-15 WELL & VALVE VAULT DETAILS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

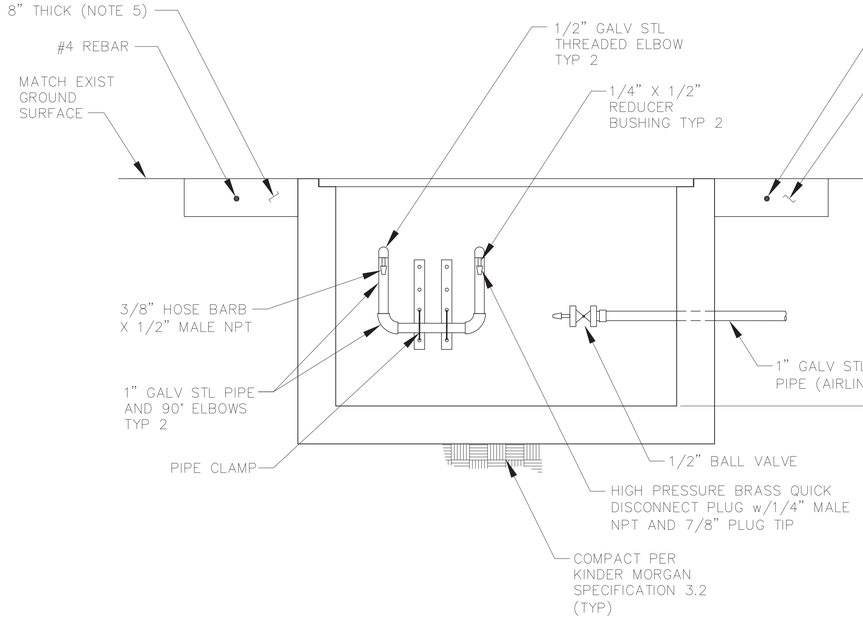
DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	M-05
SHEET	8 of 13

NOTE:

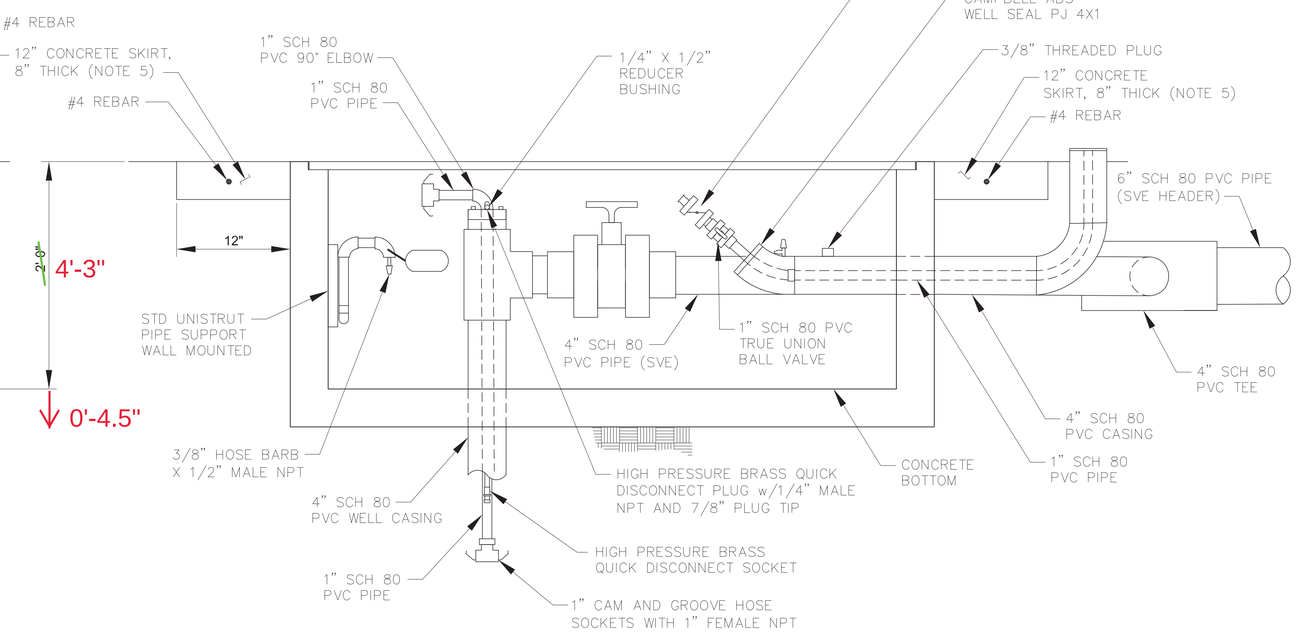
1. THE 3/8" THREADED PLUG SHALL HAVE 40" OF STRAIGHT PIPE UPSTREAM AND 20" OF STRAIGHT PIPE DOWNSTREAM. ASSUME THE 4" SCH 80 PVC TRUE UNION BALL VALVE IS PART OF THE STRAIGHT PIPE, BUT INSTALL AS FAR AWAY FROM THE PLUG AS POSSIBLE.
2. THE 4" SCH 80 PVC PIPE FOR SVE IS CONNECTED TO THE 6" SCH 80 PVC HEADER. CONNECTION POINT SHALL BE 3-FEET EAST OF THE DRIP LEG SHOWN IN DETAIL 3.
3. THE 4" SCH 80 PVC PIPE (DOUBLE CONTAINMENT) WITH 1" SCH 80 PVC INSIDE SHALL BE CONNECTED TO THE EXISTING ABOVE GRADE PIPING FOR THE GROUNDWATER AND TOTAL FLUID EXTRACTION SYSTEM.
4. THE 1" GALV STEEL PIPE FOR THE AIR LINE IS CONNECTED TO THE EXISTING AIR LINE ABOVE GRADE.
5. USE 560-C-3250 CONCRETE PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK) AND #4 REBAR 12" ON-CENTER (BOTH WAYS) WITH 3" CLEARANCE.



DETAIL 9 / C-02
NTS



SECTION F / M-06
NTS



SECTION E / M-06
NTS

REGISTERED PROFESSIONAL ENGINEER
GINO NGUYEN
No. C 62140
CIVIL
STATE OF CALIFORNIA
08/13/2019

NO.	DATE	DSGN	DR	REVISION	CHK	BY	APVD
			D. BAYLIS	XXX			

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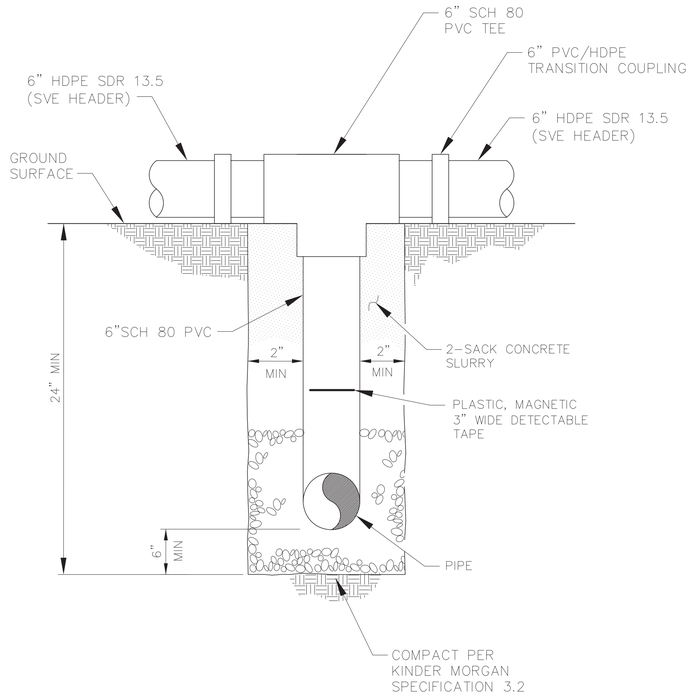
KINDER MORGAN, INC.
NORWALK, CALIFORNIA

GMW -36 WELL & VALVE VAULT DETAILS

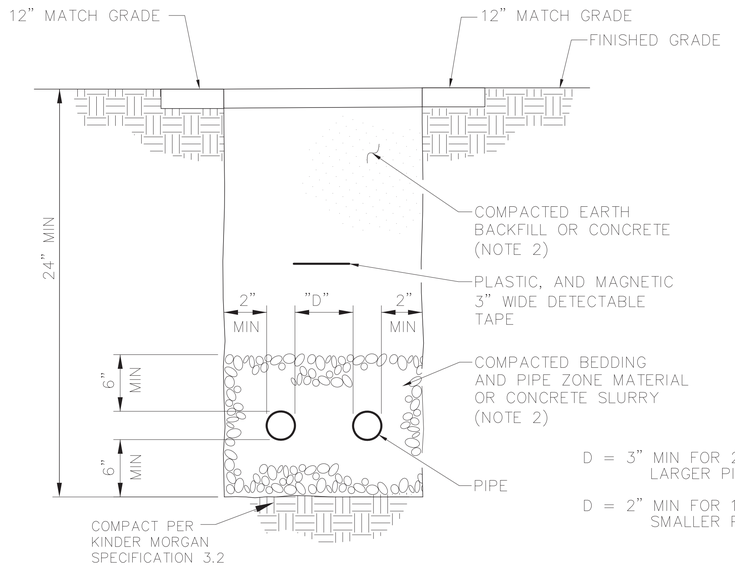
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	M-06
SHEET	9 of 13

Project Location PW: 660076 - KMEP Norwalk 2015 Startup Test / DESIGN/ D3155500-SFPP NORWALK VAULTS AND PIPING
C:\pw_workdir\den001\dbaylis\d1415415\PD--M--06.dwg Baylis, Douglas/LAC 8/12/2019 10:37 AM



DETAIL 10 / C-02
NTS



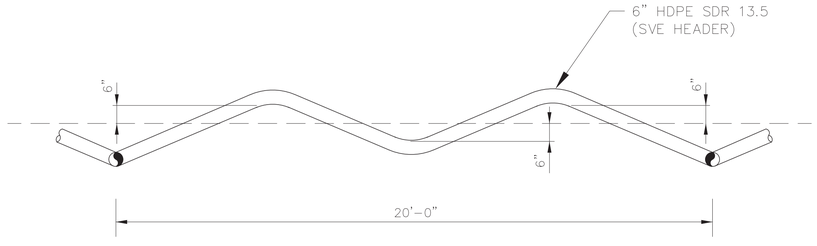
D = 3" MIN FOR 2" AND LARGER PIPE

D = 2" MIN FOR 1 1/2" AND SMALLER PIPE

TRENCH AND PIPE PLACEMENT (STANDARD)

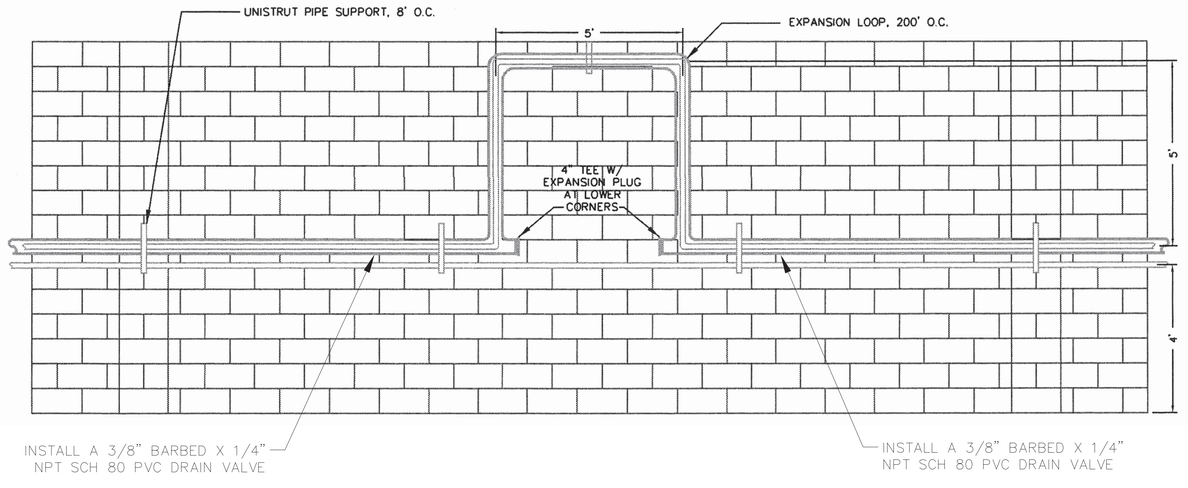
NOTE:
1. HAND DIGGING REQUIRED FOR ALL TRENCHING.
2. USE A CONCRETE SLURRY UNDER ASPHALT OR CONCRETE AREAS.

DETAIL 11 / M-07
NTS



S-PATTERN OF PIPING LAYOUT

DETAIL 12 / M-07
NTS



TYPICAL ABOVEGROUND PIPE SUPPORT ELEVATION

DETAIL 13 / M-07
NTS

REGISTERED PROFESSIONAL ENGINEER
GINO NGUYEN
No. C 62140
CIVIL
STATE OF CALIFORNIA
08/13/2019

NO.	DATE	DSGN	DR	REVISION	CHK	APVD	BY	APVD
			D. BAYLIS		XXX			

2600 MICHELSON DRIVE, SUITE 500
IRVINE, CALIFORNIA 92612
PHONE: (949) 224-7500

SFPP NORWALK PUMP STATION
15306 NORWALK BOULEVARD
KINDER MORGAN, INC.
NORWALK, CALIFORNIA

JACOBS

TRENCH DETAILS AND ABOVE GROUND PIPING LAYOUT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	AUGUST 2019
PROJ	SFPP NORWALK
DWG	M-07
SHEET	10 of 13

Appendix B
Laboratory Analytical Reports

Air TECHNOLOGY
Laboratories, Inc.

October 29, 2019

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Jacobs
ATTN: Eric Davis
1000 Wilshire Blvd., Suite 2100
Los Angeles, CA 90017

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: K100704-01/04

Enclosed are results for sample(s) received 10/07/19 by Air Technology Laboratories. Samples were received intact. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

Preliminary results were e-mailed to Eric Davis, Nils Orliczky and Danny Hill on 10/28/19.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

K100704-01/04

CHAIN OF CUSTODY RECORD

DATE: 10/4/19
PAGE: 1 of 1

Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

Section A (Required Client Information)		Section B (Required Project Information)	Section C (Invoice Information)		Section D (Sampler Information)	
Company:	**CH2M HILL**	Report To: Eric Davis (eric.davis@ch2m.com)	Attention:	Eric Davis	Sampler Name:	James Dye
	Attention: Eric Davis					
Address:	1000 Wilshire Blvd. Suite 2100	Copy To: Vladimir Carino (vcarino@ch2m.com)	Company Name:	CH2M	Sampler Signature:	JAMES DYE
	Los Angeles, CA 90017					
Email To:	eric.davis@ch2m.com	Purchase Order No.:	Address:	1000 Wilshire Blvd. Suite 2100	Sample Date:	
	vcarino@ch2m.com			Los Angeles, CA 90017		
Phone: 404-323-1600	Fax:	Project Name: **SFPP Norwalk**	Project Manager:	Joann De La Ossa		

Section E (Required Sample Information)

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	Analysis Test	TO-3 (Total VOCs as Hexane)	TO-15 (VOCs, Target Analytes)	ASTM-D 1946 (O2/Argon, CO2, CH4, N2)	Comments
	CONTAINER TYPE											
	# OF CONTAINERS											
	PRESERVATIVE											
	VOLUME (mL)											
1	VEFF-10-04	Effluent (stack)	Vapor	G	10/4/19	1225	1		X	X		Individually Certified 6-Liter SUMMA
2	VEFF-10-04D	Effluent (stack) (duplicate)	Vapor	G	10/4/19	1225	1		X	X		Individually Certified 6-Liter SUMMA
3	VPOST-10-04	Influent (post-dilution)	Vapor	G	10/4/19	1230	1		X	X		Individually Certified 1-Liter SUMMA
4	VINF-10-04	Influent (pre-dilution)	Vapor	G	10/4/19	1240	1		X	X	X	Batch Certified 1-Liter Summa
5												Target analytes includes Historical VOCs and remaining ATL list per subcontract
6												
7												
8												
9												
10												

Relinquished by (Signature and Printed Name)	Date / Time	Relinquished by (Signature and Printed Name)	Date / Time
	10/4/19 1500	FEDEX	10/4/19 1500
Fedex	10/7/19 1200	Kathy Charern	10/7/19 1200
Relinquished by (Signature and Printed Name)	Date / Time	Relinquished by (Signature and Printed Name)	Date / Time

Turn Around Time (TAT):
- ☐A = Same Day
- ☐B = 24 Hours
- ☐C = 48 Hours
- ☐D = 72 Hours
- ☐E = 5 Workdays
- ☑E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A= Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 10/07/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	K100704-01			K100704-02			K100704-03			K100704-04		
Client Sample I.D.:	VEFF-10-04			VEFF-10-04D			VPOST-10-04			VINF-10-04		
Date/Time Sampled:	10/4/19 12:25			10/4/19 12:25			10/4/19 12:30			10/4/19 12:40		
Date/Time Analyzed:	10/16/19 2:22			10/16/19 2:57			10/16/19 3:32			10/16/19 4:07		
QC Batch No.:	191015MS2A1			191015MS2A1			191015MS2A1			191015MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			3.5			3.6		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Benzene	ND	0.0025	0.0025	ND	0.0025	0.0025	**0.055**	0.0035	0.0035	**0.061**	0.0036	0.0036
Chloroform	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Carbon Tetrachloride	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,4-Dioxane	ND	0.013	0.013	ND	0.013	0.013	ND	0.018	0.018	ND	0.018	0.018
1,4-Dichlorobenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,1-Dichloroethene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Ethylbenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	**0.017**	0.0035	0.0035	**0.021**	0.0036	0.0036
1,2-Dichloroethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Methylene Chloride	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
t-Butyl Methyl Ether (MTBE)	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Tetrachloroethene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,1,2-Trichloroethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Trichloroethene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Vinyl Chloride	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Naphthalene	ND	0.013	0.013	ND	0.013	0.013	ND	0.018	0.018	ND	0.018	0.018
Dichlorodifluoromethane (12)	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Chloromethane	ND	0.0051	0.0051	ND	0.0051	0.0051	ND	0.0070	0.0070	ND	0.0072	0.0072
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Bromomethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Chloroethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Trichlorofluoromethane (11)	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Carbon Disulfide	**0.068**	0.013	0.013	**0.020**	0.013	0.013	ND	0.018	0.018	**0.030**	0.018	0.018
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Acetone	**0.014**	0.013	0.013	**0.014**	0.013	0.013	**0.026**	0.018	0.018	**0.019**	0.018	0.018
t-1,2-Dichloroethene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,1-Dichloroethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
c-1,2-Dichloroethene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
2-Butanone	**0.0072**	0.0025	0.0025	**0.0042**	0.0025	0.0025	**0.0059**	0.0035	0.0035	**0.0058**	0.0036	0.0036
1,1,1-Trichloroethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,2-Dichloropropane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Bromodichloromethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
c-1,3-Dichloropropene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
4-Methyl-2-Pentanone	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Toluene	**0.0025**	0.0025	0.0025	**0.0026**	0.0025	0.0025	**0.058**	0.0035	0.0035	**0.067**	0.0036	0.0036
t-1,3-Dichloropropene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,3-Dichloropropane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
2-Hexanone	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Dibromochloromethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,2-Dibromoethane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Chlorobenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
p,&m-Xylene	**0.0075**	0.0025	0.0025	**0.0072**	0.0025	0.0025	**0.22**	0.0035	0.0035	**0.27**	0.0036	0.0036
o-Xylene	**0.0048**	0.0025	0.0025	**0.0045**	0.0025	0.0025	**0.16**	0.0035	0.0035	**0.20**	0.0036	0.0036
Styrene	ND	0.0025	0.0025	ND	0.0025	0.0025	**0.0050**	0.0035	0.0035	**0.0062**	0.0036	0.0036
Bromoform	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
Isopropyl benzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,1,2,2-Tetrachloroethane	ND	0.0051	0.0051	ND	0.0051	0.0051	ND	0.0070	0.0070	ND	0.0072	0.0072
Benzyl Chloride	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,2,3-Trichloropropane	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
n-Propyl Benzene	ND	0.0025	0.0025	ND	0.0025	0.0025	**0.0036**	0.0035	0.0035	**0.0040**	0.0036	0.0036

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 10/07/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	K100704-01			K100704-02			K100704-03			K100704-04		
Client Sample I.D.:	VEFF-10-04			VEFF-10-04D			VPOST-10-04			VINF-10-04		
Date/Time Sampled:	10/4/19 12:25			10/4/19 12:25			10/4/19 12:30			10/4/19 12:40		
Date/Time Analyzed:	10/16/19 2:22			10/16/19 2:57			10/16/19 3:32			10/16/19 4:07		
QC Batch No.:	191015MS2A1			191015MS2A1			191015MS2A1			191015MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			3.5			3.6		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
4-Ethyl Toluene	0.0076	0.0025	0.0025	0.0070	0.0025	0.0025	0.078	0.0035	0.0035	0.093	0.0036	0.0036
1,3,5-Trimethylbenzene	ND	0.0051	0.0051	ND	0.0051	0.0051	0.056	0.0070	0.0070	0.068	0.0072	0.0072
4-Chlorotoluene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
tert-Butylbenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,2,4-Trimethylbenzene	0.010	0.0051	0.0051	0.010	0.0051	0.0051	0.054	0.0070	0.0070	0.064	0.0072	0.0072
sec-Butylbenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
p-Isopropyltoluene	0.0034	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,3-Dichlorobenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
n-Butylbenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,2-Dichlorobenzene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
1,2,4-Trichlorobenzene	ND	0.0051	0.0051	ND	0.0051	0.0051	ND	0.0070	0.0070	ND	0.0072	0.0072
Hexachlorobutadiene	ND	0.0025	0.0025	ND	0.0025	0.0025	ND	0.0035	0.0035	ND	0.0036	0.0036
t-Butanol	ND	0.013	0.013	ND	0.013	0.013	ND	0.018	0.018	ND	0.018	0.018
n-Hexane	ND	0.013	0.013	ND	0.013	0.013	0.52	0.018	0.018	0.55	0.018	0.018
Isopropyl ether	ND	0.013	0.013	ND	0.013	0.013	ND	0.018	0.018	ND	0.018	0.018
t-Butyl ethyl ether	ND	0.013	0.013	ND	0.013	0.013	ND	0.018	0.018	ND	0.018	0.018
2,2-Dichloropropane	ND	0.013	0.013	ND	0.013	0.013	ND	0.018	0.018	ND	0.018	0.018
t-Amyl methyl ether	ND	0.013	0.013	ND	0.013	0.013	ND	0.018	0.018	ND	0.018	0.018
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--	ND	--	--	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 10-25-19
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 10/07/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK		
Client Sample I.D.:	-		
Date/Time Sampled:	-		
Date/Time Analyzed:	10/15/19 19:17		
QC Batch No.:	191015MS2A1		
Analyst Initials:	DT		
Dilution Factor:	0.20		

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
Benzene	ND	0.00020	0.00020
Chloroform	ND	0.00020	0.00020
Carbon Tetrachloride	ND	0.00020	0.00020
1,4-Dioxane	ND	0.0010	0.0010
1,4-Dichlorobenzene	ND	0.00020	0.00020
1,1-Dichloroethene	ND	0.00020	0.00020
Ethylbenzene	ND	0.00020	0.00020
1,2-Dichloroethane	ND	0.00020	0.00020
Methylene Chloride	ND	0.00020	0.00020
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.00020
Tetrachloroethene	ND	0.00020	0.00020
1,1,2-Trichloroethane	ND	0.00020	0.00020
Trichloroethene	ND	0.00020	0.00020
Vinyl Chloride	ND	0.00020	0.00020
Naphthalene	ND	0.0010	0.0010
Dichlorodifluoromethane (12)	ND	0.00020	0.00020
Chloromethane	ND	0.00040	0.00040
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.00020	0.00020
Bromomethane	ND	0.00020	0.00020
Chloroethane	ND	0.00020	0.00020
Trichlorofluoromethane (11)	ND	0.00020	0.00020
Carbon Disulfide	ND	0.0010	0.0010
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.00020	0.00020
Acetone	ND	0.0010	0.0010
t-1,2-Dichloroethene	ND	0.00020	0.00020
1,1-Dichloroethane	ND	0.00020	0.00020
c-1,2-Dichloroethene	ND	0.00020	0.00020
2-Butanone	ND	0.00020	0.00020
1,1,1-Trichloroethane	ND	0.00020	0.00020
1,2-Dichloropropane	ND	0.00020	0.00020
Bromodichloromethane	ND	0.00020	0.00020
c-1,3-Dichloropropene	ND	0.00020	0.00020
4-Methyl-2-Pentanone	ND	0.00020	0.00020
Toluene	ND	0.00020	0.00020
t-1,3-Dichloropropene	ND	0.00020	0.00020
1,3-Dichloropropane	ND	0.00020	0.00020
2-Hexanone	ND	0.00020	0.00020
Dibromochloromethane	ND	0.00020	0.00020
1,2-Dibromoethane	ND	0.00020	0.00020
Chlorobenzene	ND	0.00020	0.00020
p,&m-Xylene	ND	0.00020	0.00020
o-Xylene	ND	0.00020	0.00020
Styrene	ND	0.00020	0.00020
Bromoform	ND	0.00020	0.00020
Isopropyl benzene	ND	0.00020	0.00020
1,1,2,2-Tetrachloroethane	ND	0.00040	0.00040
Benzyl Chloride	ND	0.00020	0.00020
1,2,3-Trichloropropane	ND	0.00020	0.00020
n-Propyl Benzene	ND	0.00020	0.00020

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 10/07/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK		
Client Sample I.D.:	-		
Date/Time Sampled:	-		
Date/Time Analyzed:	10/15/19 19:17		
QC Batch No.:	191015MS2A1		
Analyst Initials:	DT		
Dilution Factor:	0.20		

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
4-Ethyl Toluene	ND	0.00020	0.00020
1,3,5-Trimethylbenzene	ND	0.00040	0.00040
4-Chlorotoluene	ND	0.00020	0.00020
tert-Butylbenzene	ND	0.00020	0.00020
1,2,4-Trimethylbenzene	ND	0.00040	0.00040
sec-Butylbenzene	ND	0.00020	0.00020
p-Isopropyltoluene	ND	0.00020	0.00020
1,3-Dichlorobenzene	ND	0.00020	0.00020
n-Butylbenzene	ND	0.00020	0.00020
1,2-Dichlorobenzene	ND	0.00020	0.00020
1,2,4-Trichlorobenzene	ND	0.00040	0.00040
Hexachlorobutadiene	ND	0.00020	0.00020
t-Butanol	ND	0.0010	0.0010
n-Hexane	ND	0.0010	0.0010
Isopropyl ether	ND	0.0010	0.0010
t-Butyl ethyl ether	ND	0.0010	0.0010
2,2-Dichloropropane	ND	0.0010	0.0010
t-Amyl methyl ether	ND	0.0010	0.0010
1,2,3-Trichlorobenzene (TIC)	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 10-25-19
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 191015MS2A1

Matrix: Air

EPA Method TO-14/TO-15

Lab No:	Method Blank		LCS		LCSD						
Date/Time Analyzed:	10/15/19 19:17		10/15/19 17:18		10/15/19 17:57						
Data File ID:	15OCT008.D		15OCT005.D		15OCT006.D						
Analyst Initials:	DT		DT		DT						
Dilution Factor:	0.2		1.0		1.0			Limits			
ANALYTE	Result ppbv	Spike Amount	Result ppbv	% Rec	Result ppbv	% Rec	RPD	Low %Rec	High %Rec	Max. RPD	Pass/ Fail
1,1-Dichloroethene	0.0	10.0	8.6	86	8.6	86	0.5	70	130	30	Pass
Methylene Chloride	0.0	10.0	8.9	89	8.3	83	6.4	70	130	30	Pass
Trichloroethene	0.0	10.0	8.9	89	8.6	86	3.9	70	130	30	Pass
Toluene	0.0	10.0	8.7	87	8.2	82	6.9	70	130	30	Pass
1,1,2,2-Tetrachloroethane	0.0	10.0	8.5	85	8.3	83	2.2	70	130	30	Pass

RPD = Relative Percent Difference

Reviewed/Approved By: _____ Date: 10-25-19

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 10/07/19
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	K100704-01		K100704-02		K100704-03		K100704-04	
Client Sample I.D.:	VEFF-10-04		VEFF-10-04D		VPOST-10-04		VINF-10-04	
Date/Time Sampled:	10/4/19 12:25		10/4/19 12:25		10/4/19 12:30		10/4/19 12:40	
Date/Time Analyzed:	10/10/19 15:57		10/10/19 16:21		10/10/19 16:44		10/10/19 17:07	
QC Batch No.:	191010GC11A1		191010GC11A1		191010GC11A1		191010GC11A1	
Analyst Initials:	AS		AS		AS		AS	
Dilution Factor:	2.5		2.5		2.5		2.5	
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	ND	2.5	ND	2.5	16	2.5	17	2.5

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 10/23/19

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 191010GC11A1
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS		LCSD					
Date Analyzed:	10/10/19 14:47		10/10/19 14:01		10/10/19 14:24					
Analyst Initials:	AS		AS		AS					
Dilution Factor:	1.0		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	4.25	85	4.23	85	0.5	70	130	25

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 10/23/19

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 10/07/19
Matrix: Air
Reporting Units: % v/v

ASTM D1946

Lab No.:	**K100704-04**							
Client Sample I.D.:	**VINF-10-04**							
Date/Time Sampled:	**10/4/19 12:40**							
Date/Time Analyzed:	**10/16/19 13:10**							
QC Batch No.:	**191016GC8A1**							
Analyst Initials:	**CM**							
Dilution Factor:	**2.5**							
ANALYTE	**Result % v/v**	**RL % v/v**						
Carbon Dioxide	0.64	0.025						
Oxygen/Argon	21	1.3						
Nitrogen	78	2.5						
Methane	0.0037	0.0025						

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 10/23/19

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 191016GC8A1
Matrix: Air
Reporting Units: % v/v

ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	10/16/19 10:42			10/16/19 11:11		10/16/19 11:26					
Analyst Initials:	CM			CM		CM					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result % v/v	RL % v/v	SPIKE AMT. % v/v	Result % v/v	% Rec.	Result % v/v	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Carbon Dioxide	ND	0.010	10	9.31	93	9.31	93	0.0	70	130	30
Oxygen/Argon	ND	0.50	15	14.9	101	15.0	101	0.1	70	130	30
Nitrogen	ND	1.0	70	70.1	100	70.2	100	0.2	70	130	30
Methane	ND	0.0010	0.10	0.105	105	0.104	104	0.9	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 10/23/19
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Air TECHNOLOGY Laboratories, Inc.

December 11, 2019

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Jacobs
ATTN: Eric Davis
1000 Wilshire Blvd., Suite 2100
Los Angeles, CA 90017

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: K111105-01/04

Enclosed are results for sample(s) received 11/11/19 by Air Technology Laboratories. Samples were received intact. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

Preliminary results were e-mailed to Eric Davis, Nils Orliczky and Danny Hill on 12/10/19.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

K111105-01/04

Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

CHAIN OF CUSTODY RECORD

DATE: 11/7/19
PAGE: 1 of 1

Section A (Required Client Information)		Section B (Required Project Information)	Section C (Invoice Information)		Section D (Sampler Information)	
Company:	**CH2M HILL** **Attention: Eric Davis**	Report To: Eric Davis (eric.davis@ch2m.com)	Attention:	Eric Davis	Sampler Name:	James Dye
Address:	1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Copy To: Vladimir Carino (vcarino@ch2m.com)	Company Name:	CH2M	Sampler Signature:	
Email To:	eric.davis@ch2m.com vcarino@ch2m.com	Purchase Order No.:	Address:	1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Sample Date:	11/7/19
Phone: 404-323-1600	Fax:	Project Name: **SFPP Norwalk**	Project Manager:	Joann De La Ossa		

Section E (Required Sample Information)

	ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	Analysis Test: TO-3 (Total VOCs as Hexane)	TO-15 (VOCs, Target Analytes)	ASTM D 1946 (O2/Argon, CO2, CH4, N2)	Comments
01	1	VEFF-11-07	Effluent (stack)	Vapor	G	11/7/19	1130	1	X	X		Individually Certified 6-Liter SUMMA
02	2	VEFF-11-07D	Effluent (stack) (duplicate)	Vapor	G	11/7/19	1130	1	X	X		Individually Certified 6-Liter SUMMA
03	3	VPOST-11-07	Influent (post-dilution)	Vapor	G	11/7/19	1145	1	X	X		Individually Certified 1-Liter SUMMA
04	4	VINF-11-07	Influent (pre-dilution)	Vapor	G	11/7/19	1200	1	X	X	X	Batch Certified 1-Liter Summa
	5											Target analytes includes Historical VOCs and remaining ATLI list per subcontract
	6											
	7											
	8											
	9											
	10											

Relinquished by (Signature and Printed Name)	Date / Time	Relinquished by (Signature and Printed Name)	Date / Time
	11/7/19 1400	FED EX	11/7/19 1400
FED EX	11/11/19		11/11/19 1102

Turn Around Time (TAT):
- ☐A = Same Day
- ☐B = 24 Hours
- ☐C = 48 Hours
- ☐D = 72 Hours
- ☐E = 5 Workdays
- ☑E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A= Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 11/11/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	K111105-01			K111105-02			K111105-03			K111105-04		
Client Sample I.D.:	VEFF-11-07			VEFF-11-07-D			VPOST-11-07			VINF-11-07		
Date/Time Sampled:	11/7/19 11:30			11/7/19 11:30			11/7/19 11:45			11/7/19 12:00		
Date/Time Analyzed:	11/22/19 15:38			11/22/19 16:13			11/22/19 16:47			11/22/19 17:21		
QC Batch No.:	191122MS2A1			191122MS2A1			191122MS2A1			191122MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.1			2.1			2.1			2.0		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Dichlorodifluoromethane (12)	ND	0.0021	0.00032	ND	0.0021	0.00032	0.00052 J	0.0021	0.00032	0.00052 J	0.0020	0.00031
Chloromethane	ND	0.0042	0.00046	ND	0.0042	0.00046	ND	0.0042	0.00046	0.00095 J	0.0040	0.00044
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.0021	0.00042	ND	0.0021	0.00042	ND	0.0021	0.00042	ND	0.0020	0.00041
Vinyl Chloride	ND	0.0021	0.00034	ND	0.0021	0.00034	ND	0.0021	0.00034	ND	0.0020	0.00033
Bromomethane	0.00075 J	0.0021	0.00062	0.00085 J	0.0021	0.00062	ND	0.0021	0.00062	0.00069 J	0.0020	0.00059
Chloroethane	ND	0.0021	0.0018	ND	0.0021	0.0018	ND	0.0021	0.0018	ND	0.0020	0.0017
Trichlorofluoromethane (11)	ND	0.0021	0.00045	ND	0.0021	0.00045	ND	0.0021	0.00045	ND	0.0020	0.00044
1,1-Dichloroethene	ND	0.0021	0.00048	ND	0.0021	0.00048	ND	0.0021	0.00048	ND	0.0020	0.00046
Carbon Disulfide	0.041	0.011	0.00050	0.19	0.011	0.00050	0.016	0.011	0.00050	0.058	0.010	0.00048
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.0021	0.00057	ND	0.0021	0.00057	ND	0.0021	0.00057	ND	0.0020	0.00054
Acetone	0.016	0.011	0.00061	0.024	0.011	0.00061	0.023	0.011	0.00061	0.033	0.010	0.00058
Methylene Chloride	ND	0.0021	0.00060	ND	0.0021	0.00060	ND	0.0021	0.00060	ND	0.0020	0.00058
t-1,2-Dichloroethene	ND	0.0021	0.00063	ND	0.0021	0.00063	ND	0.0021	0.00063	ND	0.0020	0.00060
1,1-Dichloroethane	ND	0.0021	0.00029	ND	0.0021	0.00029	ND	0.0021	0.00029	ND	0.0020	0.00028
c-1,2-Dichloroethene	ND	0.0021	0.00041	ND	0.0021	0.00041	ND	0.0021	0.00041	ND	0.0020	0.00039
2-Butanone	0.0071	0.0021	0.0013	0.013	0.0021	0.0013	0.0062	0.0021	0.0013	0.0092	0.0020	0.0012
t-Butyl Methyl Ether (MTBE)	ND	0.0021	0.00047	ND	0.0021	0.00047	ND	0.0021	0.00047	ND	0.0020	0.00045
Chloroform	ND	0.0021	0.00029	ND	0.0021	0.00029	ND	0.0021	0.00029	0.00069 J	0.0020	0.00028
1,1,1-Trichloroethane	ND	0.0021	0.00021	ND	0.0021	0.00021	ND	0.0021	0.00021	ND	0.0020	0.00020
Carbon Tetrachloride	ND	0.0021	0.00037	ND	0.0021	0.00037	ND	0.0021	0.00037	ND	0.0020	0.00035
Benzene	0.0010 J	0.0021	0.00020	0.00094 J	0.0021	0.00020	0.058	0.0021	0.00020	0.066	0.0020	0.00019
1,2-Dichloroethane	ND	0.0021	0.00016	ND	0.0021	0.00016	ND	0.0021	0.00016	0.00096 J	0.0020	0.00015
Trichloroethene	ND	0.0021	0.00030	ND	0.0021	0.00030	ND	0.0021	0.00030	ND	0.0020	0.00029
1,2-Dichloropropane	ND	0.0021	0.00038	ND	0.0021	0.00038	ND	0.0021	0.00038	ND	0.0020	0.00037
Bromodichloromethane	ND	0.0021	0.00013	ND	0.0021	0.00013	ND	0.0021	0.00013	ND	0.0020	0.00012
c-1,3-Dichloropropene	ND	0.0021	0.00025	ND	0.0021	0.00025	ND	0.0021	0.00025	ND	0.0020	0.00024
4-Methyl-2-Pentanone	ND	0.0021	0.00014	ND	0.0021	0.00014	ND	0.0021	0.00014	ND	0.0020	0.00014
Toluene	0.0016 J	0.0021	0.00017	0.0017 J	0.0021	0.00017	0.043	0.0021	0.00017	0.056	0.0020	0.00016
t-1,3-Dichloropropene	ND	0.0021	0.00022	ND	0.0021	0.00022	ND	0.0021	0.00022	ND	0.0020	0.00021
1,1,2-Trichloroethane	ND	0.0021	0.00034	ND	0.0021	0.00034	ND	0.0021	0.00034	ND	0.0020	0.00033
1,3-Dichloropropane	ND	0.0021	0.00010	ND	0.0021	0.00010	ND	0.0021	0.00010	ND	0.0020	0.00010
Tetrachloroethene	ND	0.0021	0.00025	ND	0.0021	0.00025	0.00033 J	0.0021	0.00025	0.00041 J	0.0020	0.00024
2-Hexanone	ND	0.0021	0.00043	ND	0.0021	0.00043	ND	0.0021	0.00043	ND	0.0020	0.00042
Dibromochloromethane	ND	0.0021	0.00038	ND	0.0021	0.00038	ND	0.0021	0.00038	ND	0.0020	0.00037
1,2-Dibromoethane	ND	0.0021	0.00019	ND	0.0021	0.00019	ND	0.0021	0.00019	ND	0.0020	0.00018
Chlorobenzene	ND	0.0021	0.00016	ND	0.0021	0.00016	0.0023	0.0021	0.00016	ND	0.0020	0.00016
Ethylbenzene	0.00060 J	0.0021	0.00012	0.00073 J	0.0021	0.00012	0.019	0.0021	0.00012	0.026	0.0020	0.00012
p,&m-Xylene	0.0036	0.0021	0.00024	0.0039	0.0021	0.00024	0.21	0.0021	0.00024	0.27	0.0020	0.00023
o-Xylene	0.0024	0.0021	0.00026	0.0028	0.0021	0.00026	0.15	0.0021	0.00026	0.21	0.0020	0.00025

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 11/11/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	K111105-01			K111105-02			K111105-03			K111105-04		
Client Sample I.D.:	VEFF-11-07			VEFF-11-07-D			VPOST-11-07			VINF-11-07		
Date/Time Sampled:	11/7/19 11:30			11/7/19 11:30			11/7/19 11:45			11/7/19 12:00		
Date/Time Analyzed:	11/22/19 15:38			11/22/19 16:13			11/22/19 16:47			11/22/19 17:21		
QC Batch No.:	191122MS2A1			191122MS2A1			191122MS2A1			191122MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.1			2.1			2.1			2.0		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Styrene	0.00032 J	0.0021	0.00027	0.00049 J	0.0021	0.00027	0.0043	0.0021	0.00027	0.0067	0.0020	0.00026
Bromoform	ND	0.0021	0.00012	ND	0.0021	0.00012	ND	0.0021	0.00012	ND	0.0020	0.00011
Isopropyl benzene	ND	0.0021	0.00022	0.00082 J	0.0021	0.00022	0.0018 J	0.0021	0.00022	0.0026	0.0020	0.00021
1,1,2,2-Tetrachloroethane	ND	0.0042	0.00013	ND	0.0042	0.00013	ND	0.0042	0.00013	ND	0.0040	0.00012
Benzyl Chloride	ND	0.0021	0.00039	ND	0.0021	0.00039	ND	0.0021	0.00039	ND	0.0020	0.00037
1,2,3-Trichloropropane	ND	0.0021	0.00057	ND	0.0021	0.00057	ND	0.0021	0.00057	ND	0.0020	0.00054
n-Propyl Benzene	0.00017 J	0.0021	0.00012	0.00021 J	0.0021	0.00012	0.0028	0.0021	0.00012	0.0037	0.0020	0.00012
4-Ethyl Toluene	0.0012 J	0.0021	0.00013	0.0015 J	0.0021	0.00013	0.064	0.0021	0.00013	0.093	0.0020	0.00013
1,3,5-Trimethylbenzene	0.00070 J	0.0042	0.00036	0.00085 J	0.0042	0.00036	0.054	0.0042	0.00036	0.078	0.0040	0.00035
4-Chlorotoluene	ND	0.0021	0.00025	ND	0.0021	0.00025	ND	0.0021	0.00025	ND	0.0020	0.00024
tert-Butylbenzene	ND	0.0021	0.00019	ND	0.0021	0.00019	ND	0.0021	0.00019	ND	0.0020	0.00018
1,2,4-Trimethylbenzene	0.0015 J	0.0042	0.00024	0.0017 J	0.0042	0.00024	0.050	0.0042	0.00024	0.071	0.0040	0.00023
sec-Butylbenzene	ND	0.0021	0.00020	ND	0.0021	0.00020	0.00068 J	0.0021	0.00020	0.0010 J	0.0020	0.00020
p-Isopropyltoluene	0.0033	0.0021	0.00027	0.0027	0.0021	0.00027	0.0019 J	0.0021	0.00027	0.0030	0.0020	0.00026
1,3-Dichlorobenzene	ND	0.0021	0.00026	ND	0.0021	0.00026	ND	0.0021	0.00026	ND	0.0020	0.00025
1,4-Dichlorobenzene	ND	0.0021	0.00031	ND	0.0021	0.00031	ND	0.0021	0.00031	ND	0.0020	0.00030
n-Butylbenzene	0.00022 J	0.0021	0.00015	ND	0.0021	0.00015	ND	0.0021	0.00015	ND	0.0020	0.00015
1,2-Dichlorobenzene	ND	0.0021	0.00026	ND	0.0021	0.00026	ND	0.0021	0.00026	ND	0.0020	0.00025
1,2,4-Trichlorobenzene	ND	0.0042	0.00035	ND	0.0042	0.00035	ND	0.0042	0.00035	ND	0.0040	0.00033
Hexachlorobutadiene	ND	0.0021	0.00012	ND	0.0021	0.00012	ND	0.0021	0.00012	ND	0.0020	0.00012
t-Butanol	0.0031 J	0.011	0.00040	0.0029 J	0.011	0.00040	0.012	0.011	0.00040	0.016	0.010	0.00039
n-Hexane	0.0018 J	0.011	0.00028	0.0019 J	0.011	0.00028	0.40	0.011	0.00028	0.43	0.010	0.00027
Isopropyl ether	ND	0.011	0.00023	ND	0.011	0.00023	ND	0.011	0.00023	ND	0.010	0.00022
t-Butyl ethyl ether	ND	0.011	0.00042	ND	0.011	0.00042	ND	0.011	0.00042	ND	0.010	0.00040
2,2-Dichloropropane	ND	0.011	0.00020	ND	0.011	0.00020	ND	0.011	0.00020	ND	0.010	0.00019
t-Amyl methyl ether	ND	0.011	0.00015	ND	0.011	0.00015	ND	0.011	0.00015	ND	0.010	0.00014
1,4-Dioxane	ND	0.011	0.00037	ND	0.011	0.00037	ND	0.011	0.00037	ND	0.010	0.00035
Naphthalene	ND	0.011	0.00081	ND	0.011	0.00081	ND	0.011	0.00081	0.0020 J	0.010	0.00078
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--	ND	--	--	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 12/10/19
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 11/11/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK
Client Sample I.D.:	-
Date/Time Sampled:	-
Date/Time Analyzed:	11/22/19 11:32
QC Batch No.:	191122MS2A1
Analyst Initials:	DT
Dilution Factor:	0.20

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
Dichlorodifluoromethane (12)	ND	0.00020	0.000031
Chloromethane	ND	0.00040	0.000044
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.00020	0.000040
Vinyl Chloride	ND	0.00020	0.000032
Bromomethane	ND	0.00020	0.000059
Chloroethane	ND	0.00020	0.00017
Trichlorofluoromethane (11)	ND	0.00020	0.000043
1,1-Dichloroethene	ND	0.00020	0.000045
Carbon Disulfide	ND	0.0010	0.000048
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.00020	0.000054
Acetone	ND	0.0010	0.000058
Methylene Chloride	ND	0.00020	0.000057
t-1,2-Dichloroethene	ND	0.00020	0.000060
1,1-Dichloroethane	ND	0.00020	0.000027
c-1,2-Dichloroethene	ND	0.00020	0.000039
2-Butanone	ND	0.00020	0.00012
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045
Chloroform	ND	0.00020	0.000028
1,1,1-Trichloroethane	ND	0.00020	0.000020
Carbon Tetrachloride	ND	0.00020	0.000035
Benzene	ND	0.00020	0.000019
1,2-Dichloroethane	ND	0.00020	0.000015
Trichloroethene	ND	0.00020	0.000028
1,2-Dichloropropane	ND	0.00020	0.000036
Bromodichloromethane	ND	0.00020	0.000012
c-1,3-Dichloropropene	ND	0.00020	0.000024
4-Methyl-2-Pentanone	ND	0.00020	0.000013
Toluene	ND	0.00020	0.000016
t-1,3-Dichloropropene	ND	0.00020	0.000021
1,1,2-Trichloroethane	ND	0.00020	0.000032
1,3-Dichloropropane	ND	0.00020	0.0000099
Tetrachloroethene	ND	0.00020	0.000024
2-Hexanone	ND	0.00020	0.000041
Dibromochloromethane	ND	0.00020	0.000036
1,2-Dibromoethane	ND	0.00020	0.000018
Chlorobenzene	ND	0.00020	0.000016
Ethylbenzene	ND	0.00020	0.000011
p.&m-Xylene	ND	0.00020	0.000023
o-Xylene	ND	0.00020	0.000024

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 11/11/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK
Client Sample I.D.:	-
Date/Time Sampled:	-
Date/Time Analyzed:	11/22/19 11:32
QC Batch No.:	191122MS2A1
Analyst Initials:	DT
Dilution Factor:	0.20

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
Styrene	ND	0.00020	0.000026
Bromoform	ND	0.00020	0.000011
Isopropyl benzene	ND	0.00020	0.000021
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012
Benzyl Chloride	ND	0.00020	0.000037
1,2,3-Trichloropropane	ND	0.00020	0.000054
n-Propyl Benzene	ND	0.00020	0.000012
4-Ethyl Toluene	ND	0.00020	0.000013
1,3,5-Trimethylbenzene	ND	0.00040	0.000035
4-Chlorotoluene	ND	0.00020	0.000024
tert-Butylbenzene	ND	0.00020	0.000018
1,2,4-Trimethylbenzene	ND	0.00040	0.000023
sec-Butylbenzene	ND	0.00020	0.000019
p-Isopropyltoluene	ND	0.00020	0.000026
1,3-Dichlorobenzene	ND	0.00020	0.000024
1,4-Dichlorobenzene	ND	0.00020	0.000029
n-Butylbenzene	ND	0.00020	0.000015
1,2-Dichlorobenzene	ND	0.00020	0.000025
1,2,4-Trichlorobenzene	ND	0.00040	0.000033
Hexachlorobutadiene	ND	0.00020	0.000012
t-Butanol	ND	0.0010	0.000038
n-Hexane	ND	0.0010	0.000027
Isopropyl ether	ND	0.0010	0.000022
t-Butyl ethyl ether	ND	0.0010	0.000040
2,2-Dichloropropane	ND	0.0010	0.000019
t-Amyl methyl ether	ND	0.0010	0.000014
1,4-Dioxane	ND	0.0010	0.000035
Naphthalene	ND	0.0010	0.000077
1,2,3-Trichlorobenzene (TIC)	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 12/10/19
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 191122MS2A1

Matrix: Air

EPA Method TO-14/TO-15

Lab No:	Method Blank		LCS		LCSD						
Date/Time Analyzed:	11/22/19 11:32		11/22/19 10:22		11/22/19 10:56						
Data File ID:	22NOV005.D		22NOV003.D		22NOV004.D						
Analyst Initials:	DT		DT		DT						
Dilution Factor:	0.2		1.0		1.0			Limits			
ANALYTE	Result ppbv	Spike Amount	Result ppbv	% Rec	Result ppbv	% Rec	RPD	Low %Rec	High %Rec	Max. RPD	Pass/ Fail
1,1-Dichloroethene	0.0	10.0	10.1	101	10.1	101	0.0	70	130	30	Pass
Methylene Chloride	0.0	10.0	10.4	104	10.1	101	3.5	70	130	30	Pass
Trichloroethene	0.0	10.0	10.1	101	10.0	100	1.0	70	130	30	Pass
Toluene	0.0	10.0	9.6	96	9.6	96	0.2	70	130	30	Pass
1,1,2,2-Tetrachloroethane	0.0	10.0	8.8	88	8.5	85	3.0	70	130	30	Pass

RPD = Relative Percent Difference

Reviewed/Approved By: _____ Date: 12/10/19

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 11/11/19
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	K111105-01		K111105-02		K111105-03		K111105-04	
Client Sample I.D.:	VEFF-11-07		VEFF-11-07-D		VPOST-11-07		VINF-11-07	
Date/Time Sampled:	11/7/19 11:30		11/7/19 11:30		11/7/19 11:45		11/7/19 12:00	
Date/Time Analyzed:	11/15/19 10:14		11/15/19 10:37		11/15/19 11:00		11/15/19 11:23	
QC Batch No.:	191115GC11A1		191115GC11A1		191115GC11A1		191115GC11A1	
Analyst Initials:	AS		AS		AS		AS	
Dilution Factor:	2.1		2.1		2.1		2.0	
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	ND	2.1	ND	2.1	19	2.1	19	2.0

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 12/2/19
Mark Johnson
Operations Manager

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AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 191115GC11A1
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS		LCSD					
Date Analyzed:	11/15/19 9:51		11/15/19 8:39		11/15/19 9:02					
Analyst Initials:	AS		AS		AS					
Dilution Factor:	1.0		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	4.35	87	4.46	89	2.5	70	130	25

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 12/2/19

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 11/11/19
Matrix: Air
Reporting Units: % v/v

ASTM D1946

Lab No.:	K111105-04
Client Sample I.D.:	VINF-11-07
Date/Time Sampled:	11/7/19 12:00
Date/Time Analyzed:	11/21/19 11:50
QC Batch No.:	191121GC8A1
Analyst Initials:	CM
Dilution Factor:	2.0

ANALYTE	Result % v/v	RL % v/v
Carbon Dioxide	0.67	0.020
Oxygen/Argon	21	1.0
Nitrogen	78	2.0
Methane	0.0067	0.0020

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 12/2/19

Mark Johnson
Operations Manager

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AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 191121GC8A1
Matrix: Air
Reporting Units: % v/v

ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	11/21/19 9:37			11/21/19 9:51		11/21/19 10:06					
Analyst Initials:	CM			CM		CM					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result % v/v	RL % v/v	SPIKE AMT. % v/v	Result % v/v	% Rec.	Result % v/v	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Carbon Dioxide	ND	0.010	10	9.53	95	9.52	95	0.1	70	130	30
Oxygen/Argon	ND	0.50	15	15.6	105	15.6	105	0.0	70	130	30
Nitrogen	ND	1.0	70	71.9	103	71.9	103	0.0	70	130	30
Methane	ND	0.0010	0.10	0.0978	98	0.0974	97	0.4	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 12/2/19
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Air TECHNOLOGY
Laboratories, Inc.

January 6, 2020

LA Cert #04140
EPA Methods TO3, TO14A, TO15, 25C/3C, RSK-175
TX Cert T104704450-14-6
EPA Methods TO14A, TO15
UT Cert CA0133332015-3
EPA Methods TO3, TO14A, TO15, RSK-175

Jacobs
ATTN: Eric Davis
1000 Wilshire Blvd., Suite 2100
Los Angeles, CA 90017

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: K121305-01/04

Enclosed are results for sample(s) received 12/13/19 by Air Technology Laboratories. Samples were received intact. Analyses were performed according to specifications on the chain of custody provided with the sample(s).

Report Narrative:

- Unless otherwise noted in the report, sample analyses were performed within method performance criteria and meet all requirements of the TNI Standards.
- The enclosed results relate only to the sample(s).

Preliminary results were e-mailed to Eric Davis, Nils Orliczky and Danny Hill on 1/3/20.

ATL appreciates the opportunity to provide testing services to your company. If you have any questions regarding these results, please call me at (626) 964-4032.

Sincerely,

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

Note: The cover letter is an integral part of this analytical report.

Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

K121305-01104

CHAIN OF CUSTODY RECORD

DATE: 12/12/19
PAGE: 1 of 1

Section A Required Client Information:		Section B Required Project Information:	Section C Invoice Information:		Section D Sampler Information:	
Company:	CH2M HILL Attention: Eric Davis	Report To: Eric Davis (eric.davis@ch2m.com)	Attention:	Eric Davis	Sampler Name:	James Dye
Address:	1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Copy To: Vladimir Carino (vcarino@ch2m.com)	Company Name:	CH2M	Sampler Signature:	
Email To:	eric.davis@ch2m.com vcarino@ch2m.com	Purchase Order No.:	Address:	1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017	Sample Date:	12/12/19
Phone: 404-323-1600	Fax:	Project Name: **SFPP Norwalk**	Project Manager:	Joann De La Ossa		

Section E Required Sample Information

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	Analysis Test: TO-3 (Total VOCs as Hexane)	TO-15 (VOCs, Target Analytes)	ASTM-D 1946 (O2/Argon, CO2, CH4, N2)	Comments
-01 1	VEFF-12-12	Effluent (stack)	Vapor	G	12/12/19	1000	1	X	X		Individually Certified 6-Liter SUMMA
-02 2	VEFF-12-12 D	Effluent (stack) (duplicate)	Vapor	G	12/12/19	1000	1	X	X		Individually Certified 6-Liter SUMMA
-03 3	VPOST-12-12	Influent (post-dilution)	Vapor	G	12/12/19	1010	1	X	X		Individually Certified 1-Liter SUMMA
-04 4	VINF-12-12	Influent (pre-dilution)	Vapor	G	12/12/19	1020	1	X	X	X	Batch Certified 1-Liter Summa
5											Target analytes includes Historical VOCs and remaining ATLI list per subcontract
6											
7											
8											
9											
10											

Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
	12/12/19 1400	FED EX	12/12/19 1400
Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
		Corina Johnson	12/13/19 11:52

Turn Around Time (TAT):
- ☐A = Same Day
- ☐B = 24 Hours
- ☐C = 48 Hours
- ☐D = 72 Hours
- ☐E = 5 Workdays
- ☑E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A= Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 12/13/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	K121305-01			K121305-02			K121305-03			K121305-04		
Client Sample I.D.:	VEFF-12-12			VEFF-12-12D			VPOST-12-12			VINF-12-12		
Date/Time Sampled:	12/12/19 10:00			12/12/19 10:00			12/12/19 10:10			12/12/19 10:20		
Date/Time Analyzed:	12/23/19 17:35			12/23/19 16:42			12/23/19 14:49			12/23/19 15:25		
QC Batch No.:	191222MS2A1			191222MS2A1			191222MS2A1			191222MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.0			2.0			4.9			7.8		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Dichlorodifluoromethane (12)	ND	0.0020	0.00031	ND	0.0020	0.00031	ND	0.0049	0.00075	ND	0.0078	0.0012
Chloromethane	ND	0.0040	0.00044	ND	0.0040	0.00044	0.0022 J	0.0097	0.0011	ND	0.016	0.0017
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.0020	0.00041	ND	0.0020	0.00041	ND	0.0049	0.00098	ND	0.0078	0.0016
Vinyl Chloride	ND	0.0020	0.00033	ND	0.0020	0.00033	ND	0.0049	0.00079	ND	0.0078	0.0013
Bromomethane	ND	0.0020	0.00059	ND	0.0020	0.00059	ND	0.0049	0.0014	ND	0.0078	0.0023
Chloroethane	ND	0.0020	0.0017	ND	0.0020	0.0017	ND	0.0049	0.0041	ND	0.0078	0.0065
Trichlorofluoromethane (11)	ND	0.0020	0.00044	ND	0.0020	0.00044	ND	0.0049	0.0010	ND	0.0078	0.0017
1,1-Dichloroethene	ND	0.0020	0.00046	ND	0.0020	0.00046	ND	0.0049	0.0011	ND	0.0078	0.0018
Carbon Disulfide	0.078	0.010	0.00048	0.0084 J	0.010	0.00048	0.027	0.024	0.0012	0.035 J	0.039	0.0019
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.0020	0.00054	ND	0.0020	0.00054	ND	0.0049	0.0013	ND	0.0078	0.0021
Acetone	0.026	0.010	0.00058	0.035	0.010	0.00058	0.056	0.024	0.0014	0.057	0.039	0.0022
Methylene Chloride	ND	0.0020	0.00058	ND	0.0020	0.00058	ND	0.0049	0.0014	ND	0.0078	0.0022
t-1,2-Dichloroethene	ND	0.0020	0.00060	ND	0.0020	0.00060	ND	0.0049	0.0015	ND	0.0078	0.0023
1,1-Dichloroethane	ND	0.0020	0.00028	ND	0.0020	0.00028	ND	0.0049	0.00066	ND	0.0078	0.0011
c-1,2-Dichloroethene	ND	0.0020	0.00039	ND	0.0020	0.00039	ND	0.0049	0.00094	ND	0.0078	0.0015
2-Butanone	0.012	0.0020	0.0012	0.011	0.0020	0.0012	0.012	0.0049	0.0030	0.0092	0.0078	0.0048
t-Butyl Methyl Ether (MTBE)	0.00095 J	0.0020	0.00045	0.00100 J	0.0020	0.00045	0.11	0.0049	0.0011	0.14	0.0078	0.0017
Chloroform	ND	0.0020	0.00028	ND	0.0020	0.00028	ND	0.0049	0.00068	ND	0.0078	0.0011
1,1,1-Trichloroethane	ND	0.0020	0.00020	ND	0.0020	0.00020	ND	0.0049	0.00049	ND	0.0078	0.00078
Carbon Tetrachloride	ND	0.0020	0.00035	ND	0.0020	0.00035	ND	0.0049	0.00085	ND	0.0078	0.0014
Benzene	0.0061	0.0020	0.00019	0.0059	0.0020	0.00019	0.15	0.0049	0.00047	0.22	0.0078	0.00075
1,2-Dichloroethane	ND	0.0020	0.00015	ND	0.0020	0.00015	ND	0.0049	0.00036	ND	0.0078	0.00058
Trichloroethene	ND	0.0020	0.00029	ND	0.0020	0.00029	ND	0.0049	0.00069	ND	0.0078	0.0011
1,2-Dichloropropane	ND	0.0020	0.00037	ND	0.0020	0.00037	ND	0.0049	0.00088	ND	0.0078	0.0014
Bromodichloromethane	ND	0.0020	0.00012	ND	0.0020	0.00012	ND	0.0049	0.00029	ND	0.0078	0.00047
c-1,3-Dichloropropene	ND	0.0020	0.00024	ND	0.0020	0.00024	ND	0.0049	0.00058	ND	0.0078	0.00093
4-Methyl-2-Pentanone	ND	0.0020	0.00014	ND	0.0020	0.00014	ND	0.0049	0.00033	ND	0.0078	0.00052
Toluene	0.0058	0.0020	0.00016	0.0051	0.0020	0.00016	0.056	0.0049	0.00039	0.10	0.0078	0.00062
t-1,3-Dichloropropene	ND	0.0020	0.00021	ND	0.0020	0.00021	ND	0.0049	0.00050	ND	0.0078	0.00080
1,1,2-Trichloroethane	ND	0.0020	0.00033	ND	0.0020	0.00033	ND	0.0049	0.00079	ND	0.0078	0.0013
1,3-Dichloropropane	ND	0.0020	0.00010	ND	0.0020	0.00010	ND	0.0049	0.00024	ND	0.0078	0.00039
Tetrachloroethene	ND	0.0020	0.00024	ND	0.0020	0.00024	ND	0.0049	0.00058	ND	0.0078	0.00093
2-Hexanone	ND	0.0020	0.00042	ND	0.0020	0.00042	ND	0.0049	0.0010	ND	0.0078	0.0016
Dibromochloromethane	ND	0.0020	0.00037	ND	0.0020	0.00037	ND	0.0049	0.00089	ND	0.0078	0.0014
1,2-Dibromoethane	ND	0.0020	0.00018	ND	0.0020	0.00018	ND	0.0049	0.00044	ND	0.0078	0.00071
Chlorobenzene	ND	0.0020	0.00016	ND	0.0020	0.00016	ND	0.0049	0.00038	ND	0.0078	0.00061
Ethylbenzene	0.0014 J	0.0020	0.00012	0.0010 J	0.0020	0.00012	0.019	0.0049	0.00028	0.023	0.0078	0.00045
p,&m-Xylene	0.0093	0.0020	0.00023	0.0083	0.0020	0.00023	0.11	0.0049	0.00055	0.15	0.0078	0.00088
o-Xylene	0.0031	0.0020	0.00025	0.0027	0.0020	0.00025	0.0099	0.0049	0.00059	0.0084	0.0078	0.00094

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 12/13/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	K121305-01			K121305-02			K121305-03			K121305-04		
Client Sample I.D.:	VEFF-12-12			VEFF-12-12D			VPOST-12-12			VINF-12-12		
Date/Time Sampled:	12/12/19 10:00			12/12/19 10:00			12/12/19 10:10			12/12/19 10:20		
Date/Time Analyzed:	12/23/19 17:35			12/23/19 16:42			12/23/19 14:49			12/23/19 15:25		
QC Batch No.:	191222MS2A1			191222MS2A1			191222MS2A1			191222MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.0			2.0			4.9			7.8		
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv
Styrene	0.00076 J	0.0020	0.00026	0.00048 J	0.0020	0.00026	ND	0.0049	0.00062	ND	0.0078	0.00100
Bromoform	ND	0.0020	0.00011	ND	0.0020	0.00011	ND	0.0049	0.00027	ND	0.0078	0.00043
Isopropyl benzene	ND	0.0020	0.00021	ND	0.0020	0.00021	ND	0.0049	0.00051	ND	0.0078	0.00081
1,1,2,2-Tetrachloroethane	ND	0.0040	0.00012	ND	0.0040	0.00012	ND	0.0097	0.00030	ND	0.016	0.00048
Benzyl Chloride	ND	0.0020	0.00037	ND	0.0020	0.00037	ND	0.0049	0.00089	ND	0.0078	0.0014
1,2,3-Trichloropropane	ND	0.0020	0.00054	ND	0.0020	0.00054	ND	0.0049	0.0013	ND	0.0078	0.0021
n-Propyl Benzene	ND	0.0020	0.00012	0.00028 J	0.0020	0.00012	0.0041 J	0.0049	0.00028	0.0032 J	0.0078	0.00045
4-Ethyl Toluene	0.0020	0.0020	0.00013	0.0019 J	0.0020	0.00013	0.019	0.0049	0.00031	0.015	0.0078	0.00049
1,3,5-Trimethylbenzene	0.0012 J	0.0040	0.00035	0.0011 J	0.0040	0.00035	0.0084 J	0.0097	0.00084	0.0073 J	0.016	0.0013
4-Chlorotoluene	ND	0.0020	0.00024	ND	0.0020	0.00024	ND	0.0049	0.00058	ND	0.0078	0.00092
tert-Butylbenzene	ND	0.0020	0.00018	ND	0.0020	0.00018	ND	0.0049	0.00044	ND	0.0078	0.00070
1,2,4-Trimethylbenzene	0.0028 J	0.0040	0.00023	0.0024 J	0.0040	0.00023	0.026	0.0097	0.00055	0.023	0.016	0.00088
sec-Butylbenzene	ND	0.0020	0.00020	ND	0.0020	0.00020	ND	0.0049	0.00047	ND	0.0078	0.00075
p-Isopropyltoluene	0.011	0.0020	0.00026	0.0011 J	0.0020	0.00026	ND	0.0049	0.00063	ND	0.0078	0.0010
1,3-Dichlorobenzene	ND	0.0020	0.00025	ND	0.0020	0.00025	ND	0.0049	0.00059	ND	0.0078	0.00094
1,4-Dichlorobenzene	ND	0.0020	0.00030	ND	0.0020	0.00030	ND	0.0049	0.00071	ND	0.0078	0.0011
n-Butylbenzene	0.00041 J	0.0020	0.00015	0.00036 J	0.0020	0.00015	0.0047 J	0.0049	0.00035	0.0045 J	0.0078	0.00057
1,2-Dichlorobenzene	ND	0.0020	0.00025	ND	0.0020	0.00025	ND	0.0049	0.00060	ND	0.0078	0.00097
1,2,4-Trichlorobenzene	ND	0.0040	0.00033	ND	0.0040	0.00033	ND	0.0097	0.00080	ND	0.016	0.0013
Hexachlorobutadiene	ND	0.0020	0.00012	ND	0.0020	0.00012	ND	0.0049	0.00029	ND	0.0078	0.00046
t-Butanol	ND	0.010	0.00039	ND	0.010	0.00039	ND	0.024	0.00093	ND	0.039	0.0015
n-Hexane	0.0083 J	0.010	0.00027	0.0076 J	0.010	0.00027	0.80	0.024	0.00065	1.0	0.039	0.0010
Isopropyl ether	ND	0.010	0.00022	ND	0.010	0.00022	ND	0.024	0.00054	ND	0.039	0.00086
t-Butyl ethyl ether	ND	0.010	0.00040	ND	0.010	0.00040	ND	0.024	0.00097	ND	0.039	0.0016
2,2-Dichloropropane	ND	0.010	0.00019	ND	0.010	0.00019	ND	0.024	0.00046	ND	0.039	0.00074
t-Amyl methyl ether	ND	0.010	0.00014	ND	0.010	0.00014	ND	0.024	0.00034	ND	0.039	0.00055
1,4-Dioxane	ND	0.010	0.00035	ND	0.010	0.00035	ND	0.024	0.00085	ND	0.039	0.0014
Naphthalene	0.0021 J	0.010	0.00078	0.0012 J	0.010	0.00078	0.0025 J	0.024	0.0019	0.0039 J	0.039	0.0030
1,2,3-Trichlorobenzene (TIC)	ND	--	--	ND	--	--	ND	--	--	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 1/3/20
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 12/13/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK
Client Sample I.D.:	-
Date/Time Sampled:	-
Date/Time Analyzed:	12/23/19 5:22
QC Batch No.:	191222MS2A1
Analyst Initials:	DT
Dilution Factor:	0.20

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
Dichlorodifluoromethane (12)	ND	0.00020	0.000031
Chloromethane	ND	0.00040	0.000044
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.00020	0.000040
Vinyl Chloride	ND	0.00020	0.000032
Bromomethane	ND	0.00020	0.000059
Chloroethane	ND	0.00020	0.00017
Trichlorofluoromethane (11)	ND	0.00020	0.000043
1,1-Dichloroethene	ND	0.00020	0.000045
Carbon Disulfide	ND	0.0010	0.000048
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.00020	0.000054
Acetone	0.000098 J	0.0010	0.000058
Methylene Chloride	ND	0.00020	0.000057
t-1,2-Dichloroethene	ND	0.00020	0.000060
1,1-Dichloroethane	ND	0.00020	0.000027
c-1,2-Dichloroethene	ND	0.00020	0.000039
2-Butanone	ND	0.00020	0.00012
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045
Chloroform	ND	0.00020	0.000028
1,1,1-Trichloroethane	ND	0.00020	0.000020
Carbon Tetrachloride	ND	0.00020	0.000035
Benzene	0.00011 J	0.00020	0.000019
1,2-Dichloroethane	ND	0.00020	0.000015
Trichloroethene	ND	0.00020	0.000028
1,2-Dichloropropane	ND	0.00020	0.000036
Bromodichloromethane	ND	0.00020	0.000012
c-1,3-Dichloropropene	ND	0.00020	0.000024
4-Methyl-2-Pentanone	ND	0.00020	0.000013
Toluene	0.000039 J	0.00020	0.000016
t-1,3-Dichloropropene	ND	0.00020	0.000021
1,1,2-Trichloroethane	ND	0.00020	0.000032
1,3-Dichloropropane	ND	0.00020	0.0000099
Tetrachloroethene	ND	0.00020	0.000024
2-Hexanone	ND	0.00020	0.000041
Dibromochloromethane	ND	0.00020	0.000036
1,2-Dibromoethane	ND	0.00020	0.000018
Chlorobenzene	ND	0.00020	0.000016
Ethylbenzene	ND	0.00020	0.000011
p,&m-Xylene	0.000079 J	0.00020	0.000023
o-Xylene	ND	0.00020	0.000024

18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 12/13/19
Matrix: Air
Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK
Client Sample I.D.:	-
Date/Time Sampled:	-
Date/Time Analyzed:	12/23/19 5:22
QC Batch No.:	191222MS2A1
Analyst Initials:	DT
Dilution Factor:	0.20

ANALYTE	Result ppmv	RL ppmv	MDL ppmv
Styrene	ND	0.00020	0.000026
Bromoform	ND	0.00020	0.000011
Isopropyl benzene	ND	0.00020	0.000021
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012
Benzyl Chloride	ND	0.00020	0.000037
1,2,3-Trichloropropane	ND	0.00020	0.000054
n-Propyl Benzene	ND	0.00020	0.000012
4-Ethyl Toluene	ND	0.00020	0.000013
1,3,5-Trimethylbenzene	ND	0.00040	0.000035
4-Chlorotoluene	ND	0.00020	0.000024
tert-Butylbenzene	ND	0.00020	0.000018
1,2,4-Trimethylbenzene	ND	0.00040	0.000023
sec-Butylbenzene	ND	0.00020	0.000019
p-Isopropyltoluene	ND	0.00020	0.000026
1,3-Dichlorobenzene	ND	0.00020	0.000024
1,4-Dichlorobenzene	ND	0.00020	0.000029
n-Butylbenzene	ND	0.00020	0.000015
1,2-Dichlorobenzene	ND	0.00020	0.000025
1,2,4-Trichlorobenzene	ND	0.00040	0.000033
Hexachlorobutadiene	ND	0.00020	0.000012
t-Butanol	ND	0.0010	0.000038
n-Hexane	ND	0.0010	0.000027
Isopropyl ether	ND	0.0010	0.000022
t-Butyl ethyl ether	ND	0.0010	0.000040
2,2-Dichloropropane	ND	0.0010	0.000019
t-Amyl methyl ether	ND	0.0010	0.000014
1,4-Dioxane	ND	0.0010	0.000035
Naphthalene	0.000099 J	0.0010	0.000077
1,2,3-Trichlorobenzene (TIC)	ND	--	--

MDL = Method Detection Limit
ND= Not Detected (below MDL)
RL = Reporting Limit
J = Trace amount. Analyte concentration between RL and MDL.

Reviewed/Approved By: _____ Date 1/3/20
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 191222MS2A1

Matrix: Air

EPA Method TO-14/TO-15

Lab No:	Method Blank		LCS		LCSD						
Date/Time Analyzed:	12/23/19 5:22		12/23/19 4:06		12/23/19 4:44						
Data File ID:	22DEC015.D		22DEC013.D		22DEC014.D						
Analyst Initials:	DT		DT		DT						
Dilution Factor:	0.2		1.0		1.0			Limits			
ANALYTE	Result ppbv	Spike Amount	Result ppbv	% Rec	Result ppbv	% Rec	RPD	Low %Rec	High %Rec	Max. RPD	Pass/ Fail
1,1-Dichloroethene	0.0	10.0	10.1	101	10.2	102	1.4	70	130	30	Pass
Methylene Chloride	0.0	10.0	10.1	101	10.2	102	1.1	70	130	30	Pass
Trichloroethene	0.0	10.0	10.2	102	10.0	100	1.6	70	130	30	Pass
Toluene	0.0	10.0	10.9	109	11.0	110	0.6	70	130	30	Pass
1,1,2,2-Tetrachloroethane	0.0	10.0	8.8	88	9.0	90	1.9	70	130	30	Pass

RPD = Relative Percent Difference

Reviewed/Approved By: _____ Date: 1/3/20

Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 12/13/19
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	K121305-01		K121305-02		K121305-03		K121305-04	
Client Sample I.D.:	VEFF-12-12		VEFF-12-12D		VPOST-12-12		VINF-12-12	
Date/Time Sampled:	12/12/19 10:00		12/12/19 10:00		12/12/19 10:10		12/12/19 10:20	
Date/Time Analyzed:	12/19/19 13:34		12/19/19 13:57		12/19/19 14:20		12/19/19 14:43	
QC Batch No.:	191219GC11A2		191219GC11A2		191219GC11A2		191219GC11A2	
Analyst Initials:	AS		AS		AS		AS	
Dilution Factor:	2.0		2.0		1.9		1.9	
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	ND	2.0	ND	2.0	21	1.9	30	1.9

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 12/23/19
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 191219GC11A2
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS		LCSD					
Date Analyzed:	12/19/19 13:10		12/19/19 12:24		12/19/19 12:47					
Analyst Initials:	AS		AS		AS					
Dilution Factor:	1.0		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	4.04	81	4.00	80	1.0	70	130	25

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ **Date** 12/23/19
Mark Johnson
Operations Manager

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18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

Client: Jacobs
Attn: Eric Davis
Project Name: SFPP Norwalk
Project No.: NA
Date Received: 12/13/19
Matrix: Air
Reporting Units: % v/v

ASTM D1946

Lab No.:	K121305-04
Client Sample I.D.:	VINF-12-12
Date/Time Sampled:	12/12/19 10:20
Date/Time Analyzed:	12/26/19 16:03
QC Batch No.:	191226GC8A1
Analyst Initials:	AS
Dilution Factor:	1.9

ANALYTE	Result % v/v	RL % v/v
Carbon Dioxide	1.1	0.019
Oxygen/Argon	20	0.97
Nitrogen	78	1.9
Methane	0.023	0.0019

Results normalized including non-methane hydrocarbons
ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 1/3/20
Mark Johnson
Operations Manager

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AirTECHNOLOGY Laboratories, Inc.
18501 E. Gale Avenue, Suite 130 ♦ City of Industry, CA 91748 ♦ Ph: (626) 964-4032 ♦ Fx: (626) 964-5832

QC Batch No: 191226GC8A1
Matrix: Air
Reporting Units: % v/v

ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	12/26/19 10:57			12/26/19 9:51		12/26/19 10:05					
Analyst Initials:	AS			AS		AS					
Dilution Factor:	1.0			1.0		1.0			Limits		
ANALYTE	Result % v/v	RL % v/v	SPIKE AMT. % v/v	Result % v/v	% Rec.	Result % v/v	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Carbon Dioxide	ND	0.010	10	9.35	93	9.29	93	0.7	70	130	30
Oxygen/Argon	ND	0.50	15	16.1	108	16.0	108	0.5	70	130	30
Nitrogen	ND	1.0	70	72.4	103	72.1	103	0.4	70	130	30
Methane	ND	0.0010	0.10	0.104	104	0.103	103	0.9	70	130	30

ND = Not Detected (below RL)
RL = Reporting Limit

Reviewed/Approved By: _____ Date 1/3/20
Mark Johnson
Operations Manager

The cover letter is an integral part of this analytical report

October 16, 2019

Eric Davis
CH2MHill
1000 Wilshire Blvd.
Los Angeles, CA 90017

TEL:
FAX:

Workorder No.: N037815

RE: SFPP Norwalk

Attention: Eric Davis

Enclosed are the results for sample(s) received on October 08, 2019 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

for

Puri Romualdo
Laboratory Director

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

Results were J-Flag. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" Flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.

Analytical Comment For EPA 8260B:

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) in samples N037814-01MS/MSD are outside recovery criteria for some analytes possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Analytical Comment For EPA 8015B_GRO:

Surrogate, Chlorobenzene-d5, recovery biased high in sample N037815-001 and closing Continuing Calibration Verification (CCV). However, sample result was non-detect (ND) for the analyte of interest therefore reanalysis of the sample was not necessary.

CLIENT: CH2MHill
Project: SFPP Norwalk
Lab Order: N037815
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N037815-001A	INF-10-08	Wastewater	10/8/2019 10:30:00 AM	10/8/2019	10/16/2019
N037815-001B	INF-10-08	Wastewater	10/8/2019 10:30:00 AM	10/8/2019	10/16/2019
N037815-001C	INF-10-08	Wastewater	10/8/2019 10:30:00 AM	10/8/2019	10/16/2019

CLIENT: CH2MHill
Lab Order: N037815
Project: SFPP Norwalk
Lab ID: N037815-001

Client Sample ID: INF-10-08
Collection Date: 10/8/2019 10:30:00 AM
Matrix: WASTEWATER

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: **CA01638-MS10_191009A** QC Batch: **CA19VW096** PrepDate: Analyst: **AW**

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		ug/L	1	10/9/2019 12:24 PM
1,1,1-Trichloroethane	ND	0.20	1.0		ug/L	1	10/9/2019 12:24 PM
1,1,2,2-Tetrachloroethane	ND	0.11	1.0		ug/L	1	10/9/2019 12:24 PM
1,1,2-Trichloroethane	ND	0.23	1.0		ug/L	1	10/9/2019 12:24 PM
1,1-Dichloroethane	ND	0.22	0.50		ug/L	1	10/9/2019 12:24 PM
1,1-Dichloroethene	ND	0.17	1.0		ug/L	1	10/9/2019 12:24 PM
1,1-Dichloropropene	ND	0.16	1.0		ug/L	1	10/9/2019 12:24 PM
1,2,3-Trichlorobenzene	ND	0.37	1.0		ug/L	1	10/9/2019 12:24 PM
1,2,3-Trichloropropane	ND	0.23	1.0		ug/L	1	10/9/2019 12:24 PM
1,2,4-Trichlorobenzene	ND	0.10	1.0		ug/L	1	10/9/2019 12:24 PM
1,2,4-Trimethylbenzene	ND	0.060	1.0		ug/L	1	10/9/2019 12:24 PM
1,2-Dibromo-3-chloropropane	ND	0.32	2.0		ug/L	1	10/9/2019 12:24 PM
1,2-Dibromoethane	ND	0.19	1.0		ug/L	1	10/9/2019 12:24 PM
1,2-Dichlorobenzene	ND	0.089	1.0		ug/L	1	10/9/2019 12:24 PM
1,2-Dichloroethane	ND	0.16	0.50		ug/L	1	10/9/2019 12:24 PM
1,2-Dichloropropane	ND	0.16	1.0		ug/L	1	10/9/2019 12:24 PM
1,3,5-Trimethylbenzene	ND	0.051	1.0		ug/L	1	10/9/2019 12:24 PM
1,3-Dichlorobenzene	ND	0.081	1.0		ug/L	1	10/9/2019 12:24 PM
1,3-Dichloropropane	ND	0.13	1.0		ug/L	1	10/9/2019 12:24 PM
1,4-Dichlorobenzene	ND	0.080	1.0		ug/L	1	10/9/2019 12:24 PM
2,2-Dichloropropane	ND	0.22	1.0		ug/L	1	10/9/2019 12:24 PM
2-Butanone	ND	4.7	10		ug/L	1	10/9/2019 12:24 PM
2-Chlorotoluene	ND	0.090	1.0		ug/L	1	10/9/2019 12:24 PM
4-Chlorotoluene	ND	0.065	1.0		ug/L	1	10/9/2019 12:24 PM
4-Isopropyltoluene	ND	0.085	1.0		ug/L	1	10/9/2019 12:24 PM
4-Methyl-2-pentanone	ND	0.83	10		ug/L	1	10/9/2019 12:24 PM
Acetone	ND	4.6	10		ug/L	1	10/9/2019 12:24 PM
Benzene	ND	0.11	1.0		ug/L	1	10/9/2019 12:24 PM
Bromobenzene	ND	0.093	1.0		ug/L	1	10/9/2019 12:24 PM
Bromochloromethane	ND	0.26	1.0		ug/L	1	10/9/2019 12:24 PM
Bromodichloromethane	ND	0.20	1.0		ug/L	1	10/9/2019 12:24 PM
Bromoform	ND	0.23	1.0		ug/L	1	10/9/2019 12:24 PM
Bromomethane	ND	0.38	1.0		ug/L	1	10/9/2019 12:24 PM
Carbon disulfide	ND	0.19	1.0		ug/L	1	10/9/2019 12:24 PM
Carbon tetrachloride	ND	0.33	0.50		ug/L	1	10/9/2019 12:24 PM
Chlorobenzene	ND	0.11	1.0		ug/L	1	10/9/2019 12:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	S	Spike/Surrogate outside of limits due to matrix interference
	Results are wet unless otherwise specified	DO	Surrogate Diluted Out

CLIENT: CH2MHill
Lab Order: N037815
Project: SFPP Norwalk
Lab ID: N037815-001

Client Sample ID: INF-10-08
Collection Date: 10/8/2019 10:30:00 AM
Matrix: WASTEWATER

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: **CA01638-MS10_191009A** QC Batch: **CA19VW096** PrepDate: Analyst: **AW**

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
Chloroethane	ND	0.69	1.0		ug/L	1	10/9/2019 12:24 PM
Chloroform	ND	0.38	1.0		ug/L	1	10/9/2019 12:24 PM
Chloromethane	ND	0.23	1.0		ug/L	1	10/9/2019 12:24 PM
cis-1,2-Dichloroethene	ND	0.11	1.0		ug/L	1	10/9/2019 12:24 PM
cis-1,3-Dichloropropene	ND	0.16	1.0		ug/L	1	10/9/2019 12:24 PM
Di-isopropyl ether	0.94	0.15	1.0	J	ug/L	1	10/9/2019 12:24 PM
Dibromochloromethane	ND	0.23	1.0		ug/L	1	10/9/2019 12:24 PM
Dibromomethane	ND	0.13	1.0		ug/L	1	10/9/2019 12:24 PM
Dichlorodifluoromethane	ND	0.16	1.0		ug/L	1	10/9/2019 12:24 PM
Ethyl tert-butyl ether	ND	0.10	1.0		ug/L	1	10/9/2019 12:24 PM
Ethylbenzene	ND	0.11	1.0		ug/L	1	10/9/2019 12:24 PM
Freon-113	ND	0.28	1.0		ug/L	1	10/9/2019 12:24 PM
Hexachlorobutadiene	ND	0.30	1.0		ug/L	1	10/9/2019 12:24 PM
Isopropylbenzene	ND	0.092	1.0		ug/L	1	10/9/2019 12:24 PM
m,p-Xylene	ND	0.23	1.0		ug/L	1	10/9/2019 12:24 PM
Methylene chloride	ND	1.2	2.0		ug/L	1	10/9/2019 12:24 PM
MTBE	ND	0.44	1.0		ug/L	1	10/9/2019 12:24 PM
n-Butylbenzene	ND	0.093	1.0		ug/L	1	10/9/2019 12:24 PM
n-Propylbenzene	ND	0.10	1.0		ug/L	1	10/9/2019 12:24 PM
Naphthalene	ND	0.41	1.0		ug/L	1	10/9/2019 12:24 PM
o-Xylene	ND	0.087	1.0		ug/L	1	10/9/2019 12:24 PM
sec-Butylbenzene	ND	0.076	1.0		ug/L	1	10/9/2019 12:24 PM
Styrene	ND	0.41	1.0		ug/L	1	10/9/2019 12:24 PM
Tert-amyl methyl ether	ND	0.13	1.0		ug/L	1	10/9/2019 12:24 PM
Tert-Butanol	ND	2.8	5.0		ug/L	1	10/9/2019 12:24 PM
tert-Butylbenzene	ND	0.10	1.0		ug/L	1	10/9/2019 12:24 PM
Tetrachloroethene	ND	0.25	1.0		ug/L	1	10/9/2019 12:24 PM
Toluene	ND	0.13	2.0		ug/L	1	10/9/2019 12:24 PM
trans-1,2-Dichloroethene	ND	0.27	1.0		ug/L	1	10/9/2019 12:24 PM
trans-1,3-Dichloropropene	ND	0.12	1.0		ug/L	1	10/9/2019 12:24 PM
Trichloroethene	ND	0.26	1.0		ug/L	1	10/9/2019 12:24 PM
Trichlorofluoromethane	ND	0.23	1.0		ug/L	1	10/9/2019 12:24 PM
Vinyl chloride	ND	0.19	0.50		ug/L	1	10/9/2019 12:24 PM
Xylenes, Total	ND	1.5	2.0		ug/L	1	10/9/2019 12:24 PM
Surr: 1,2-Dichloroethane-d4	97.8	0	72-119		%REC	1	10/9/2019 12:24 PM
Surr: 4-Bromofluorobenzene	96.4	0	76-119		%REC	1	10/9/2019 12:24 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	S	Spike/Surrogate outside of limits due to matrix interference
	Results are wet unless otherwise specified	DO	Surrogate Diluted Out

CLIENT: CH2MHill
Lab Order: N037815
Project: SFPP Norwalk
Lab ID: N037815-001

Client Sample ID: INF-10-08
Collection Date: 10/8/2019 10:30:00 AM
Matrix: WASTEWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS							
			EPA 8260B				
RunID: **CA01638-MS10_191009A** QC Batch: **CA19VW096**				PrepDate:			Analyst: **AW**
Surr: Dibromofluoromethane	96.4	0	85-115		%REC	1	10/9/2019 12:24 PM
Surr: Toluene-d8	105	0	81-120		%REC	1	10/9/2019 12:24 PM
TPH EXTRACTABLE BY GC/FID							
		EPA 3510C	**EPA 8015B**				
RunID: **NV00922-GC3_191011A** QC Batch: **75607**				PrepDate:	**10/9/2019**		Analyst: **MG**
TPH-Diesel (C13-C22)	250	15	25		ug/L	1	10/12/2019 09:37 AM
TPH-Oil (C23-C36)	140	14	25		ug/L	1	10/12/2019 09:37 AM
Surr: Octacosane	75.3	0	26-152		%REC	1	10/12/2019 09:37 AM
Surr: p-Terphenyl	81.5	0	57-132		%REC	1	10/12/2019 09:37 AM
GASOLINE RANGE ORGANICS BY GC/FID							
			EPA 8015B				
RunID: **NV00922-GC4_191010A** QC Batch: **E19VW076**				PrepDate:			Analyst: **HG**
TPH-Gasoline (C4-C12)	28	21	50	J	ug/L	1	10/10/2019 01:26 PM
Surr: Chlorobenzene - d5	141	0	74-138	S	%REC	1	10/10/2019 01:26 PM
TOTAL TPH							
			EPA 8015B				
RunID: **NV00922-GC3_191011A** QC Batch: **R136898**				PrepDate:			Analyst: **MG**
Total TPH	420	21	100		ug/L	1	10/11/2019

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	S	Spike/Surrogate outside of limits due to matrix interference
	Results are wet unless otherwise specified	DO	Surrogate Diluted Out

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_FP_SFPP

Sample ID: **MB-75607** SampType: **MBLK** TestCode: **8015_W_FP_** Units: **ug/L** Prep Date: **10/9/2019** RunNo: **136898**
Client ID: **PBW** Batch ID: **75607** TestNo: **EPA 8015B** **EPA 3510C** Analysis Date: **10/12/2019** SeqNo: **3533521**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-Diesel (C13-C22)	ND	25									
TPH-Oil (C23-C36)	ND	25									
Surr: Octacosane	84.351		80.00		105	26	152				
Surr: p-Terphenyl	85.066		80.00		106	57	132				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_SFPPTOT

Sample ID: **MB-R136898**	SampType: **MBLK**	TestCode: **8015_W_SFP**	Units: **ug/L**		Prep Date:					RunNo: **136898**		
Client ID: **PBW**	Batch ID: **R136898**	TestNo: **EPA 8015B**			Analysis Date: **10/11/2019**					SeqNo: **3537348**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Total TPH	26.000	100									J	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015GAS_WSFPP

Sample ID: **E191010LCS** SampType: **LCS** TestCode: **8015GAS_WS** Units: **ug/L** Prep Date: RunNo: **136879**
Client ID: **LCSW** Batch ID: **E19VW076** TestNo: **EPA 8015B** Analysis Date: **10/10/2019** SeqNo: **3532260**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-Gasoline (C4-C12)	1098.000	50	1000	0	110	67	136				
Surr: Chlorobenzene - d5	49646.000		50000		99.3	74	138				

Sample ID: **E191010LCSD** SampType: **LCSD** TestCode: **8015GAS_WS** Units: **ug/L** Prep Date: RunNo: **136879**
Client ID: **LCSS02** Batch ID: **E19VW076** TestNo: **EPA 8015B** Analysis Date: **10/10/2019** SeqNo: **3532261**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-Gasoline (C4-C12)	956.000	50	1000	0	95.6	67	136	1098	13.8	30	
Surr: Chlorobenzene - d5	50877.000		50000		102	74	138		0	0	

Sample ID: **E191010MB** SampType: **MBLK** TestCode: **8015GAS_WS** Units: **ug/L** Prep Date: RunNo: **136879**
Client ID: **PBW** Batch ID: **E19VW076** TestNo: **EPA 8015B** Analysis Date: **10/10/2019** SeqNo: **3532262**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-Gasoline (C4-C12)	26.000	50									J
Surr: Chlorobenzene - d5	63040.000		50000		126	74	138				

Sample ID: **N037828-001CMS** SampType: **MS** TestCode: **8015GAS_WS** Units: **ug/L** Prep Date: RunNo: **136879**
Client ID: **ZZZZZZ** Batch ID: **E19VW076** TestNo: **EPA 8015B** Analysis Date: **10/10/2019** SeqNo: **3532266**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-Gasoline (C4-C12)	1193.000	50	1000	23.00	117	67	136				
Surr: Chlorobenzene - d5	55720.000		50000		111	74	138				

Sample ID: **N037828-001CMSD** SampType: **MSD** TestCode: **8015GAS_WS** Units: **ug/L** Prep Date: RunNo: **136879**
Client ID: **ZZZZZZ** Batch ID: **E19VW076** TestNo: **EPA 8015B** Analysis Date: **10/10/2019** SeqNo: **3532267**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-Gasoline (C4-C12)	1113.000	50	1000	23.00	109	67	136	1193	6.94	30	

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015GAS_WSFPP

Sample ID: **N037828-001CMSD** SampType: **MSD** TestCode: **8015GAS_WS** Units: **ug/L** Prep Date: RunNo: **136879**
Client ID: **ZZZZZZ** Batch ID: **E19VW076** TestNo: **EPA 8015B** Analysis Date: **10/10/2019** SeqNo: **3532267**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Chlorobenzene - d5	54842.000		50000		110	74	138		0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191009-LCS** SampType: **LCS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **LCSW** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531566**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	20.830	1.0	20.00	0	104	81	129				
1,1,1-Trichloroethane	20.740	1.0	20.00	0	104	67	132				
1,1,2,2-Tetrachloroethane	20.060	1.0	20.00	0	100	63	128				
1,1,2-Trichloroethane	21.790	1.0	20.00	0	109	75	125				
1,1-Dichloroethane	20.280	0.50	20.00	0	101	69	133				
1,1-Dichloroethene	19.450	1.0	20.00	0	97.3	68	130				
1,1-Dichloropropene	22.150	1.0	20.00	0	111	73	132				
1,2,3-Trichlorobenzene	20.490	1.0	20.00	0	102	67	137				
1,2,3-Trichloropropane	21.510	1.0	20.00	0	108	73	124				
1,2,4-Trichlorobenzene	21.210	1.0	20.00	0	106	66	134				
1,2,4-Trimethylbenzene	22.630	1.0	20.00	0	113	74	132				
1,2-Dibromo-3-chloropropane	23.780	2.0	20.00	0	119	50	132				
1,2-Dibromoethane	19.790	1.0	20.00	0	99.0	80	121				
1,2-Dichlorobenzene	20.700	1.0	20.00	0	104	71	122				
1,2-Dichloroethane	20.370	0.50	20.00	0	102	69	132				
1,2-Dichloropropane	20.520	1.0	20.00	0	103	75	125				
1,3,5-Trimethylbenzene	22.140	1.0	20.00	0	111	74	131				
1,3-Dichlorobenzene	20.180	1.0	20.00	0	101	75	124				
1,3-Dichloropropane	21.210	1.0	20.00	0	106	73	126				
1,4-Dichlorobenzene	19.750	1.0	20.00	0	98.8	74	123				
2,2-Dichloropropane	19.480	1.0	20.00	0	97.4	69	137				
2-Butanone	154.760	10	200.0	0	77.4	49	136				
2-Chlorotoluene	20.280	1.0	20.00	0	101	73	126				
4-Chlorotoluene	20.430	1.0	20.00	0	102	74	128				
4-Isopropyltoluene	21.780	1.0	20.00	0	109	73	130				
4-Methyl-2-pentanone	200.430	10	200.0	0	100	58	134				
Acetone	144.030	10	200.0	0	72.0	40	135				
Benzene	20.390	1.0	20.00	0	102	81	122				
Bromobenzene	20.420	1.0	20.00	0	102	76	124				
Bromochloromethane	17.780	1.0	20.00	0	88.9	65	129				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191009-LCS** SampType: **LCS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **LCSW** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531566**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	21.160	1.0	20.00	0	106	76	121				
Bromoform	21.530	1.0	20.00	0	108	69	128				
Bromomethane	26.370	1.0	20.00	0	132	53	141				
Carbon disulfide	20.420	1.0	20.00	0	102	75	125				
Carbon tetrachloride	21.270	0.50	20.00	0	106	66	138				
Chlorobenzene	20.700	1.0	20.00	0	104	81	122				
Chloroethane	17.970	1.0	20.00	0	89.8	58	133				
Chloroform	19.070	1.0	20.00	0	95.4	69	128				
Chloromethane	20.740	1.0	20.00	0	104	56	131				
cis-1,2-Dichloroethene	18.950	1.0	20.00	0	94.8	72	126				
cis-1,3-Dichloropropene	18.380	1.0	20.00	0	91.9	69	131				
Di-isopropyl ether	17.830	1.0	20.00	0	89.2	70	130				
Dibromochloromethane	21.870	1.0	20.00	0	109	66	133				
Dibromomethane	21.330	1.0	20.00	0	107	76	125				
Dichlorodifluoromethane	18.920	1.0	20.00	0	94.6	53	153				
Ethyl tert-butyl ether	18.730	1.0	20.00	0	93.6	70	130				
Ethylbenzene	21.700	1.0	20.00	0	108	73	127				
Freon-113	20.320	1.0	20.00	0	102	75	125				
Hexachlorobutadiene	20.340	1.0	20.00	0	102	67	131				
Isopropylbenzene	20.930	1.0	20.00	0	105	75	127				
m,p-Xylene	44.060	1.0	40.00	0	110	76	128				
Methylene chloride	18.500	2.0	20.00	0	92.5	63	137				
MTBE	18.000	1.0	20.00	0	90.0	65	123				
n-Butylbenzene	22.280	1.0	20.00	0	111	69	137				
n-Propylbenzene	21.160	1.0	20.00	0	106	72	129				
Naphthalene	20.840	1.0	20.00	0	104	54	138				
o-Xylene	20.830	1.0	20.00	0	104	80	121				
sec-Butylbenzene	20.530	1.0	20.00	0	103	72	127				
Styrene	21.590	1.0	20.00	0	108	65	134				
Tert-amyl methyl ether	20.000	1.0	20.00	0	100	70	130				

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out
- Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191009-LCS** SampType: **LCS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **LCSW** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531566**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tert-Butanol	98.640	5.0	100.0	0	98.6	70	130				
tert-Butylbenzene	20.630	1.0	20.00	0	103	70	129				
Tetrachloroethene	21.410	1.0	20.00	0	107	66	128				
Toluene	22.050	2.0	20.00	0	110	77	122				
trans-1,2-Dichloroethene	18.060	1.0	20.00	0	90.3	63	137				
trans-1,3-Dichloropropene	19.770	1.0	20.00	0	98.8	59	135				
Trichloroethene	19.990	1.0	20.00	0	100	70	127				
Trichlorofluoromethane	20.230	1.0	20.00	0	101	57	129				
Vinyl chloride	20.000	0.50	20.00	0	100	50	134				
Xylenes, Total	64.890	2.0	60.00	0	108	75	125				
Surr: 1,2-Dichloroethane-d4	23.570		25.00		94.3	72	119				
Surr: 4-Bromofluorobenzene	25.640		25.00		103	76	119				
Surr: Dibromofluoromethane	22.640		25.00		90.6	85	115				
Surr: Toluene-d8	26.340		25.00		105	81	120				

Sample ID: **CA191009-MB2** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **PBW** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531568**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	1.0									
1,1,1-Trichloroethane	ND	1.0									
1,1,2,2-Tetrachloroethane	ND	1.0									
1,1,2-Trichloroethane	ND	1.0									
1,1-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	1.0									
1,1-Dichloropropene	ND	1.0									
1,2,3-Trichlorobenzene	ND	1.0									
1,2,3-Trichloropropane	ND	1.0									
1,2,4-Trichlorobenzene	ND	1.0									
1,2,4-Trimethylbenzene	ND	1.0									

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out
- Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191009-MB2** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **PBW** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531568**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	ND	2.0									
1,2-Dibromoethane	ND	1.0									
1,2-Dichlorobenzene	ND	1.0									
1,2-Dichloroethane	ND	0.50									
1,2-Dichloropropane	ND	1.0									
1,3,5-Trimethylbenzene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,3-Dichloropropane	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
2,2-Dichloropropane	ND	1.0									
2-Butanone	ND	10									
2-Chlorotoluene	ND	1.0									
4-Chlorotoluene	ND	1.0									
4-Isopropyltoluene	ND	1.0									
4-Methyl-2-pentanone	ND	10									
Acetone	ND	10									
Benzene	ND	1.0									
Bromobenzene	ND	1.0									
Bromochloromethane	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									
Carbon disulfide	ND	1.0									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	1.0									
Chloroethane	ND	1.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
cis-1,2-Dichloroethene	ND	1.0									
cis-1,3-Dichloropropene	ND	1.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191009-MB2** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **PBW** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531568**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Di-isopropyl ether	ND	1.0									
Dibromochloromethane	ND	1.0									
Dibromomethane	ND	1.0									
Dichlorodifluoromethane	ND	1.0									
Ethyl tert-butyl ether	ND	1.0									
Ethylbenzene	ND	1.0									
Freon-113	ND	1.0									
Hexachlorobutadiene	ND	1.0									
Isopropylbenzene	ND	1.0									
m,p-Xylene	ND	1.0									
Methylene chloride	ND	2.0									
MTBE	ND	1.0									
n-Butylbenzene	ND	1.0									
n-Propylbenzene	ND	1.0									
Naphthalene	ND	1.0									
o-Xylene	ND	1.0									
sec-Butylbenzene	ND	1.0									
Styrene	ND	1.0									
Tert-amyl methyl ether	ND	1.0									
Tert-Butanol	ND	5.0									
tert-Butylbenzene	ND	1.0									
Tetrachloroethene	ND	1.0									
Toluene	ND	2.0									
trans-1,2-Dichloroethene	ND	1.0									
trans-1,3-Dichloropropene	ND	1.0									
Trichloroethene	ND	1.0									
Trichlorofluoromethane	ND	1.0									
Vinyl chloride	ND	0.50									
Xylenes, Total	ND	2.0									
Surr: 1,2-Dichloroethane-d4	25.030		25.00		100	72	119				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191009-MB2** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **PBW** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531568**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	24.390		25.00		97.6	76	119				
Surr: Dibromofluoromethane	25.430		25.00		102	85	115				
Surr: Toluene-d8	26.510		25.00		106	81	120				

Sample ID: **N037814-001A-MS** SampType: **MS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **ZZZZZZ** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531570**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	21.370	1.0	20.00	0	107	81	129				
1,1,1-Trichloroethane	21.230	1.0	20.00	0	106	67	132				
1,1,2,2-Tetrachloroethane	21.000	1.0	20.00	0	105	63	128				
1,1,2-Trichloroethane	20.670	1.0	20.00	0	103	75	125				
1,1-Dichloroethane	19.390	0.50	20.00	0	97.0	69	133				
1,1-Dichloroethene	19.770	1.0	20.00	0	98.8	68	130				
1,1-Dichloropropene	23.420	1.0	20.00	0	117	73	132				
1,2,3-Trichlorobenzene	21.910	1.0	20.00	0	110	67	137				
1,2,3-Trichloropropane	24.570	1.0	20.00	0	123	73	124				
1,2,4-Trichlorobenzene	21.970	1.0	20.00	0	110	66	134				
1,2,4-Trimethylbenzene	23.040	1.0	20.00	0	115	74	132				
1,2-Dibromo-3-chloropropane	20.840	2.0	20.00	0	104	50	132				
1,2-Dibromoethane	20.310	1.0	20.00	0	102	80	121				
1,2-Dichlorobenzene	21.410	1.0	20.00	0	107	71	122				
1,2-Dichloroethane	21.440	0.50	20.00	0	107	69	132				
1,2-Dichloropropane	21.870	1.0	20.00	0	109	75	125				
1,3,5-Trimethylbenzene	22.570	1.0	20.00	0	113	74	131				
1,3-Dichlorobenzene	20.730	1.0	20.00	0	104	75	124				
1,3-Dichloropropane	21.550	1.0	20.00	0	108	73	126				
1,4-Dichlorobenzene	21.300	1.0	20.00	0	106	74	123				
2,2-Dichloropropane	19.680	1.0	20.00	0	98.4	69	137				
2-Butanone	129.210	10	200.0	0	64.6	49	136				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N037814-001A-MS** SampType: **MS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **ZZZZZZ** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531570**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Chlorotoluene	20.830	1.0	20.00	0	104	73	126				
4-Chlorotoluene	20.740	1.0	20.00	0	104	74	128				
4-Isopropyltoluene	22.560	1.0	20.00	0	113	73	130				
4-Methyl-2-pentanone	215.440	10	200.0	0	108	58	134				
Acetone	82.620	10	200.0	0	41.3	40	135				
Benzene	20.950	1.0	20.00	0	105	81	122				
Bromobenzene	20.320	1.0	20.00	0	102	76	124				
Bromochloromethane	19.710	1.0	20.00	0	98.6	65	129				
Bromodichloromethane	19.910	1.0	20.00	0	99.6	76	121				
Bromoform	22.410	1.0	20.00	0	112	69	128				
Bromomethane	26.890	1.0	20.00	0	134	53	141				
Carbon disulfide	20.600	1.0	20.00	0	103	75	125				
Carbon tetrachloride	21.950	0.50	20.00	0	110	66	138				
Chlorobenzene	21.440	1.0	20.00	0	107	81	122				
Chloroethane	18.740	1.0	20.00	0	93.7	58	133				
Chloroform	20.040	1.0	20.00	0	100	69	128				
Chloromethane	20.620	1.0	20.00	0	103	56	131				
cis-1,2-Dichloroethene	20.450	1.0	20.00	0	102	72	126				
cis-1,3-Dichloropropene	19.820	1.0	20.00	0	99.1	69	131				
Di-isopropyl ether	18.580	1.0	20.00	0	92.9	70	130				
Dibromochloromethane	22.340	1.0	20.00	0	112	66	133				
Dibromomethane	20.100	1.0	20.00	0	101	76	125				
Dichlorodifluoromethane	19.880	1.0	20.00	0	99.4	53	153				
Ethyl tert-butyl ether	18.650	1.0	20.00	0	93.3	70	130				
Ethylbenzene	21.980	1.0	20.00	0	110	73	127				
Freon-113	21.290	1.0	20.00	0	106	75	125				
Hexachlorobutadiene	19.390	1.0	20.00	0	97.0	67	131				
Isopropylbenzene	21.630	1.0	20.00	0	108	75	127				
m,p-Xylene	45.080	1.0	40.00	0	113	76	128				
Methylene chloride	19.490	2.0	20.00	0	97.5	63	137				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N037814-001A-MS** SampType: **MS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **ZZZZZZ** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531570**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	18.720	1.0	20.00	0	93.6	65	123				
n-Butylbenzene	23.110	1.0	20.00	0	116	69	137				
n-Propylbenzene	21.830	1.0	20.00	0	109	72	129				
Naphthalene	21.670	1.0	20.00	0	108	54	138				
o-Xylene	21.300	1.0	20.00	0	106	80	121				
sec-Butylbenzene	20.880	1.0	20.00	0	104	72	127				
Styrene	22.120	1.0	20.00	0	111	65	134				
Tert-amyl methyl ether	21.270	1.0	20.00	0	106	70	130				
Tert-Butanol	94.130	5.0	100.0	0	94.1	70	130				
tert-Butylbenzene	21.260	1.0	20.00	0	106	70	129				
Tetrachloroethene	22.080	1.0	20.00	0	110	66	128				
Toluene	21.810	2.0	20.00	0	109	77	122				
trans-1,2-Dichloroethene	18.310	1.0	20.00	0	91.6	63	137				
trans-1,3-Dichloropropene	19.140	1.0	20.00	0	95.7	59	135				
Trichloroethene	21.590	1.0	20.00	0	108	70	127				
Trichlorofluoromethane	22.500	1.0	20.00	0	112	57	129				
Vinyl chloride	20.100	0.50	20.00	0	101	50	134				
Xylenes, Total	66.380	2.0	60.00	0	111	75	125				
Surr: 1,2-Dichloroethane-d4	22.690		25.00		90.8	72	119				
Surr: 4-Bromofluorobenzene	25.230		25.00		101	76	119				
Surr: Dibromofluoromethane	24.840		25.00		99.4	85	115				
Surr: Toluene-d8	25.880		25.00		104	81	120				

Sample ID: **N037814-001A-MSD** SampType: **MSD** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **ZZZZZZ** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	21.470	1.0	20.00	0	107	81	129	21.37	0.467	20	
1,1,1-Trichloroethane	21.620	1.0	20.00	0	108	67	132	21.23	1.82	20	
1,1,2,2-Tetrachloroethane	20.490	1.0	20.00	0	102	63	128	21.00	2.46	20	

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N037814-001A-MSD** SampType: **MSD** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **ZZZZZZ** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,2-Trichloroethane	20.510	1.0	20.00	0	103	75	125	20.67	0.777	20	
1,1-Dichloroethane	21.600	0.50	20.00	0	108	69	133	19.39	10.8	20	
1,1-Dichloroethene	20.710	1.0	20.00	0	104	68	130	19.77	4.64	20	
1,1-Dichloropropene	23.270	1.0	20.00	0	116	73	132	23.42	0.643	20	
1,2,3-Trichlorobenzene	21.620	1.0	20.00	0	108	67	137	21.91	1.33	20	
1,2,3-Trichloropropane	22.160	1.0	20.00	0	111	73	124	24.57	10.3	20	
1,2,4-Trichlorobenzene	21.390	1.0	20.00	0	107	66	134	21.97	2.68	20	
1,2,4-Trimethylbenzene	23.920	1.0	20.00	0	120	74	132	23.04	3.75	20	
1,2-Dibromo-3-chloropropane	21.880	2.0	20.00	0	109	50	132	20.84	4.87	20	
1,2-Dibromoethane	19.540	1.0	20.00	0	97.7	80	121	20.31	3.86	20	
1,2-Dichlorobenzene	21.470	1.0	20.00	0	107	71	122	21.41	0.280	20	
1,2-Dichloroethane	19.650	0.50	20.00	0	98.2	69	132	21.44	8.71	20	
1,2-Dichloropropane	21.660	1.0	20.00	0	108	75	125	21.87	0.965	20	
1,3,5-Trimethylbenzene	23.200	1.0	20.00	0	116	74	131	22.57	2.75	20	
1,3-Dichlorobenzene	21.600	1.0	20.00	0	108	75	124	20.73	4.11	20	
1,3-Dichloropropane	20.940	1.0	20.00	0	105	73	126	21.55	2.87	20	
1,4-Dichlorobenzene	21.960	1.0	20.00	0	110	74	123	21.30	3.05	20	
2,2-Dichloropropane	21.040	1.0	20.00	0	105	69	137	19.68	6.68	20	
2-Butanone	117.110	10	200.0	0	58.6	49	136	129.2	9.82	20	
2-Chlorotoluene	21.670	1.0	20.00	0	108	73	126	20.83	3.95	20	
4-Chlorotoluene	21.450	1.0	20.00	0	107	74	128	20.74	3.37	20	
4-Isopropyltoluene	23.260	1.0	20.00	0	116	73	130	22.56	3.06	20	
4-Methyl-2-pentanone	188.570	10	200.0	0	94.3	58	134	215.4	13.3	20	
Acetone	79.260	10	200.0	0	39.6	40	135	82.62	4.15	20	S
Benzene	21.480	1.0	20.00	0	107	81	122	20.95	2.50	20	
Bromobenzene	21.650	1.0	20.00	0	108	76	124	20.32	6.34	20	
Bromochloromethane	19.910	1.0	20.00	0	99.6	65	129	19.71	1.01	20	
Bromodichloromethane	19.650	1.0	20.00	0	98.2	76	121	19.91	1.31	20	
Bromoform	20.840	1.0	20.00	0	104	69	128	22.41	7.26	20	
Bromomethane	31.410	1.0	20.00	0	157	53	141	26.89	15.5	20	S

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out
- Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N037814-001A-MSD** SampType: **MSD** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **ZZZZZZ** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	21.400	1.0	20.00	0	107	75	125	20.60	3.81	20	
Carbon tetrachloride	22.340	0.50	20.00	0	112	66	138	21.95	1.76	20	
Chlorobenzene	21.360	1.0	20.00	0	107	81	122	21.44	0.374	20	
Chloroethane	22.500	1.0	20.00	0	112	58	133	18.74	18.2	20	
Chloroform	20.300	1.0	20.00	0	102	69	128	20.04	1.29	20	
Chloromethane	22.730	1.0	20.00	0	114	56	131	20.62	9.73	20	
cis-1,2-Dichloroethene	20.790	1.0	20.00	0	104	72	126	20.45	1.65	20	
cis-1,3-Dichloropropene	18.750	1.0	20.00	0	93.8	69	131	19.82	5.55	20	
Di-isopropyl ether	19.740	1.0	20.00	0	98.7	70	130	18.58	6.05	20	
Dibromochloromethane	21.340	1.0	20.00	0	107	66	133	22.34	4.58	20	
Dibromomethane	18.320	1.0	20.00	0	91.6	76	125	20.10	9.27	20	
Dichlorodifluoromethane	20.840	1.0	20.00	0	104	53	153	19.88	4.72	20	
Ethyl tert-butyl ether	18.950	1.0	20.00	0	94.8	70	130	18.65	1.60	20	
Ethylbenzene	22.790	1.0	20.00	0	114	73	127	21.98	3.62	20	
Freon-113	22.220	1.0	20.00	0	111	75	125	21.29	4.27	20	
Hexachlorobutadiene	20.520	1.0	20.00	0	103	67	131	19.39	5.66	20	
Isopropylbenzene	22.340	1.0	20.00	0	112	75	127	21.63	3.23	20	
m,p-Xylene	46.010	1.0	40.00	0	115	76	128	45.08	2.04	20	
Methylene chloride	19.260	2.0	20.00	0	96.3	63	137	19.49	1.19	20	
MTBE	18.700	1.0	20.00	0	93.5	65	123	18.72	0.107	20	
n-Butylbenzene	23.790	1.0	20.00	0	119	69	137	23.11	2.90	20	
n-Propylbenzene	23.240	1.0	20.00	0	116	72	129	21.83	6.26	20	
Naphthalene	21.150	1.0	20.00	0	106	54	138	21.67	2.43	20	
o-Xylene	22.030	1.0	20.00	0	110	80	121	21.30	3.37	20	
sec-Butylbenzene	22.650	1.0	20.00	0	113	72	127	20.88	8.13	20	
Styrene	22.150	1.0	20.00	0	111	65	134	22.12	0.136	20	
Tert-amyl methyl ether	20.460	1.0	20.00	0	102	70	130	21.27	3.88	20	
Tert-Butanol	90.130	5.0	100.0	0	90.1	70	130	94.13	4.34	20	
tert-Butylbenzene	22.130	1.0	20.00	0	111	70	129	21.26	4.01	20	
Tetrachloroethene	22.130	1.0	20.00	0	111	66	128	22.08	0.226	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out

Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N037815
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N037814-001A-MSD** SampType: **MSD** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **136855**
Client ID: **ZZZZZZ** Batch ID: **CA19VW096** TestNo: **EPA 8260B** Analysis Date: **10/9/2019** SeqNo: **3531571**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	22.700	2.0	20.00	0	114	77	122	21.81	4.00	20	
trans-1,2-Dichloroethene	20.160	1.0	20.00	0	101	63	137	18.31	9.62	20	
trans-1,3-Dichloropropene	20.280	1.0	20.00	0	101	59	135	19.14	5.78	20	
Trichloroethene	21.070	1.0	20.00	0	105	70	127	21.59	2.44	20	
Trichlorofluoromethane	22.690	1.0	20.00	0	113	57	129	22.50	0.841	20	
Vinyl chloride	22.120	0.50	20.00	0	111	50	134	20.10	9.57	20	
Xylenes, Total	68.040	2.0	60.00	0	113	75	125	66.38	2.47	20	
Surr: 1,2-Dichloroethane-d4	23.370		25.00		93.5	72	119		0		
Surr: 4-Bromofluorobenzene	26.480		25.00		106	76	119		0		
Surr: Dibromofluoromethane	24.990		25.00		100	85	115		0		
Surr: Toluene-d8	27.320		25.00		109	81	120		0		

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

Asset Laboratories
3151 W. Post Road
Las Vegas, NV 89118
Tel: 702-307-2659 Fax: 702-307-2691
Marlon Cartin (marlon@assetlaboratories.com)

CHAIN OF CUSTODY RECORD

DATE: 10/8/19
PAGE: 1 of 1

Section A Required Client Information:		Section B Required Project Information:	Section C Invoice Information:	Section D Sampler Information:
Company: Kinder Morgan, Inc. Attention: Alan Van Antwerp		Report To: Eric Davis	Attention: Alan Van Antwerp - Ref. AFE# 81195	Sampler Name: James Dye
Address: 9950 San Diego Mission Road San Diego, CA 92108		Copy To: Alan Van Antwerp	Company Name: Kinder Morgan, Inc.	Sampler Signature:
Email To: alan_vanantwerp@kindermorgan.com eric.davis@tiaalabs.com		Purchase Order No.:	Address: 9950 San Diego Mission Road San Diego, CA 92108	Sample Date: 10/8/19
Phone: 619-922-1960 (mobile)	Fax:	Project Name: SPPP Norwalk	ATL Project Manager: Marlon Cartin	

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	SAMPLE TEMPERATURE (°F)	Analysis Test: Full VOCs + Oxygenates List (8260B)	TPH-gas (C6-C12) (8015B)	TPH-d (C13-C22), TPH-oil (C23+), Total TPH (8015B)	Comments
	Section E Required Sample Information						CONTAINER TYPE		V	V	A	
							# OF CONTAINERS		3	3	3	
							PRESERVATIVE		H	H	–	
							VOLUME (mL)		40	40	1000	
1	INF-10_08	INFLUENT	WW	G	10/8/19	1030	9		X	X	X	N037815-01
2												
3												
4												
5												
6												
7												
8												
9												
10												

Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
	10/8/19 1045		10/8/19 1804
Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
	10/8/19 1820	MARIANNO SANTOS	10/9/19 1830
Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
MARIANNO SANTOS	10/9/19 1900	Yoandra Rodriguez	10/9/19 8:33am

Turn Around Time (TAT):
- ☐A = Same Day
- ☐B = 24 Hours
- ☐C = 48 Hours
- ☐D = 72 Hours
- ☐E = 5 Workdays
- ☐E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:
5.4°C on #1
COC # : 0199

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A = Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On:	10/8/2019	Workorder:	N037815
Rep sample Temp (Deg C):	5.4	IR Gun ID:	1
Temp Blank:	☑ Yes ☐ No		
Carrier name:	Golden State Overnight		
Last 4 digits of Tracking No.:	0199	Packing Material Used:	Bubble Wrap
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☑	No ☐	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☑	No ☐	NA ☐
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☐	No ☐	NA ☑
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☐	No ☐	NA ☑
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments:

Checklist Completed By: YR YRJ 10/9/2019

Reviewed By: MBC 10/11/2019

ASSET Laboratories

WORK ORDER Summary

09-Oct-19

WorkOrder: N037815

Client ID: CH2HI03

Project: SFPP Norwalk **QC Level:** RTNE **Date Received:** 10/8/2019

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N037815-001A	INF-10-08	10/8/2019 10:30:00 AM	10/16/2019	Wastewater	EPA 8260B	VOLATILE ORGANIC COMPOUNDS BY GC/MS	☐	☐	☐	V-CA
N037815-001B			10/16/2019		EPA 8015B	GASOLINE RANGE ORGANICS BY GC/FID	☐	☐	☐	VW
N037815-001C			10/16/2019		EPA 3510C	SEPARATORY FUNNEL EXTRACTION: EXTRACTABLE FUELS	☐	☐	☐	VW
			10/16/2019		EPA 8015B	TPH EXTRACTABLE BY GC/FID	☐	☐	☐	VW
			10/16/2019		EPA 8015B	Total TPH	☐	☐	☐	VW
N037815-002A	FOLDER	10/16/2019	10/16/2019		Folder	Folder	☐	☐	☐	LAB
			10/16/2019		Folder	Folder	☐	☐	☐	LAB

GSO | GLS

800-322-5555
www.gso.com

Ship From
ASSET LABORATORIES
MARIANNE SANTOS
11110 ARTESIA BLVD. SUITE B
CERRITOS, CA 90703

Ship To
ASSET LABORATORIES
MARLON CARTIN
3151 W. POST RD.,
LAS VEGAS, NV 89118

COD: $0.00
Weight: 0 lb(s)
Reference:

Delivery Instructions:
HOLD FOR PICK-UP
Signature Type: STANDARD

Tracking #: 546500199

CPS

LAS VEGAS

C89102A

9801074

LVS NV891-C51

Print Date: 10/8/2019 5:46 PM

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.
Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.
Step 2: Fold this page in half.
Step 3: Securely attach this label to your package and do not cover the barcode.

TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all of the GSO service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at www.gso.com.

5.4°C
DNH1

December 09, 2019

Eric Davis
CH2MHill
1000 Wilshire Blvd.
Los Angeles, CA 90017

TEL:
FAX:

Workorder No.: N038378

RE: SFPP Norwalk

Attention: Eric Davis

Enclosed are the results for sample(s) received on November 19, 2019 by ASSET Laboratories. The sample(s) are tested for the parameters as indicated in the enclosed chain of custody in accordance with the applicable laboratory certifications.

Thank you for the opportunity to service the needs of your company.

Please feel free to call me at (702) 307-2659 if I can be of further assistance to your company.

Sincerely,

for

Puri Romualdo
Laboratory Director

CLIENT: CH2MHill
Project: SFPP Norwalk
Lab Order: N038378

CASE NARRATIVE

SAMPLE RECEIVING/GENERAL COMMENTS:

All sample containers were received intact with proper chain of custody documentation.

Information on sample receipt conditions including discrepancies can be found in attached Sample Receipt Checklist Form.

Cooler temperature and sample preservation were verified upon receipt of samples if applicable.

Samples were analyzed within method holding time.

Results were J-Flag. "J" is used to flag those results that are between the PQL (Practical Quantitation Limit) and the calculated MDL (Method Detection Limit). Results that are "J" Flagged are estimated values since it becomes difficult to accurately quantitate the analyte near the MDL.

GRO by 8015 was subcontracted to Enthalpy Analytical, Berkeley CA.

Analytical Comment For EPA 8260B:

Surrogate recovery biased high possibly due to matrix interferences. Sample result was non-detect (ND) for analytes of interest therefore reanalysis of the sample was not necessary.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) are outside recovery criteria possibly due to matrix interference. The associated Laboratory Control Sample (LCS) recovery was acceptable.

Laboratory Control Sample (LCS) recovery biased high for Bromomethane. Sample results were non-detect (ND) for these analytes therefore reanalysis of the sample was not necessary.

Laboratory Control Sample (LCS) outside recovery criteria for Acetone. NELAC standard allows for three analytes in marginal exceedence based on 51-70 analytes.

ASSET Laboratories

Date: *09-Dec-19*

CLIENT: CH2MHill
Project: SFPP Norwalk
Lab Order: N038378
Contract No:

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received	Date Reported
N038378-001A	INF-11-19	Wastewater	11/19/2019 8:50:00 AM	11/19/2019	12/9/2019
N038378-001B	INF-11-19	Wastewater	11/19/2019 8:50:00 AM	11/19/2019	12/9/2019
N038378-001C	INF-11-19	Wastewater	11/19/2019 8:50:00 AM	11/19/2019	12/9/2019

CLIENT: CH2MHill
Lab Order: N038378
Project: SFPP Norwalk
Lab ID: N038378-001

Client Sample ID: INF-11-19
Collection Date: 11/19/2019 8:50:00 AM
Matrix: WASTEWATER

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: **CA01638-MS10_191120A** QC Batch: **CA19VW118** PrepDate: Analyst: **AW**

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	0.25	1.0		ug/L	1	11/20/2019 01:32 PM
1,1,1-Trichloroethane	ND	0.20	1.0		ug/L	1	11/20/2019 01:32 PM
1,1,2,2-Tetrachloroethane	ND	0.11	1.0		ug/L	1	11/20/2019 01:32 PM
1,1,2-Trichloroethane	ND	0.23	1.0		ug/L	1	11/20/2019 01:32 PM
1,1-Dichloroethane	ND	0.22	0.50		ug/L	1	11/20/2019 01:32 PM
1,1-Dichloroethene	ND	0.17	1.0		ug/L	1	11/20/2019 01:32 PM
1,1-Dichloropropene	ND	0.16	1.0		ug/L	1	11/20/2019 01:32 PM
1,2,3-Trichlorobenzene	ND	0.37	1.0		ug/L	1	11/20/2019 01:32 PM
1,2,3-Trichloropropane	ND	0.23	1.0		ug/L	1	11/20/2019 01:32 PM
1,2,4-Trichlorobenzene	ND	0.10	1.0		ug/L	1	11/20/2019 01:32 PM
1,2,4-Trimethylbenzene	ND	0.060	1.0		ug/L	1	11/20/2019 01:32 PM
1,2-Dibromo-3-chloropropane	ND	0.32	2.0		ug/L	1	11/20/2019 01:32 PM
1,2-Dibromoethane	ND	0.19	1.0		ug/L	1	11/20/2019 01:32 PM
1,2-Dichlorobenzene	ND	0.089	1.0		ug/L	1	11/20/2019 01:32 PM
1,2-Dichloroethane	ND	0.16	0.50		ug/L	1	11/20/2019 01:32 PM
1,2-Dichloropropane	ND	0.16	1.0		ug/L	1	11/20/2019 01:32 PM
1,3,5-Trimethylbenzene	ND	0.051	1.0		ug/L	1	11/20/2019 01:32 PM
1,3-Dichlorobenzene	ND	0.081	1.0		ug/L	1	11/20/2019 01:32 PM
1,3-Dichloropropane	ND	0.13	1.0		ug/L	1	11/20/2019 01:32 PM
1,4-Dichlorobenzene	ND	0.080	1.0		ug/L	1	11/20/2019 01:32 PM
2,2-Dichloropropane	ND	0.22	1.0		ug/L	1	11/20/2019 01:32 PM
2-Butanone	ND	4.7	10		ug/L	1	11/20/2019 01:32 PM
2-Chlorotoluene	ND	0.090	1.0		ug/L	1	11/20/2019 01:32 PM
4-Chlorotoluene	ND	0.065	1.0		ug/L	1	11/20/2019 01:32 PM
4-Isopropyltoluene	ND	0.085	1.0		ug/L	1	11/20/2019 01:32 PM
4-Methyl-2-pentanone	ND	0.83	10		ug/L	1	11/20/2019 01:32 PM
Acetone	ND	4.6	10		ug/L	1	11/20/2019 01:32 PM
Benzene	ND	0.11	1.0		ug/L	1	11/20/2019 01:32 PM
Bromobenzene	ND	0.093	1.0		ug/L	1	11/20/2019 01:32 PM
Bromochloromethane	ND	0.26	1.0		ug/L	1	11/20/2019 01:32 PM
Bromodichloromethane	ND	0.20	1.0		ug/L	1	11/20/2019 01:32 PM
Bromoform	ND	0.23	1.0		ug/L	1	11/20/2019 01:32 PM
Bromomethane	ND	0.38	1.0		ug/L	1	11/20/2019 01:32 PM
Carbon disulfide	ND	0.19	1.0		ug/L	1	11/20/2019 01:32 PM
Carbon tetrachloride	ND	0.33	0.50		ug/L	1	11/20/2019 01:32 PM
Chlorobenzene	ND	0.11	1.0		ug/L	1	11/20/2019 01:32 PM

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit
S	Spike/Surrogate outside of limits due to matrix interference
	Results are wet unless otherwise specified
DO	Surrogate Diluted Out

CLIENT: CH2MHill
Lab Order: N038378
Project: SFPP Norwalk
Lab ID: N038378-001

Client Sample ID: INF-11-19
Collection Date: 11/19/2019 8:50:00 AM
Matrix: WASTEWATER

VOLATILE ORGANIC COMPOUNDS BY GC/MS

EPA 8260B

RunID: **CA01638-MS10_191120A** QC Batch: **CA19VW118** PrepDate: Analyst: **AW**

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
Chloroethane	ND	0.69	1.0		ug/L	1	11/20/2019 01:32 PM
Chloroform	ND	0.38	1.0		ug/L	1	11/20/2019 01:32 PM
Chloromethane	ND	0.23	1.0		ug/L	1	11/20/2019 01:32 PM
cis-1,2-Dichloroethene	ND	0.11	1.0		ug/L	1	11/20/2019 01:32 PM
cis-1,3-Dichloropropene	ND	0.16	1.0		ug/L	1	11/20/2019 01:32 PM
Di-isopropyl ether	ND	0.15	1.0		ug/L	1	11/20/2019 01:32 PM
Dibromochloromethane	ND	0.23	1.0		ug/L	1	11/20/2019 01:32 PM
Dibromomethane	ND	0.13	1.0		ug/L	1	11/20/2019 01:32 PM
Dichlorodifluoromethane	ND	0.16	1.0		ug/L	1	11/20/2019 01:32 PM
Ethyl tert-butyl ether	ND	0.10	1.0		ug/L	1	11/20/2019 01:32 PM
Ethylbenzene	ND	0.11	1.0		ug/L	1	11/20/2019 01:32 PM
Freon-113	ND	0.28	1.0		ug/L	1	11/20/2019 01:32 PM
Hexachlorobutadiene	ND	0.30	1.0		ug/L	1	11/20/2019 01:32 PM
Isopropylbenzene	ND	0.092	1.0		ug/L	1	11/20/2019 01:32 PM
m,p-Xylene	ND	0.23	1.0		ug/L	1	11/20/2019 01:32 PM
Methylene chloride	ND	1.2	2.0		ug/L	1	11/20/2019 01:32 PM
MTBE	ND	0.44	1.0		ug/L	1	11/20/2019 01:32 PM
n-Butylbenzene	ND	0.093	1.0		ug/L	1	11/20/2019 01:32 PM
n-Propylbenzene	ND	0.10	1.0		ug/L	1	11/20/2019 01:32 PM
Naphthalene	ND	0.41	1.0		ug/L	1	11/20/2019 01:32 PM
o-Xylene	ND	0.087	1.0		ug/L	1	11/20/2019 01:32 PM
sec-Butylbenzene	ND	0.076	1.0		ug/L	1	11/20/2019 01:32 PM
Styrene	ND	0.41	1.0		ug/L	1	11/20/2019 01:32 PM
Tert-amyl methyl ether	ND	0.13	1.0		ug/L	1	11/20/2019 01:32 PM
Tert-Butanol	ND	2.8	5.0		ug/L	1	11/20/2019 01:32 PM
tert-Butylbenzene	ND	0.10	1.0		ug/L	1	11/20/2019 01:32 PM
Tetrachloroethene	ND	0.25	1.0		ug/L	1	11/20/2019 01:32 PM
Toluene	ND	0.13	2.0		ug/L	1	11/20/2019 01:32 PM
trans-1,2-Dichloroethene	ND	0.27	1.0		ug/L	1	11/20/2019 01:32 PM
trans-1,3-Dichloropropene	ND	0.12	1.0		ug/L	1	11/20/2019 01:32 PM
Trichloroethene	ND	0.26	1.0		ug/L	1	11/20/2019 01:32 PM
Trichlorofluoromethane	ND	0.23	1.0		ug/L	1	11/20/2019 01:32 PM
Vinyl chloride	ND	0.19	0.50		ug/L	1	11/20/2019 01:32 PM
Xylenes, Total	ND	1.5	2.0		ug/L	1	11/20/2019 01:32 PM
Surr: 1,2-Dichloroethane-d4	116	0	72-119		%REC	1	11/20/2019 01:32 PM
Surr: 4-Bromofluorobenzene	94.7	0	76-119		%REC	1	11/20/2019 01:32 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike/Surrogate outside of limits due to matrix interference
- Results are wet unless otherwise specified
- DO Surrogate Diluted Out

CLIENT: CH2MHill
Lab Order: N038378
Project: SFPP Norwalk
Lab ID: N038378-001

Client Sample ID: INF-11-19
Collection Date: 11/19/2019 8:50:00 AM
Matrix: WASTEWATER

Analyses	Result	MDL	PQL	Qual	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS							
			EPA 8260B				
RunID: **CA01638-MS10_191120A** QC Batch: **CA19VW118**				PrepDate:			Analyst: **AW**
Surr: Dibromofluoromethane	119	0	85-115	S	%REC	1	11/20/2019 01:32 PM
Surr: Toluene-d8	114	0	81-120		%REC	1	11/20/2019 01:32 PM
TPH EXTRACTABLE BY GC/FID							
	EPA 3510C		**EPA 8015B**				
RunID: **NV00922-GC3_191121C** QC Batch: **76142**				PrepDate:	**11/21/2019**		Analyst: **MG**
TPH-Diesel (C13-C22)	170	15	25		ug/L	1	11/22/2019 04:25 AM
TPH-Oil (C23-C36)	150	14	25		ug/L	1	11/22/2019 04:25 AM
Surr: Octacosane	67.2	0	26-152		%REC	1	11/22/2019 04:25 AM
Surr: p-Terphenyl	64.1	0	57-132		%REC	1	11/22/2019 04:25 AM
TOTAL TPH							
			EPA 8015B				
RunID: **NV00922-GC3_191121C** QC Batch: **R137796**				PrepDate:			Analyst: **MG**
Total TPH	330	21	100		ug/L	1	12/9/2019

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
	Results are wet unless otherwise specified
E	Value above quantitation range
J	Analyte detected below quantitation limits
S	Spike/Surrogate outside of limits due to matrix interference
DO	Surrogate Diluted Out

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_FP_SFPP

Sample ID: **MB-76142** SampType: **MBLK** TestCode: **8015_W_FP_** Units: **ug/L** Prep Date: **11/21/2019** RunNo: **137796**
Client ID: **PBW** Batch ID: **76142** TestNo: **EPA 8015B** **EPA 3510C** Analysis Date: **11/22/2019** SeqNo: **3580071**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPH-Diesel (C13-C22)	ND	25									
TPH-Oil (C23-C36)	ND	25									
Surr: Octacosane	54.676		80.00		68.3	26	152				
Surr: p-Terphenyl	60.055		80.00		75.1	57	132				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8015_W_SFPPTOT

Sample ID: **MB-R137796**	SampType: **MBLK**	TestCode: **8015_W_SFP**	Units: **ug/L**	Prep Date:					RunNo: **137796**			
Client ID: **PBW**	Batch ID: **R137796**	TestNo: **EPA 8015B**		Analysis Date: **12/9/2019**					SeqNo: **3600772**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Total TPH	ND	100										

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191120-LCS** SampType: **LCS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **LCSW** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577286**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	22.560	1.0	20.00	0	113	81	129				
1,1,1-Trichloroethane	22.390	1.0	20.00	0	112	67	132				
1,1,2,2-Tetrachloroethane	20.650	1.0	20.00	0	103	63	128				
1,1,2-Trichloroethane	20.520	1.0	20.00	0	103	75	125				
1,1-Dichloroethane	20.990	0.50	20.00	0	105	69	133				
1,1-Dichloroethene	22.100	1.0	20.00	0	110	68	130				
1,1-Dichloropropene	23.780	1.0	20.00	0	119	73	132				
1,2,3-Trichlorobenzene	22.200	1.0	20.00	0	111	67	137				
1,2,3-Trichloropropane	21.300	1.0	20.00	0	106	73	124				
1,2,4-Trichlorobenzene	20.290	1.0	20.00	0	101	66	134				
1,2,4-Trimethylbenzene	22.910	1.0	20.00	0	115	74	132				
1,2-Dibromo-3-chloropropane	22.170	2.0	20.00	0	111	50	132				
1,2-Dibromoethane	21.880	1.0	20.00	0	109	80	121				
1,2-Dichlorobenzene	22.070	1.0	20.00	0	110	71	122				
1,2-Dichloroethane	22.410	0.50	20.00	0	112	69	132				
1,2-Dichloropropane	19.800	1.0	20.00	0	99.0	75	125				
1,3,5-Trimethylbenzene	23.170	1.0	20.00	0	116	74	131				
1,3-Dichlorobenzene	21.710	1.0	20.00	0	109	75	124				
1,3-Dichloropropane	22.190	1.0	20.00	0	111	73	126				
1,4-Dichlorobenzene	22.630	1.0	20.00	0	113	74	123				
2,2-Dichloropropane	21.800	1.0	20.00	0	109	69	137				
2-Butanone	117.240	10	200.0	0	58.6	49	136				
2-Chlorotoluene	21.080	1.0	20.00	0	105	73	126				
4-Chlorotoluene	21.700	1.0	20.00	0	108	74	128				
4-Isopropyltoluene	22.460	1.0	20.00	0	112	73	130				
4-Methyl-2-pentanone	195.570	10	200.0	0	97.8	58	134				
Acetone	79.670	10	200.0	0	39.8	40	135				S
Benzene	22.210	1.0	20.00	0	111	81	122				
Bromobenzene	21.730	1.0	20.00	0	109	76	124				
Bromochloromethane	20.850	1.0	20.00	0	104	65	129				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191120-LCS** SampType: **LCS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **LCSW** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577286**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromodichloromethane	21.100	1.0	20.00	0	106	76	121				
Bromoform	24.470	1.0	20.00	0	122	69	128				
Bromomethane	37.990	1.0	20.00	0	190	53	141				S
Carbon disulfide	22.960	1.0	20.00	0	115	75	125				
Carbon tetrachloride	25.200	0.50	20.00	0	126	66	138				
Chlorobenzene	21.600	1.0	20.00	0	108	81	122				
Chloroethane	21.530	1.0	20.00	0	108	58	133				
Chloroform	21.750	1.0	20.00	0	109	69	128				
Chloromethane	22.750	1.0	20.00	0	114	56	131				
cis-1,2-Dichloroethene	20.980	1.0	20.00	0	105	72	126				
cis-1,3-Dichloropropene	18.920	1.0	20.00	0	94.6	69	131				
Di-isopropyl ether	17.360	1.0	20.00	0	86.8	70	130				
Dibromochloromethane	22.870	1.0	20.00	0	114	66	133				
Dibromomethane	21.930	1.0	20.00	0	110	76	125				
Dichlorodifluoromethane	22.190	1.0	20.00	0	111	53	153				
Ethyl tert-butyl ether	18.230	1.0	20.00	0	91.2	70	130				
Ethylbenzene	21.960	1.0	20.00	0	110	73	127				
Freon-113	23.930	1.0	20.00	0	120	75	125				
Hexachlorobutadiene	21.020	1.0	20.00	0	105	67	131				
Isopropylbenzene	20.900	1.0	20.00	0	104	75	127				
m,p-Xylene	44.830	1.0	40.00	0	112	76	128				
Methylene chloride	18.370	2.0	20.00	0	91.9	63	137				
MTBE	17.880	1.0	20.00	0	89.4	65	123				
n-Butylbenzene	22.660	1.0	20.00	0	113	69	137				
n-Propylbenzene	21.840	1.0	20.00	0	109	72	129				
Naphthalene	19.400	1.0	20.00	0	97.0	54	138				
o-Xylene	21.070	1.0	20.00	0	105	80	121				
sec-Butylbenzene	21.790	1.0	20.00	0	109	72	127				
Styrene	22.170	1.0	20.00	0	111	65	134				
Tert-amyl methyl ether	20.290	1.0	20.00	0	101	70	130				

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out
- Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191120-LCS** SampType: **LCS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **LCSW** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577286**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tert-Butanol	89.530	5.0	100.0	0	89.5	70	130				
tert-Butylbenzene	21.790	1.0	20.00	0	109	70	129				
Tetrachloroethene	22.800	1.0	20.00	0	114	66	128				
Toluene	22.980	2.0	20.00	0	115	77	122				
trans-1,2-Dichloroethene	19.500	1.0	20.00	0	97.5	63	137				
trans-1,3-Dichloropropene	21.270	1.0	20.00	0	106	59	135				
Trichloroethene	22.650	1.0	20.00	0	113	70	127				
Trichlorofluoromethane	25.790	1.0	20.00	0	129	57	129				
Vinyl chloride	21.640	0.50	20.00	0	108	50	134				
Xylenes, Total	65.900	2.0	60.00	0	110	75	125				
Surr: 1,2-Dichloroethane-d4	26.130		25.00		105	72	119				
Surr: 4-Bromofluorobenzene	25.750		25.00		103	76	119				
Surr: Dibromofluoromethane	27.280		25.00		109	85	115				
Surr: Toluene-d8	28.260		25.00		113	81	120				

Sample ID: **N038378-001A-MS** SampType: **MS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **ZZZZZZ** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577287**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	21.880	1.0	20.00	0	109	81	129				
1,1,1-Trichloroethane	21.030	1.0	20.00	0	105	67	132				
1,1,2,2-Tetrachloroethane	17.980	1.0	20.00	0	89.9	63	128				
1,1,2-Trichloroethane	19.520	1.0	20.00	0	97.6	75	125				
1,1-Dichloroethane	20.430	0.50	20.00	0	102	69	133				
1,1-Dichloroethene	20.900	1.0	20.00	0	104	68	130				
1,1-Dichloropropene	24.720	1.0	20.00	0	124	73	132				
1,2,3-Trichlorobenzene	19.810	1.0	20.00	0	99.0	67	137				
1,2,3-Trichloropropane	19.620	1.0	20.00	0	98.1	73	124				
1,2,4-Trichlorobenzene	19.750	1.0	20.00	0	98.8	66	134				
1,2,4-Trimethylbenzene	22.530	1.0	20.00	0	113	74	132				

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N038378-001A-MS** SampType: **MS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **ZZZZZZ** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577287**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dibromo-3-chloropropane	19.330	2.0	20.00	0	96.7	50	132				
1,2-Dibromoethane	19.600	1.0	20.00	0	98.0	80	121				
1,2-Dichlorobenzene	19.770	1.0	20.00	0	98.8	71	122				
1,2-Dichloroethane	21.280	0.50	20.00	0	106	69	132				
1,2-Dichloropropane	19.400	1.0	20.00	0	97.0	75	125				
1,3,5-Trimethylbenzene	22.320	1.0	20.00	0	112	74	131				
1,3-Dichlorobenzene	20.600	1.0	20.00	0	103	75	124				
1,3-Dichloropropane	19.800	1.0	20.00	0	99.0	73	126				
1,4-Dichlorobenzene	20.490	1.0	20.00	0	102	74	123				
2,2-Dichloropropane	20.630	1.0	20.00	0	103	69	137				
2-Butanone	99.710	10	200.0	0	49.9	49	136				
2-Chlorotoluene	20.430	1.0	20.00	0	102	73	126				
4-Chlorotoluene	20.600	1.0	20.00	0	103	74	128				
4-Isopropyltoluene	21.890	1.0	20.00	0	109	73	130				
4-Methyl-2-pentanone	175.610	10	200.0	0	87.8	58	134				
Acetone	69.710	10	200.0	0	34.9	40	135				S
Benzene	21.400	1.0	20.00	0	107	81	122				
Bromobenzene	20.720	1.0	20.00	0	104	76	124				
Bromochloromethane	16.970	1.0	20.00	0	84.8	65	129				
Bromodichloromethane	20.380	1.0	20.00	0	102	76	121				
Bromoform	21.050	1.0	20.00	0	105	69	128				
Bromomethane	38.340	1.0	20.00	0	192	53	141				S
Carbon disulfide	21.620	1.0	20.00	0	108	75	125				
Carbon tetrachloride	24.520	0.50	20.00	0	123	66	138				
Chlorobenzene	21.280	1.0	20.00	0	106	81	122				
Chloroethane	19.830	1.0	20.00	0	99.2	58	133				
Chloroform	19.950	1.0	20.00	0	99.8	69	128				
Chloromethane	21.660	1.0	20.00	0	108	56	131				
cis-1,2-Dichloroethene	18.750	1.0	20.00	0	93.8	72	126				
cis-1,3-Dichloropropene	18.070	1.0	20.00	0	90.4	69	131				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N038378-001A-MS** SampType: **MS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **ZZZZZZ** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577287**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Di-isopropyl ether	17.050	1.0	20.00	0	85.2	70	130				
Dibromochloromethane	21.240	1.0	20.00	0	106	66	133				
Dibromomethane	19.260	1.0	20.00	0	96.3	76	125				
Dichlorodifluoromethane	19.850	1.0	20.00	0	99.2	53	153				
Ethyl tert-butyl ether	17.230	1.0	20.00	0	86.2	70	130				
Ethylbenzene	21.480	1.0	20.00	0	107	73	127				
Freon-113	22.540	1.0	20.00	0	113	75	125				
Hexachlorobutadiene	19.960	1.0	20.00	0	99.8	67	131				
Isopropylbenzene	21.130	1.0	20.00	0	106	75	127				
m,p-Xylene	44.280	1.0	40.00	0	111	76	128				
Methylene chloride	18.600	2.0	20.00	0	93.0	63	137				
MTBE	15.500	1.0	20.00	0	77.5	65	123				
n-Butylbenzene	21.840	1.0	20.00	0	109	69	137				
n-Propylbenzene	21.810	1.0	20.00	0	109	72	129				
Naphthalene	18.520	1.0	20.00	0	92.6	54	138				
o-Xylene	20.790	1.0	20.00	0	104	80	121				
sec-Butylbenzene	21.220	1.0	20.00	0	106	72	127				
Styrene	21.200	1.0	20.00	0	106	65	134				
Tert-amyl methyl ether	18.180	1.0	20.00	0	90.9	70	130				
Tert-Butanol	81.170	5.0	100.0	0	81.2	70	130				
tert-Butylbenzene	20.740	1.0	20.00	0	104	70	129				
Tetrachloroethene	23.530	1.0	20.00	0	118	66	128				
Toluene	22.920	2.0	20.00	0	115	77	122				
trans-1,2-Dichloroethene	19.540	1.0	20.00	0	97.7	63	137				
trans-1,3-Dichloropropene	19.950	1.0	20.00	0	99.8	59	135				
Trichloroethene	20.900	1.0	20.00	0	104	70	127				
Trichlorofluoromethane	25.700	1.0	20.00	0	128	57	129				
Vinyl chloride	21.220	0.50	20.00	0	106	50	134				
Xylenes, Total	65.070	2.0	60.00	0	108	75	125				
Surr: 1,2-Dichloroethane-d4	24.520		25.00		98.1	72	119				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N038378-001A-MS** SampType: **MS** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **ZZZZZZ** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577287**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	26.420		25.00		106	76	119				
Surr: Dibromofluoromethane	26.860		25.00		107	85	115				
Surr: Toluene-d8	29.330		25.00		117	81	120				

Sample ID: **N038378-001A-MSD** SampType: **MSD** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **ZZZZZZ** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577288**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	21.570	1.0	20.00	0	108	81	129	21.88	1.43	20	
1,1,1-Trichloroethane	22.470	1.0	20.00	0	112	67	132	21.03	6.62	20	
1,1,2,2-Tetrachloroethane	20.470	1.0	20.00	0	102	63	128	17.98	13.0	20	
1,1,2-Trichloroethane	20.280	1.0	20.00	0	101	75	125	19.52	3.82	20	
1,1-Dichloroethane	21.150	0.50	20.00	0	106	69	133	20.43	3.46	20	
1,1-Dichloroethene	21.240	1.0	20.00	0	106	68	130	20.90	1.61	20	
1,1-Dichloropropene	24.550	1.0	20.00	0	123	73	132	24.72	0.690	20	
1,2,3-Trichlorobenzene	21.560	1.0	20.00	0	108	67	137	19.81	8.46	20	
1,2,3-Trichloropropane	20.130	1.0	20.00	0	101	73	124	19.62	2.57	20	
1,2,4-Trichlorobenzene	21.480	1.0	20.00	0	107	66	134	19.75	8.39	20	
1,2,4-Trimethylbenzene	24.090	1.0	20.00	0	120	74	132	22.53	6.69	20	
1,2-Dibromo-3-chloropropane	21.560	2.0	20.00	0	108	50	132	19.33	10.9	20	
1,2-Dibromoethane	19.360	1.0	20.00	0	96.8	80	121	19.60	1.23	20	
1,2-Dichlorobenzene	20.740	1.0	20.00	0	104	71	122	19.77	4.79	20	
1,2-Dichloroethane	21.550	0.50	20.00	0	108	69	132	21.28	1.26	20	
1,2-Dichloropropane	20.960	1.0	20.00	0	105	75	125	19.40	7.73	20	
1,3,5-Trimethylbenzene	23.620	1.0	20.00	0	118	74	131	22.32	5.66	20	
1,3-Dichlorobenzene	22.050	1.0	20.00	0	110	75	124	20.60	6.80	20	
1,3-Dichloropropane	20.580	1.0	20.00	0	103	73	126	19.80	3.86	20	
1,4-Dichlorobenzene	22.590	1.0	20.00	0	113	74	123	20.49	9.75	20	
2,2-Dichloropropane	21.550	1.0	20.00	0	108	69	137	20.63	4.36	20	
2-Butanone	107.520	10	200.0	0	53.8	49	136	99.71	7.54	20	

Qualifiers:

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- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out
- Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N038378-001A-MSD** SampType: **MSD** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **ZZZZZZ** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577288**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
2-Chlorotoluene	21.500	1.0	20.00	0	108	73	126	20.43	5.10	20	
4-Chlorotoluene	21.910	1.0	20.00	0	110	74	128	20.60	6.16	20	
4-Isopropyltoluene	23.390	1.0	20.00	0	117	73	130	21.89	6.63	20	
4-Methyl-2-pentanone	183.380	10	200.0	0	91.7	58	134	175.6	4.33	20	
Acetone	76.720	10	200.0	0	38.4	40	135	69.71	9.57	20	S
Benzene	21.310	1.0	20.00	0	107	81	122	21.40	0.421	20	
Bromobenzene	22.110	1.0	20.00	0	111	76	124	20.72	6.49	20	
Bromochloromethane	18.720	1.0	20.00	0	93.6	65	129	16.97	9.81	20	
Bromodichloromethane	21.300	1.0	20.00	0	106	76	121	20.38	4.41	20	
Bromoform	24.210	1.0	20.00	0	121	69	128	21.05	14.0	20	
Bromomethane	39.840	1.0	20.00	0	199	53	141	38.34	3.84	20	S
Carbon disulfide	22.340	1.0	20.00	0	112	75	125	21.62	3.28	20	
Carbon tetrachloride	22.970	0.50	20.00	0	115	66	138	24.52	6.53	20	
Chlorobenzene	21.090	1.0	20.00	0	105	81	122	21.28	0.897	20	
Chloroethane	21.030	1.0	20.00	0	105	58	133	19.83	5.87	20	
Chloroform	20.470	1.0	20.00	0	102	69	128	19.95	2.57	20	
Chloromethane	23.330	1.0	20.00	0	117	56	131	21.66	7.42	20	
cis-1,2-Dichloroethene	20.100	1.0	20.00	0	101	72	126	18.75	6.95	20	
cis-1,3-Dichloropropene	17.750	1.0	20.00	0	88.8	69	131	18.07	1.79	20	
Di-isopropyl ether	17.680	1.0	20.00	0	88.4	70	130	17.05	3.63	20	
Dibromochloromethane	21.070	1.0	20.00	0	105	66	133	21.24	0.804	20	
Dibromomethane	19.940	1.0	20.00	0	99.7	76	125	19.26	3.47	20	
Dichlorodifluoromethane	20.280	1.0	20.00	0	101	53	153	19.85	2.14	20	
Ethyl tert-butyl ether	17.950	1.0	20.00	0	89.8	70	130	17.23	4.09	20	
Ethylbenzene	21.860	1.0	20.00	0	109	73	127	21.48	1.75	20	
Freon-113	23.650	1.0	20.00	0	118	75	125	22.54	4.81	20	
Hexachlorobutadiene	19.240	1.0	20.00	0	96.2	67	131	19.96	3.67	20	
Isopropylbenzene	21.480	1.0	20.00	0	107	75	127	21.13	1.64	20	
m,p-Xylene	45.600	1.0	40.00	0	114	76	128	44.28	2.94	20	
Methylene chloride	19.290	2.0	20.00	0	96.5	63	137	18.60	3.64	20	

Qualifiers:

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out

Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **N038378-001A-MSD** SampType: **MSD** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **ZZZZZZ** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577288**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	17.260	1.0	20.00	0	86.3	65	123	15.50	10.7	20	
n-Butylbenzene	22.520	1.0	20.00	0	113	69	137	21.84	3.07	20	
n-Propylbenzene	22.280	1.0	20.00	0	111	72	129	21.81	2.13	20	
Naphthalene	19.920	1.0	20.00	0	99.6	54	138	18.52	7.28	20	
o-Xylene	20.690	1.0	20.00	0	103	80	121	20.79	0.482	20	
sec-Butylbenzene	21.880	1.0	20.00	0	109	72	127	21.22	3.06	20	
Styrene	22.180	1.0	20.00	0	111	65	134	21.20	4.52	20	
Tert-amyl methyl ether	19.270	1.0	20.00	0	96.4	70	130	18.18	5.82	20	
Tert-Butanol	81.680	5.0	100.0	0	81.7	70	130	81.17	0.626	20	
tert-Butylbenzene	21.480	1.0	20.00	0	107	70	129	20.74	3.51	20	
Tetrachloroethene	22.880	1.0	20.00	0	114	66	128	23.53	2.80	20	
Toluene	22.660	2.0	20.00	0	113	77	122	22.92	1.14	20	
trans-1,2-Dichloroethene	18.650	1.0	20.00	0	93.3	63	137	19.54	4.66	20	
trans-1,3-Dichloropropene	19.520	1.0	20.00	0	97.6	59	135	19.95	2.18	20	
Trichloroethene	21.910	1.0	20.00	0	110	70	127	20.90	4.72	20	
Trichlorofluoromethane	23.830	1.0	20.00	0	119	57	129	25.70	7.55	20	
Vinyl chloride	22.250	0.50	20.00	0	111	50	134	21.22	4.74	20	
Xylenes, Total	66.290	2.0	60.00	0	110	75	125	65.07	1.86	20	
Surr: 1,2-Dichloroethane-d4	26.060		25.00		104	72	119		0		
Surr: 4-Bromofluorobenzene	26.690		25.00		107	76	119		0		
Surr: Dibromofluoromethane	26.790		25.00		107	85	115		0		
Surr: Toluene-d8	27.310		25.00		109	81	120		0		

Sample ID: **CA191120-MB1** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **PBW** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577289**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,1,2-Tetrachloroethane	ND	1.0									
1,1,1-Trichloroethane	ND	1.0									
1,1,2,2-Tetrachloroethane	ND	1.0									

Qualifiers:

B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S Spike/Surrogate outside of limits due to matrix interference
DO Surrogate Diluted Out
Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191120-MB1** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **PBW** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577289**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,1,2-Trichloroethane	ND	1.0									
1,1-Dichloroethane	ND	0.50									
1,1-Dichloroethene	ND	1.0									
1,1-Dichloropropene	ND	1.0									
1,2,3-Trichlorobenzene	ND	1.0									
1,2,3-Trichloropropane	ND	1.0									
1,2,4-Trichlorobenzene	ND	1.0									
1,2,4-Trimethylbenzene	ND	1.0									
1,2-Dibromo-3-chloropropane	ND	2.0									
1,2-Dibromoethane	ND	1.0									
1,2-Dichlorobenzene	ND	1.0									
1,2-Dichloroethane	ND	0.50									
1,2-Dichloropropane	ND	1.0									
1,3,5-Trimethylbenzene	ND	1.0									
1,3-Dichlorobenzene	ND	1.0									
1,3-Dichloropropane	ND	1.0									
1,4-Dichlorobenzene	ND	1.0									
2,2-Dichloropropane	ND	1.0									
2-Butanone	ND	10									
2-Chlorotoluene	ND	1.0									
4-Chlorotoluene	ND	1.0									
4-Isopropyltoluene	ND	1.0									
4-Methyl-2-pentanone	ND	10									
Acetone	ND	10									
Benzene	ND	1.0									
Bromobenzene	ND	1.0									
Bromochloromethane	ND	1.0									
Bromodichloromethane	ND	1.0									
Bromoform	ND	1.0									
Bromomethane	ND	1.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191120-MB1** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **PBW** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577289**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Carbon disulfide	ND	1.0									
Carbon tetrachloride	ND	0.50									
Chlorobenzene	ND	1.0									
Chloroethane	ND	1.0									
Chloroform	ND	1.0									
Chloromethane	ND	1.0									
cis-1,2-Dichloroethene	ND	1.0									
cis-1,3-Dichloropropene	ND	1.0									
Di-isopropyl ether	ND	1.0									
Dibromochloromethane	ND	1.0									
Dibromomethane	ND	1.0									
Dichlorodifluoromethane	ND	1.0									
Ethyl tert-butyl ether	ND	1.0									
Ethylbenzene	ND	1.0									
Freon-113	ND	1.0									
Hexachlorobutadiene	ND	1.0									
Isopropylbenzene	ND	1.0									
m,p-Xylene	ND	1.0									
Methylene chloride	ND	2.0									
MTBE	ND	1.0									
n-Butylbenzene	ND	1.0									
n-Propylbenzene	ND	1.0									
Naphthalene	ND	1.0									
o-Xylene	ND	1.0									
sec-Butylbenzene	ND	1.0									
Styrene	ND	1.0									
Tert-amyl methyl ether	ND	1.0									
Tert-Butanol	ND	5.0									
tert-Butylbenzene	ND	1.0									
Tetrachloroethene	ND	1.0									

Qualifiers:

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- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
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- S Spike/Surrogate outside of limits due to matrix interference
- DO Surrogate Diluted Out

Calculations are based on raw values

CLIENT: CH2MHill
Work Order: N038378
Project: SFPP Norwalk

ANALYTICAL QC SUMMARY REPORT

TestCode: 8260_WP_SFPP

Sample ID: **CA191120-MB1** SampType: **MBLK** TestCode: **8260_WP_SF** Units: **ug/L** Prep Date: RunNo: **137737**
Client ID: **PBW** Batch ID: **CA19VW118** TestNo: **EPA 8260B** Analysis Date: **11/20/2019** SeqNo: **3577289**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Toluene	ND	2.0									
trans-1,2-Dichloroethene	ND	1.0									
trans-1,3-Dichloropropene	ND	1.0									
Trichloroethene	ND	1.0									
Trichlorofluoromethane	ND	1.0									
Vinyl chloride	ND	0.50									
Xylenes, Total	ND	2.0									
Surr: 1,2-Dichloroethane-d4	26.870		25.00		107	72	119				
Surr: 4-Bromofluorobenzene	23.920		25.00		95.7	76	119				
Surr: Dibromofluoromethane	27.530		25.00		110	85	115				
Surr: Toluene-d8	26.530		25.00		106	81	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit	R	RPD outside accepted recovery limits
S	Spike/Surrogate outside of limits due to matrix interference	DO	Surrogate Diluted Out		Calculations are based on raw values

N038378

Asset Laboratories
3151 W. Post Road
Las Vegas, NV 89118
Tel: 702-307-2659 Fax: 702-307-2691
Marlon Cartin (marlon@assetlaboratories.com)

CHAIN OF CUSTODY RECORD

DATE: 11/19/19
PAGE: 1 of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:	Section D Sampler Information:
Company: Kinder Morgan, Inc. Attention: Alan Van Antwerp	Report To: Eric Davis	Attention: Alan Van Antwerp - Ref. AFE# 81195	Sampler Name: James Dye
Address: 9950 San Diego Mission Road San Diego, CA 92108	Copy To: Alan Van Antwerp	Company Name: Kinder Morgan, Inc.	Sampler Signature:
Email To: alan_vanantwerp@kindermorgan.com eric.davis@jacobs.com	Purchase Order No.:	Address: 9950 San Diego Mission Road San Diego, CA 92108	Sample Date: 11/19/19
Phone 619-922-1960 (mobi Fax	Project Name: SFPP Norwalk	ATL Project Manager: Marlon Cartin	

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING DATE	SAMPLING TIME	TOTAL # OF CONTAINERS	SAMPLE TEMPERATURE (°F)	Analysis Test	Full VOCs + Oxygenates List (8260B)	TPH-gas (C4-C12) (8015B)	TPH-d (C18-C22), TPH-oil (C23+), Total TPH (8015B)	Comments
CONTAINER TYPE										V	V	A	
# OF CONTAINERS										3	3	3	
PRESERVATIVE										H	H	–	
VOLUME (mL)										40	40	1000	
1	INF-11-19	INFLUENT	WW	G	11/19/19	0850	9			X	X	X	N038378-01
2													
3													
4													
5													
6													
7													
8													
10													

0.4°C
IR#2

Relinquished by (Signature and Printed Name):	Date / Time	Relinquished by (Signature and Printed Name):	Date / Time
James Dye	11/19/19 0850	E. RODRIGUEZ	11-19-19 0850
E. RODRIGUEZ	11-19-19 1700	MARIANNE SANTOS	11/19/19 1700
MARIANNE SANTOS	11/19/19 1800	Yesenia Rodriguez	11/20/19 8:45 am

Turn Around Time (TAT):
- ☐ A = Same Day
- ☐ B = 24 Hours
- ☐ C = 48 Hours
- ☐ D = 72 Hours
- ☑ E = 5 Workdays
- ☐ E = 10 Workdays

TAT Starts at 8 AM the following day if samples received after 3:00 PM.

Special Instruction:
Las Vegas
3.7°C IR#2

Matrix:			Preservatives:			Container Type:			
W = Water	WW = Wastewater		H = HCl	N = HNO3	S = H2SO4	T = Tube	V = VOA	P = Pint	A = Amber
O = Oil	P = Product	S = Soil	Z = Zn(AC)2	O = NaOH	T = Na2S2O3	J = Jar	B = Tedlar	G = Glass	
Others/Specify:			Others/Specify:			M = Metal	P = Plastic	C = Can	

USO #: 2105

ASSET Laboratories

Please review the checklist below. Any NO signifies non-compliance. Any non-compliance will be noted and must be understood as having an impact on the quality of the data. All tests will be performed as requested regardless of any compliance issues.

If you have any questions or further instruction, please contact our Project Coordinator at (702) 307-2659.

Cooler Received/Opened On:	11/19/2018	Workorder:	N038378
Rep sample Temp (Deg C):	0.4	IR Gun ID:	2
Temp Blank:	☐ Yes ☑ No		
Carrier name:	ASSET		
Last 4 digits of Tracking No.:	NA	Packing Material Used:	None
Cooling process:	☑ Ice ☐ Ice Pack ☐ Dry Ice ☐ Other ☐ None		

Sample Receipt Checklist

1. Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
2. Custody seals intact, signed, dated on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
3. Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
4. Chain of custody present?	Yes ☑	No ☐	
5. Sampler's name present in COC?	Yes ☑	No ☐	
6. Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
7. Chain of custody agrees with sample labels?	Yes ☑	No ☐	
8. Samples in proper container/bottle?	Yes ☑	No ☐	
9. Sample containers intact?	Yes ☑	No ☐	
10. Sufficient sample volume for indicated test?	Yes ☑	No ☐	
11. All samples received within holding time?	Yes ☑	No ☐	
12. Temperature of rep sample or Temp Blank within acceptable limit?	Yes ☑	No ☐	NA ☐
13. Water - VOA vials have zero headspace?	Yes ☑	No ☐	NA ☐
14. Water - pH acceptable upon receipt? Example: pH > 12 for (CN,S); pH<2 for Metals	Yes ☐	No ☐	NA ☑
15. Did the bottle labels indicate correct preservatives used?	Yes ☑	No ☐	NA ☐
16. Were there Non-Conformance issues at login?	Yes ☐	No ☐	NA ☑
Was Client notified?	Yes ☐	No ☐	NA ☑

Comments: Received in Las Vegas Lab on 11/20/19 (GSO # 2105) at 3.7 oC (IR # 2).

For:

Checklist Completed By: EAR YRJ 11/22/2019

Reviewed By: MBC 11/26/2019

ASSET Laboratories

WORK ORDER Summary

25-Nov-19

WorkOrder: N038378

Client ID: CH2HI03

Project: SFPP Norwalk **QC Level:** RTNE **Date Received:** 11/19/2019

Comments:

Sample ID	Client Sample ID	Date Collected	Date Due	Matrix	Test No	Test Name	Hld	MS	Sub	Storage
N038378-001A	INF-11-19	11/19/2019 8:50:00 AM	11/27/2019	Wastewater	EPA 8260B	VOLATILE ORGANIC COMPOUNDS BY GC/MS	☐	☐	☐	V-CA
N038378-001B			11/27/2019		EPA 8015B	GASOLINE RANGE ORGANICS BY GC/FID	☐	☐	☑	SUB
N038378-001C			11/27/2019		EPA 3510C	SEPARATORY FUNNEL EXTRACTION: EXTRACTABLE FUELS	☐	☐	☐	WW
			11/27/2019		EPA 8015B	TPH EXTRACTABLE BY GC/FID	☐	☐	☐	WW
			11/27/2019		EPA 8015B	Total TPH	☐	☐	☐	WW
N038378-002A	FOLDER	11/27/2019	11/27/2019		Folder	Folder	☐	☐	☐	LAB
			11/27/2019		Folder	Folder	☐	☐	☐	LAB

ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.atl-labs.com
TEL: 7023072659 *FAX: 7023072691*

CHAIN-OF-CUSTODY RECORD

QC Level: RTNE

Subcontractor:

Enthalpy Analytical
2323 5th St
Berkeley, CA 94710

TEL: (510) 486-0900
FAX:
Acct #:

Field Sampler: Signed

25-Nov-19

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				EPA 8015B		
N038378-001B / INF-11-19	Wastewater	11/19/2019 8:50:00 AM	VOA	1		

General Comments: Please email sample receipt acknowledgement to the PM. Please cc andrea.gallardo@assetlaboratories.com

Please use PO#:N38378A Please email Invoices and Account Receivable Statements to elvira@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: 3-day TAT.

Please analyze for GRO by 8015. EDD Requirement CH2M Hill Labspec7 edata. Please report "J" flagged down to MDL.

GSO #: 547071056

		Date/Time		Date/Time
Relinquished by:	YRJ	11/25/2019 17:00	Received by:	
Relinquished by:			Received by:	

GSO | GLS

800-322-5555
www.gso.com

Ship From
ASSET LABORATORIES
MARIANNE SANTOS
11110 ARTESIA BLVD. SUITE B
CERRITOS, CA 90703

Ship To
ASSET LABORATORIES
MARLON CARTIN
3151 W. POST RD.,
LAS VEGAS, NV 89118

COD: $0.00
Weight: 0 lb(s)
Reference:

Delivery Instructions:
HOLD FOR PICK-UP
Signature Type: STANDARD

Tracking #: 547002105

CPS

LAS VEGAS

C89102A

11829789

LVS NV891-C51

Print Date: 11/19/2019 7:02 PM

Package 3 of 4

LABEL INSTRUCTIONS:

Do not copy or reprint this label for additional shipments - each package must have a unique barcode.
Step 1: Use the "Print Label" button on this page to print the shipping label on a laser or inkjet printer.
Step 2: Fold this page in half.
Step 3: Securely attach this label to your package and do not cover the barcode.

TERMS AND CONDITIONS:

By giving us your shipment to deliver, you agree to all of the GSO service terms & conditions including, but not limited to; limits of liability, declared value conditions, and claim procedures which are available on our website at www.gso.com.

3.70L DK #2 08:45 $20.74

Enthalpy Analytical
2323 Fifth Street
Berkeley, CA 94710
(510) 486-0900

enthalpy.com

Lab Job Number: 316234
Report Level: II
Report Date: 12/05/2019

Analytical Report *prepared for:*

Anadrea Gallardo
ASSET LABS
3151-3153 W Post Road
Las Vegas, NV 89118

Authorized for release by:

Patrick McCarthy, Project Manager
(510) 204-2236 ext 13115
patrick.mccarthy@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 2896, NELAP# 4044-001

ENTHALPY ANALYTICAL

Sample Summary

Anadrea Gallardo
ASSET LABS
3151-3153 W Post Road
Las Vegas, NV 89118

Lab Job #: 316234
Date Received: 11/26/19

Sample ID	Lab ID	Collected	Matrix
N038378-001D/INF-11-19	316234-001	11/19/19 08:50	Water

ENTHALPY ANALYTICAL

Case Narrative

ASSET LABS
3151-3153 W Post Road
Las Vegas, NV 89118
Anadrea Gallardo

Lab Job Number: 316234
Date Received: 11/26/19

This data package contains sample and QC results for one water sample, requested for the above referenced project on 12/02/19. The sample was received cold and intact.

TPH-Purgeables and/or BTXE by GC (EPA 8015B):
Gasoline C7-C12 was detected between the MDL and the RL in the method blank for batch 276589; this analyte was not detected in the sample at or above the RL. No other analytical problems were encountered.

Detection Summary for 316234

Client: ASSET LABS

Sample ID: N038378-001D/INF-11-19 Lab ID: 316234-001

Analyte	Result	Flags	RL	MDL	Units	Basis	IDF	Method	Prep Method
Gasoline C7-C12	19	B,J	50	9.4	ug/L	As Recd	1.000	EPA 8015B	EPA 5030B

B: Contamination found in associated Method Blank
J: Estimated value

Results for any subcontracted analyses are not included in this summary. Data qualifiers and additional information necessary for the interpretation of the test results are contained in the PDF file and may not be included in this summary.

ASSET Laboratories
3151-3153 W Post Rd., Las Vegas, NV 89118
www.atl-labs.com
TEL: 7023072659 *FAX: 7023072691*

CHAIN-OF-CUSTODY RECORD

QC Level: RTNE

316234

Subcontractor:
Enthalpy Analytical
2323 5th St
Berkeley, CA 94710

TEL: (510) 486-0900
FAX:
Acct #:

Field Sampler: Signed

25-Nov-19

Sample ID	Matrix	Date Collected	Bottle Type	Requested Tests		
				EPA 8015B		
N038378-001B / INF-11-19	Wastewater	11/19/2019 8:50:00 AM	VOA	1		

General Comments: Please email sample receipt acknowledgement to the PM. Please cc andrea.gallardo@assetlaboratories.com

Please use PO#:N38378A Please email Invoices and Account Receivable Statements to elvira@assetlaboratories.com. For questions, call Marlon at (702)-307-2659. Please e-mail results to reports.lv@assetlaboratories.com by: 3-day TAT.

Please analyze for GRO by 8015. EDD Requirement CH2M Hill Labspec7 edata. Please report "J" flagged down to MDL.

GSO #: 547071056

		Date/Time			Date/Time
Relinquished by:	YRJ	11/25/2019 17:00	**Received by:**		11/26/19
Relinquished by:			**Received by:**		

1/15

SAMPLE RECEIPT CHECKLIST

Section 1: Login # 316284 Client: ASSET Labs

Date Received: 11.27 Project: _____

Section 2: Shipping info (if applicable) _____

Are custody seals present? ☑ No, or ☐ Yes. If yes, where? ☐ on cooler, ☐ on samples, ☐ on package

☐ Date: _____ How many _____ ☐ Signature, ☐ Initials, ☐ None

Were custody seals intact upon arrival? ☐ Yes ☐ No ☐ N/A

Samples received in a cooler? ☑ Yes, how many? 1 ☐ No (**skip Section 3 below**)

If no cooler Sample Temp (°C): _____ using IR Gun # ☐ B, or ☐ C

☐ Samples received on ice directly from the field. Cooling process had begun

If in cooler: Date Opened 11.27 By (print) BM (sign) BM

Section 3: ***Important*** **: Notify PM if temperature exceeds 6°C or arrive frozen.**

Packing in cooler: (if other, describe) _____

☐ Bubble Wrap, ☐ Foam blocks, ☑ Bags, ☐ None, ☐ Cloth material, ☐ Cardboard, ☐ Styrofoam, ☐ Paper towels

☐ Samples received on ice directly from the field. Cooling process had begun

Type of ice used : ☑ Wet, ☐ Blue/Gel, ☐ None Temperature blank(s) included? ☐ Yes, ☐ No

Temperature measured using ☐ Thermometer ID: _____, or IR Gun # ☐ B ☐ C

Cooler Temp (°C): #1: 0.1, #2: _____, #3: _____, #4: _____, #5: _____, #6: _____, #7: _____

Section 4:	YES	NO	N/A
Were custody papers dry, filled out properly, and the project identifiable	✓		
Were Method 5035 sampling containers present?		✓	
If YES, what time were they transferred to freezer?			
Did all bottles arrive unbroken/unopened?	✓		
Are there any missing / extra samples?		✓	
Are samples in the appropriate containers for indicated tests?	✓		
Are sample labels present, in good condition and complete?	✓		
Does the container count match the COC?	✓		
Do the sample labels agree with custody papers?	✓		
Was sufficient amount of sample sent for tests requested?	✓		
Did you change the hold time in LIMS for unpreserved VOAs?			✓
Did you change the hold time in LIMS for preserved terracores?			✓
Are bubbles > 6mm present in VOA samples?		✓	
Was the client contacted concerning this sample delivery?		✓	
If YES, who was called? _____ By _____ Date: _____			

Section 5:	YES	NO	N/A
Are the samples appropriately preserved? (if N/A, skip the rest of section 5)			✓
Did you check preservatives for all bottles for each sample?			
Did you document your preservative check?			

pH strip lot# _____, pH strip lot# _____, pH strip lot# _____

Preservative added:

☐ H2SO4 lot# _____ added to samples _____ on/at _____

☐ HCL lot# _____ added to samples _____ on/at _____

☐ HNO3 lot# _____ added to samples _____ on/at _____

☐ NaOH lot# _____ added to samples _____ on/at _____

Section 6:

Explanations/Comments: _____

Date Logged in 12.02 **By (print)** BM **(sign)** BM

Date Labeled 12/04/19 **By (print)** ZH **(sign)** ZH

ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: Asset Labs Project: _____

Date Received: 11/26/19 Sampler's Name Present: ☑ Yes ☐ No

Section 2

Sample(s) received in a cooler? ☑ Yes, How many? 1 ☐ No (skip section 2) Sample Temp (°C) (No Cooler): _____

Sample Temp (°C), One from each cooler: #1: 1.3 #2: _____ #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: ☑ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooler Temp (°C): #1: 1.0 #2: _____ #3: _____ #4: _____

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?	✓		
Is there headspace in the VOA vials greater than 5-6 mm in diameter?		✓	
Was a sufficient amount of sample submitted for the requested tests?	✓		

Section 5 Explanations/Comments

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date/Time _____

☐ Email (email sent to/on): _____ / _____

Project Manager's response:

Completed By: _____ Date: 11/26/19

ENTHALPY ANALYTICAL

Total Volatile Hydrocarbons

Lab #: 316234 **Project#:** STANDARD

Client: ASSET LABS **Location:**

Field ID: N038378-001D/INF-11-19 **Diln Fac:** 1.000 **Analyzed:** 12/03/19

Type: SAMPLE **Batch#:** 276589 **Prep:** EPA 5030B

Lab ID: 316234-001 **Sampled:** 11/19/19 **Analysis:** EPA 8015B

Matrix: Water **Received:** 11/26/19

Analyte	Result	RL	MDL	Units
Gasoline C7-C12	**19 J B**	50	9.4	ug/L

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	80-120

Type: BLANK **Matrix:** Water **Batch#:** 276589 **Prep:** EPA 5030B

Lab ID: QC1000945 **Diln Fac:** 1.000 **Analyzed:** 12/03/19 **Analysis:** EPA 8015B

Analyte	Result	RL	MDL	Units
Gasoline C7-C12	**12 J**	50	9.4	ug/L

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	89	80-120

Legend

B: Contamination found in associated Method Blank

J: Estimated value

MDL: Method Detection Limit

RL: Reporting Limit

ENTHALPY ANALYTICAL

Total Volatile Hydrocarbons: Batch QC

Lab #: 316234 **Project#:** STANDARD

Client: ASSET LABS **Location:**

Type: BS **Matrix:** Water **Batch#:** 276589 **Prep:** EPA 5030B

Lab ID: QC1000946 **Dil'n Fac:** 1.000 **Analyzed:** 12/03/19 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units
Gasoline C7-C12	1,000	975.9	98	80-123	ug/L

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	80-120

Type: BSD **Matrix:** Water **Batch#:** 276589 **Prep:** EPA 5030B

Lab ID: QC1000947 **Dil'n Fac:** 1.000 **Analyzed:** 12/03/19 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Gasoline C7-C12	1,000	961.3	96	80-123	ug/L	2	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	94	80-120

Legend

RPD: Relative Percent Difference

ENTHALPY ANALYTICAL

Total Volatile Hydrocarbons: Batch QC

Lab #: 316234 **Project#:** STANDARD

Client: ASSET LABS **Location:**

Field ID: ZZZZZZZZZZ **Matrix:** Water **Received:** 11/21/19
Type: MS **Diln Fac:** 1.000 **Analyzed:** 12/03/19
MSS Lab ID: 316131-001 **Batch#:** 276589 **Prep:** EPA 5030B
Lab ID: QC1000948 **Sampled:** 11/19/19 **Analysis:** EPA 8015B

Analyte	MSS Result	Spiked	Result	%REC	Limits	Units
Gasoline C7-C12	24.63	2,000	1,854	91	80-124	ug/L

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	80-120

Field ID: ZZZZZZZZZZ **Matrix:** Water **Received:** 11/21/19
Type: MSD **Diln Fac:** 1.000 **Analyzed:** 12/03/19
MSS Lab ID: 316131-001 **Batch#:** 276589 **Prep:** EPA 5030B
Lab ID: QC1000949 **Sampled:** 11/19/19 **Analysis:** EPA 8015B

Analyte	Spiked	Result	%REC	Limits	Units	RPD	Lim
Gasoline C7-C12	2,000	1,859	92	80-124	ug/L	0	20

Surrogate	%REC	Limits
Bromofluorobenzene (FID)	96	80-120

Legend

RPD: Relative Percent Difference

AMERICAN ANALYTICS

9765 Eton Avenue
Chatsworth
California 91311
Tel: (818) 998-5547
Fax: (818) 998-7258

November 21, 2019

Vladimir Carino

CH2M Hill, Inc.

P.O. Box 241329

Denver, CO 80224

Re : KMEP Norwalk Biosparge Startup / 693142

MB187331 / 9J28017

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 10/30/19 15:00 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report or require additional information please call me at American Analytics.

Sincerely,

Allen Aminian

QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Fixed Gases - Field					
SVM-1-5	9J28017-01	Vapor	5	10/28/19 07:27	10/30/19 15:00
SVM-1-15	9J28017-02	Vapor	5	10/28/19 07:28	10/30/19 15:00
SVM-2-5	9J28017-03	Vapor	5	10/28/19 07:57	10/30/19 15:00
SVM-15-7	9J28017-04	Vapor	5	10/28/19 09:11	10/30/19 15:00
SVM-15-15	9J28017-05	Vapor	5	10/28/19 09:15	10/30/19 15:00
SVM-15-22	9J28017-06	Vapor	5	10/28/19 09:16	10/30/19 15:00
SVM-6-7	9J28017-07	Vapor	5	10/28/19 09:42	10/30/19 15:00
SVM-6-13	9J28017-08	Vapor	5	10/28/19 09:43	10/30/19 15:00
SVM-7-7	9J28017-09	Vapor	5	10/28/19 10:15	10/30/19 15:00
SVM-7-13	9J28017-10	Vapor	5	10/28/19 10:15	10/30/19 15:00
SVM-7-13DUP	9J28017-11	Vapor	5	10/28/19 10:15	10/30/19 15:00
SVM-10-15	9J28017-13	Vapor	5	10/28/19 10:53	10/30/19 15:00
SVM-5-5	9J28017-14	Vapor	5	10/28/19 11:42	10/30/19 15:00
SVM-5-15	9J28017-15	Vapor	5	10/28/19 11:50	10/30/19 15:00
SVM-8-5	9J28017-16	Vapor	5	10/28/19 12:23	10/30/19 15:00
SVM-8-15	9J28017-17	Vapor	5	10/28/19 12:25	10/30/19 15:00
SVM-16-7	9J28017-18	Vapor	5	10/28/19 13:06	10/30/19 15:00
SVM-16-16	9J28017-19	Vapor	5	10/28/19 13:07	10/30/19 15:00
SVM-16-22	9J28017-20	Vapor	5	10/28/19 13:09	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-3-5	9J28017-21	Vapor	5	10/29/19 07:28	10/30/19 15:00
SVM-3-15	9J28017-22	Vapor	5	10/29/19 07:34	10/30/19 15:00
SVM-12-15	9J28017-23	Vapor	5	10/29/19 08:18	10/30/19 15:00
SVM-12-7	9J28017-24	Vapor	5	10/29/19 08:23	10/30/19 15:00
SVM-12-22	9J28017-25	Vapor	5	10/29/19 08:29	10/30/19 15:00
SVM-11-7	9J28017-26	Vapor	5	10/29/19 09:03	10/30/19 15:00
SVM-11-15	9J28017-27	Vapor	5	10/29/19 09:03	10/30/19 15:00
SVM-11-22	9J28017-28	Vapor	5	10/29/19 09:05	10/30/19 15:00
SVM-13-7	9J28017-29	Vapor	5	10/29/19 09:22	10/30/19 15:00
SVM-13-15	9J28017-30	Vapor	5	10/29/19 09:23	10/30/19 15:00
SVM-13-22	9J28017-31	Vapor	5	10/29/19 09:30	10/30/19 15:00
SVM-13-22DUP	9J28017-32	Vapor	5	10/29/19 09:30	10/30/19 15:00
SVM-14R-22	9J28017-33	Vapor	5	10/29/19 10:00	10/30/19 15:00
SVM-14R-8	9J28017-34	Vapor	5	10/29/19 10:06	10/30/19 15:00
SVM-14R-16	9J28017-35	Vapor	5	10/29/19 10:09	10/30/19 15:00
SVP-108-5	9J28017-36	Vapor	5	10/29/19 11:06	10/30/19 15:00
SVP-108-10	9J28017-37	Vapor	5	10/29/19 11:10	10/30/19 15:00
SV-230-10	9J28017-39	Vapor	5	10/29/19 11:44	10/30/19 15:00
SV-230-5	9J28017-40	Vapor	5	10/29/19 11:46	10/30/19 15:00
SVM-21-14.5	9J28017-41	Vapor	5	10/30/19 07:45	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-21-5	9J28017-42	Vapor	5	10/30/19 07:57	10/30/19 15:00
SVM-20-10	9J28017-43	Vapor	5	10/30/19 08:30	10/30/19 15:00
SVM-20-5	9J28017-44	Vapor	5	10/30/19 08:32	10/30/19 15:00
SVM-19-5	9J28017-45	Vapor	5	10/30/19 08:52	10/30/19 15:00
SVM-23-5	9J28017-46	Vapor	5	10/30/19 09:25	10/30/19 15:00
SVM-23-14.5	9J28017-47	Vapor	5	10/30/19 09:29	10/30/19 15:00
SVM-22-14.5	9J28017-48	Vapor	5	10/30/19 09:37	10/30/19 15:00
SVM-22-5	9J28017-49	Vapor	5	10/30/19 09:52	10/30/19 15:00
SVM-9-5	9J28017-50	Vapor	5	10/30/19 10:07	10/30/19 15:00
SVM-9-14.5	9J28017-51	Vapor	5	10/30/19 10:08	10/30/19 15:00
SVM-18-14.5	9J28017-53	Vapor	5	10/30/19 10:47	10/30/19 15:00
SVM-18-5	9J28017-54	Vapor	5	10/30/19 10:49	10/30/19 15:00
SVM-17-5	9J28017-55	Vapor	5	10/30/19 11:23	10/30/19 15:00
SVM-17-14.5	9J28017-56	Vapor	5	10/30/19 11:24	10/30/19 15:00
SVP-109-5	9J28017-57	Vapor	5	10/30/19 12:05	10/30/19 15:00
SVP-109-10	9J28017-58	Vapor	5	10/30/19 12:06	10/30/19 15:00
SVP-109-10DUP	9J28017-59	Vapor	5	10/30/19 12:06	10/30/19 15:00
SV-227-10	9J28017-60	Vapor	5	10/30/19 12:14	10/30/19 15:00
SV-227-5	9J28017-61	Vapor	5	10/30/19 12:21	10/30/19 15:00

TO-15 (Mid Level)

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-1-5	9J28017-01	Vapor	5	10/28/19 07:27	10/30/19 15:00
SVM-1-15	9J28017-02	Vapor	5	10/28/19 07:28	10/30/19 15:00
SVM-2-5	9J28017-03	Vapor	5	10/28/19 07:57	10/30/19 15:00
SVM-15-7	9J28017-04	Vapor	5	10/28/19 09:11	10/30/19 15:00
SVM-15-15	9J28017-05	Vapor	5	10/28/19 09:15	10/30/19 15:00
SVM-15-22	9J28017-06	Vapor	5	10/28/19 09:16	10/30/19 15:00
SVM-6-7	9J28017-07	Vapor	5	10/28/19 09:42	10/30/19 15:00
SVM-6-13	9J28017-08	Vapor	5	10/28/19 09:43	10/30/19 15:00
SVM-7-7	9J28017-09	Vapor	5	10/28/19 10:15	10/30/19 15:00
SVM-7-13	9J28017-10	Vapor	5	10/28/19 10:15	10/30/19 15:00
SVM-7-13DUP	9J28017-11	Vapor	5	10/28/19 10:15	10/30/19 15:00
Ambient Air	9J28017-12	Vapor	5	10/28/19 10:40	10/30/19 15:00
SVM-10-15	9J28017-13	Vapor	5	10/28/19 10:53	10/30/19 15:00
SVM-5-5	9J28017-14	Vapor	5	10/28/19 11:42	10/30/19 15:00
SVM-5-15	9J28017-15	Vapor	5	10/28/19 11:50	10/30/19 15:00
SVM-8-5	9J28017-16	Vapor	5	10/28/19 12:23	10/30/19 15:00
SVM-8-15	9J28017-17	Vapor	5	10/28/19 12:25	10/30/19 15:00
SVM-16-7	9J28017-18	Vapor	5	10/28/19 13:06	10/30/19 15:00
SVM-16-16	9J28017-19	Vapor	5	10/28/19 13:07	10/30/19 15:00
SVM-16-22	9J28017-20	Vapor	5	10/28/19 13:09	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-3-5	9J28017-21	Vapor	5	10/29/19 07:28	10/30/19 15:00
SVM-3-15	9J28017-22	Vapor	5	10/29/19 07:34	10/30/19 15:00
SVM-12-15	9J28017-23	Vapor	5	10/29/19 08:18	10/30/19 15:00
SVM-12-7	9J28017-24	Vapor	5	10/29/19 08:23	10/30/19 15:00
SVM-12-22	9J28017-25	Vapor	5	10/29/19 08:29	10/30/19 15:00
SVM-11-7	9J28017-26	Vapor	5	10/29/19 09:03	10/30/19 15:00
SVM-11-15	9J28017-27	Vapor	5	10/29/19 09:03	10/30/19 15:00
SVM-11-22	9J28017-28	Vapor	5	10/29/19 09:05	10/30/19 15:00
SVM-13-7	9J28017-29	Vapor	5	10/29/19 09:22	10/30/19 15:00
SVM-13-15	9J28017-30	Vapor	5	10/29/19 09:23	10/30/19 15:00
SVM-13-22	9J28017-31	Vapor	5	10/29/19 09:30	10/30/19 15:00
SVM-13-22DUP	9J28017-32	Vapor	5	10/29/19 09:30	10/30/19 15:00
SVM-14R-22	9J28017-33	Vapor	5	10/29/19 10:00	10/30/19 15:00
SVM-14R-8	9J28017-34	Vapor	5	10/29/19 10:06	10/30/19 15:00
SVM-14R-16	9J28017-35	Vapor	5	10/29/19 10:09	10/30/19 15:00
SVP-108-5	9J28017-36	Vapor	5	10/29/19 11:06	10/30/19 15:00
SVP-108-10	9J28017-37	Vapor	5	10/29/19 11:10	10/30/19 15:00
Ambient Air	9J28017-38	Vapor	5	10/29/19 11:33	10/30/19 15:00
SV-230-10	9J28017-39	Vapor	5	10/29/19 11:44	10/30/19 15:00
SV-230-5	9J28017-40	Vapor	5	10/29/19 11:46	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-21-14.5	9J28017-41	Vapor	5	10/30/19 07:45	10/30/19 15:00
SVM-21-5	9J28017-42	Vapor	5	10/30/19 07:57	10/30/19 15:00
SVM-20-10	9J28017-43	Vapor	5	10/30/19 08:30	10/30/19 15:00
SVM-20-5	9J28017-44	Vapor	5	10/30/19 08:32	10/30/19 15:00
SVM-19-5	9J28017-45	Vapor	5	10/30/19 08:52	10/30/19 15:00
SVM-23-5	9J28017-46	Vapor	5	10/30/19 09:25	10/30/19 15:00
SVM-23-14.5	9J28017-47	Vapor	5	10/30/19 09:29	10/30/19 15:00
SVM-22-14.5	9J28017-48	Vapor	5	10/30/19 09:37	10/30/19 15:00
SVM-22-5	9J28017-49	Vapor	5	10/30/19 09:52	10/30/19 15:00
SVM-9-5	9J28017-50	Vapor	5	10/30/19 10:07	10/30/19 15:00
SVM-9-14.5	9J28017-51	Vapor	5	10/30/19 10:08	10/30/19 15:00
Ambient Air	9J28017-52	Vapor	5	10/30/19 10:25	10/30/19 15:00
SVM-18-14.5	9J28017-53	Vapor	5	10/30/19 10:47	10/30/19 15:00
SVM-18-5	9J28017-54	Vapor	5	10/30/19 10:49	10/30/19 15:00
SVM-17-5	9J28017-55	Vapor	5	10/30/19 11:23	10/30/19 15:00
SVM-17-14.5	9J28017-56	Vapor	5	10/30/19 11:24	10/30/19 15:00
SVP-109-5	9J28017-57	Vapor	5	10/30/19 12:05	10/30/19 15:00
SVP-109-10	9J28017-58	Vapor	5	10/30/19 12:06	10/30/19 15:00
SVP-109-10DUP	9J28017-59	Vapor	5	10/30/19 12:06	10/30/19 15:00
SV-227-10	9J28017-60	Vapor	5	10/30/19 12:14	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SV-227-5	9J28017-61	Vapor	5	10/30/19 12:21	10/30/19 15:00
TO-3					
SVM-1-5	9J28017-01	Vapor	5	10/28/19 07:27	10/30/19 15:00
SVM-1-15	9J28017-02	Vapor	5	10/28/19 07:28	10/30/19 15:00
SVM-2-5	9J28017-03	Vapor	5	10/28/19 07:57	10/30/19 15:00
SVM-15-7	9J28017-04	Vapor	5	10/28/19 09:11	10/30/19 15:00
SVM-15-15	9J28017-05	Vapor	5	10/28/19 09:15	10/30/19 15:00
SVM-15-22	9J28017-06	Vapor	5	10/28/19 09:16	10/30/19 15:00
SVM-6-7	9J28017-07	Vapor	5	10/28/19 09:42	10/30/19 15:00
SVM-6-13	9J28017-08	Vapor	5	10/28/19 09:43	10/30/19 15:00
SVM-7-7	9J28017-09	Vapor	5	10/28/19 10:15	10/30/19 15:00
SVM-7-13	9J28017-10	Vapor	5	10/28/19 10:15	10/30/19 15:00
SVM-7-13DUP	9J28017-11	Vapor	5	10/28/19 10:15	10/30/19 15:00
Ambient Air	9J28017-12	Vapor	5	10/28/19 10:40	10/30/19 15:00
SVM-10-15	9J28017-13	Vapor	5	10/28/19 10:53	10/30/19 15:00
SVM-5-5	9J28017-14	Vapor	5	10/28/19 11:42	10/30/19 15:00
SVM-5-15	9J28017-15	Vapor	5	10/28/19 11:50	10/30/19 15:00
SVM-8-5	9J28017-16	Vapor	5	10/28/19 12:23	10/30/19 15:00
SVM-8-15	9J28017-17	Vapor	5	10/28/19 12:25	10/30/19 15:00
SVM-16-7	9J28017-18	Vapor	5	10/28/19 13:06	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-16-16	9J28017-19	Vapor	5	10/28/19 13:07	10/30/19 15:00
SVM-16-22	9J28017-20	Vapor	5	10/28/19 13:09	10/30/19 15:00
SVM-3-5	9J28017-21	Vapor	5	10/29/19 07:28	10/30/19 15:00
SVM-3-15	9J28017-22	Vapor	5	10/29/19 07:34	10/30/19 15:00
SVM-12-15	9J28017-23	Vapor	5	10/29/19 08:18	10/30/19 15:00
SVM-12-7	9J28017-24	Vapor	5	10/29/19 08:23	10/30/19 15:00
SVM-12-22	9J28017-25	Vapor	5	10/29/19 08:29	10/30/19 15:00
SVM-11-7	9J28017-26	Vapor	5	10/29/19 09:03	10/30/19 15:00
SVM-11-15	9J28017-27	Vapor	5	10/29/19 09:03	10/30/19 15:00
SVM-11-22	9J28017-28	Vapor	5	10/29/19 09:05	10/30/19 15:00
SVM-13-7	9J28017-29	Vapor	5	10/29/19 09:22	10/30/19 15:00
SVM-13-15	9J28017-30	Vapor	5	10/29/19 09:23	10/30/19 15:00
SVM-13-22	9J28017-31	Vapor	5	10/29/19 09:30	10/30/19 15:00
SVM-13-22DUP	9J28017-32	Vapor	5	10/29/19 09:30	10/30/19 15:00
SVM-14R-22	9J28017-33	Vapor	5	10/29/19 10:00	10/30/19 15:00
SVM-14R-8	9J28017-34	Vapor	5	10/29/19 10:06	10/30/19 15:00
SVM-14R-16	9J28017-35	Vapor	5	10/29/19 10:09	10/30/19 15:00
SVP-108-5	9J28017-36	Vapor	5	10/29/19 11:06	10/30/19 15:00
SVP-108-10	9J28017-37	Vapor	5	10/29/19 11:10	10/30/19 15:00
Ambient Air	9J28017-38	Vapor	5	10/29/19 11:33	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SV-230-10	9J28017-39	Vapor	5	10/29/19 11:44	10/30/19 15:00
SV-230-5	9J28017-40	Vapor	5	10/29/19 11:46	10/30/19 15:00
SVM-21-14.5	9J28017-41	Vapor	5	10/30/19 07:45	10/30/19 15:00
SVM-21-5	9J28017-42	Vapor	5	10/30/19 07:57	10/30/19 15:00
SVM-20-10	9J28017-43	Vapor	5	10/30/19 08:30	10/30/19 15:00
SVM-20-5	9J28017-44	Vapor	5	10/30/19 08:32	10/30/19 15:00
SVM-19-5	9J28017-45	Vapor	5	10/30/19 08:52	10/30/19 15:00
SVM-23-5	9J28017-46	Vapor	5	10/30/19 09:25	10/30/19 15:00
SVM-23-14.5	9J28017-47	Vapor	5	10/30/19 09:29	10/30/19 15:00
SVM-22-14.5	9J28017-48	Vapor	5	10/30/19 09:37	10/30/19 15:00
SVM-22-5	9J28017-49	Vapor	5	10/30/19 09:52	10/30/19 15:00
SVM-9-5	9J28017-50	Vapor	5	10/30/19 10:07	10/30/19 15:00
SVM-9-14.5	9J28017-51	Vapor	5	10/30/19 10:08	10/30/19 15:00
Ambient Air	9J28017-52	Vapor	5	10/30/19 10:25	10/30/19 15:00
SVM-18-14.5	9J28017-53	Vapor	5	10/30/19 10:47	10/30/19 15:00
SVM-18-5	9J28017-54	Vapor	5	10/30/19 10:49	10/30/19 15:00
SVM-17-5	9J28017-55	Vapor	5	10/30/19 11:23	10/30/19 15:00
SVM-17-14.5	9J28017-56	Vapor	5	10/30/19 11:24	10/30/19 15:00
SVP-109-5	9J28017-57	Vapor	5	10/30/19 12:05	10/30/19 15:00
SVP-109-10	9J28017-58	Vapor	5	10/30/19 12:06	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVP-109-10DUP	9J28017-59	Vapor	5	10/30/19 12:06	10/30/19 15:00
SV-227-10	9J28017-60	Vapor	5	10/30/19 12:14	10/30/19 15:00
SV-227-5	9J28017-61	Vapor	5	10/30/19 12:21	10/30/19 15:00

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
			Fixed Gases by TCD					
Oxygen	SVM-1-5	**20**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-1-15	**18**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-2-5	**18**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Carbon Dioxide	SVM-2-5	**0.50**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-15-7	**19**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-15-15	**19**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-15-22	**20**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Carbon Dioxide	SVM-15-22	**0.68**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-6-7	**21**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-6-13	**19**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-7-7	**21**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-7-13	**19**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-7-13DUP	**19**	1.0	% by Volume	10	11/12/19	11/12/19	EPA 3CM
Carbon Dioxide	SVM-7-13DUP	**0.38**	0.20	% by Volume	2	11/12/19	11/12/19	EPA 3CM
Oxygen	SVM-10-15	**13**	1.0	% by Volume	10	11/12/19	11/12/19	EPA 3CM
Carbon Dioxide	SVM-10-15	**2.9**	0.20	% by Volume	2	11/12/19	11/12/19	EPA 3CM
Oxygen	SVM-5-5	**20**	1.0	% by Volume	10	11/12/19	11/12/19	EPA 3CM
Oxygen	SVM-5-15	**19**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-8-5	**19**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-8-15	**17**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-16-7	**17**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-16-16	**18**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-16-22	**4.5**	0.20	% by Volume	2	11/08/19	11/12/19	EPA 3CM
Carbon Dioxide	SVM-16-22	**8.8**	0.20	% by Volume	2	11/08/19	11/12/19	EPA 3CM
Oxygen	SVM-3-5	**18**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-3-15	**20**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-12-15	**17**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-12-15	**2.2**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-12-7	**18**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-12-7	**1.1**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-12-22	**10**	0.40	% by Volume	4	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-12-22	**5.2**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM

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QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
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Project Name: KMEP Norwalk Biosparge Startup

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Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-11-7	**19**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-11-15	**18**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-11-15	**0.62**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-11-22	**9.0**	0.40	% by Volume	4	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-11-22	**7.0**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-13-7	**19**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-13-15	**19**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-13-22	**18**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-13-22	**0.74**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-13-22DUP	**19**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-13-22DUP	**0.47**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-14R-22	**1.4**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-14R-22	**3.3**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-14R-8	**17**	1.0	% by Volume	10	11/08/19	11/08/19	EPA 3CM
Carbon Dioxide	SVM-14R-8	**1.3**	0.20	% by Volume	2	11/08/19	11/08/19	EPA 3CM
Oxygen	SVM-14R-16	**18**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVP-108-5	**16**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Carbon Dioxide	SVP-108-5	**0.51**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Oxygen	SVP-108-10	**2.1**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Carbon Dioxide	SVP-108-10	**12**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Oxygen	SV-230-10	**17**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Carbon Dioxide	SV-230-10	**1.9**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SV-230-5	**19**	1.0	% by Volume	10	11/13/19	11/13/19	EPA 3CM
Oxygen	SVM-21-14.5	**20**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Carbon Dioxide	SVM-21-14.5	**0.61**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-21-5	**17**	1.0	% by Volume	10	11/13/19	11/13/19	EPA 3CM
Carbon Dioxide	SVM-21-5	**0.62**	0.20	% by Volume	2	11/13/19	11/13/19	EPA 3CM
Oxygen	SVM-20-10	**17**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Carbon Dioxide	SVM-20-10	**0.49**	0.20	% by Volume	2	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-20-5	**20**	1.0	% by Volume	10	11/11/19	11/11/19	EPA 3CM
Oxygen	SVM-19-5	**19**	1.0	% by Volume	10	11/12/19	11/12/19	EPA 3CM
Oxygen	SVM-23-5	**18**	1.0	% by Volume	10	11/12/19	11/12/19	EPA 3CM
Carbon Dioxide	SVM-23-5	**1.3**	0.20	% by Volume	2	11/12/19	11/12/19	EPA 3CM

Allen Aminian
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LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-23-14.5	**19**	1.0	% by Volume	10	11/12/19	11/12/19	EPA 3CM
Carbon Dioxide	SVM-23-14.5	**0.32**	0.20	% by Volume	2	11/12/19	11/12/19	EPA 3CM
Oxygen	SVM-22-14.5	**17**	0.20	% by Volume	2	11/12/19	11/12/19	EPA 3CM
Carbon Dioxide	SVM-22-14.5	**0.32**	0.20	% by Volume	2	11/12/19	11/12/19	EPA 3CM
Oxygen	SVM-22-5	**19**	1.0	% by Volume	10	11/12/19	11/12/19	EPA 3CM
Oxygen	SVM-9-5	**19**	1.0	% by Volume	10	11/13/19	11/13/19	EPA 3CM
Oxygen	SVM-9-14.5	**16**	1.0	% by Volume	10	11/13/19	11/13/19	EPA 3CM
Carbon Dioxide	SVM-9-14.5	**1.3**	0.20	% by Volume	2	11/13/19	11/13/19	EPA 3CM
Oxygen	SVM-18-14.5	**17**	1.0	% by Volume	10	11/13/19	11/14/19	EPA 3CM
Carbon Dioxide	SVM-18-14.5	**2.2**	0.20	% by Volume	2	11/13/19	11/14/19	EPA 3CM
Oxygen	SVM-18-5	**23**	1.0	% by Volume	10	11/13/19	11/14/19	EPA 3CM

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-17-5	**19**	1.0	% by Volume	10	11/14/19	11/14/19	EPA 3CM
Oxygen	SVM-17-14.5	**18**	1.0	% by Volume	10	11/14/19	11/14/19	EPA 3CM
Carbon Dioxide	SVM-17-14.5	**0.36**	0.20	% by Volume	2	11/14/19	11/14/19	EPA 3CM
Oxygen	SVP-109-5	**19**	1.0	% by Volume	10	11/14/19	11/14/19	EPA 3CM
Carbon Dioxide	SVP-109-5	**1.0**	0.20	% by Volume	2	11/14/19	11/14/19	EPA 3CM
Oxygen	SVP-109-10	**15**	1.0	% by Volume	10	11/14/19	11/14/19	EPA 3CM
Carbon Dioxide	SVP-109-10	**1.7**	0.20	% by Volume	2	11/14/19	11/14/19	EPA 3CM
Oxygen	SVP-109-10DUP	**16**	1.0	% by Volume	10	11/14/19	11/14/19	EPA 3CM
Carbon Dioxide	SVP-109-10DUP	**1.7**	0.20	% by Volume	2	11/14/19	11/14/19	EPA 3CM
Oxygen	SV-227-10	**16**	1.0	% by Volume	10	11/14/19	11/14/19	EPA 3CM
Carbon Dioxide	SV-227-10	**1.4**	0.20	% by Volume	2	11/14/19	11/14/19	EPA 3CM

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SV-227-5	**15**	0.20	% by Volume	2	11/14/19	11/14/19	EPA 3CM
Carbon Dioxide	SV-227-5	**1.2**	0.20	% by Volume	2	11/14/19	11/14/19	EPA 3CM
VOCs by EPA TO-3								
Gasoline Range Organics (GRO)	SV-230-10	**130**	20	ug/L	1	11/08/19	11/09/19	TO-3
VOCs by GCMS EPA TO-15 (Mid Level)								
Tetrachloroethylene (PCE)	SVM-16-22	**0.016**	0.010	ug/L	1	11/04/19	11/04/19	TO-15
Tetrachloroethylene (PCE)	SVM-12-22	**0.021**	0.010	ug/L	1	11/05/19	11/05/19	TO-15
Tetrachloroethylene (PCE)	SVM-11-22	**0.15**	0.010	ug/L	1	11/05/19	11/05/19	TO-15
Tetrachloroethylene (PCE)	SVM-13-22	**0.012**	0.010	ug/L	1	11/05/19	11/05/19	TO-15
Tetrachloroethylene (PCE)	SVM-13-22DUP	**0.012**	0.010	ug/L	1	11/06/19	11/06/19	TO-15
Tetrachloroethylene (PCE)	SV-230-5	**0.038**	0.010	ug/L	1	11/08/19	11/08/19	TO-15
Trichloroethylene (TCE)	SV-230-5	**0.12**	0.020	ug/L	1	11/08/19	11/08/19	TO-15
Tetrachloroethylene (PCE)	SVM-21-14.5	**0.061**	0.010	ug/L	1	11/08/19	11/08/19	TO-15
Trichloroethylene (TCE)	SVM-21-14.5	**0.035**	0.020	ug/L	1	11/08/19	11/08/19	TO-15
Tetrachloroethylene (PCE)	SVM-21-5	**0.040**	0.010	ug/L	1	11/08/19	11/08/19	TO-15
Tetrahydrofuran (THF)	SVM-21-5	**1.8**	0.60	ug/L	30	11/08/19	11/08/19	TO-15
Tetrachloroethylene (PCE)	SVM-23-5	**0.028**	0.010	ug/L	1	11/09/19	11/09/19	TO-15
Tetrachloroethylene (PCE)	SVM-23-14.5	**0.043**	0.010	ug/L	1	11/09/19	11/09/19	TO-15
Naphthalene	SVM-9-5	**0.0039**	0.0030	ug/L	1	11/11/19	11/11/19	TO-15
Methyl-tert-Butyl Ether (MTBE)	SVM-9-14.5	**0.029**	0.020	ug/L	1	11/11/19	11/11/19	TO-15
Tetrachloroethylene (PCE)	SVM-9-14.5	**0.012**	0.010	ug/L	1	11/11/19	11/11/19	TO-15
Acetone	Ambient Air	**0.022**	0.020	ug/L	1	11/11/19	11/11/19	TO-15
Tetrachloroethylene (PCE)	Ambient Air	**0.016**	0.010	ug/L	1	11/11/19	11/11/19	TO-15
Tetrachloroethylene (PCE)	SVP-109-5	**0.057**	0.010	ug/L	1	11/12/19	11/12/19	TO-15

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Tetrachloroethylene (PCE)	SVP-109-10	**0.080**	0.010	ug/L	1	11/12/19	11/12/19	TO-15
Tetrachloroethylene (PCE)	SVP-109-10DUP	**0.082**	0.010	ug/L	1	11/12/19	11/12/19	TO-15
Tetrachloroethylene (PCE)	SV-227-10	**0.076**	0.010	ug/L	1	11/12/19	11/12/19	TO-15
Tetrachloroethylene (PCE)	SV-227-5	**0.076**	0.010	ug/L	1	11/12/19	11/12/19	TO-15

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-01	9J28017-02	9J28017-03	9J28017-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	SVM-15-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	103%	103%	103%	104%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-05	9J28017-06	9J28017-07	9J28017-08	
Client ID No:	SVM-15-15	SVM-15-22	SVM-6-7	SVM-6-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	106%	101%	102%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/02/19	11/02/19	
Date Analyzed:	11/01/19	11/01/19	11/02/19	11/02/19	
AA ID No:	9J28017-09	9J28017-10	9J28017-11	9J28017-12	
Client ID No:	SVM-7-7	SVM-7-13	SVM-7-13DUP	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	102%	103%	105%	102%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by EPA TO-3	**Units:**	ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/02/19	11/02/19	11/05/19	11/04/19	
Date Analyzed:	11/02/19	11/02/19	11/05/19	11/04/19	
AA ID No:	9J28017-13	9J28017-14	9J28017-15	9J28017-16	
Client ID No:	SVM-10-15	SVM-5-5	SVM-5-15	SVM-8-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	104%	103%	113%	116%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by EPA TO-3	**Units:**	ug/L

Date Sampled:	10/28/2019	10/28/2019	10/28/2019	10/28/2019	
Date Prepared:	11/04/19	11/04/19	11/04/19	11/05/19	
Date Analyzed:	11/04/19	11/04/19	11/04/19	11/05/19	
AA ID No:	9J28017-17	9J28017-18	9J28017-19	9J28017-20	
Client ID No:	SVM-8-15	SVM-16-7	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	113%	115%	113%	106%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by EPA TO-3	**Units:**	ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-21	9J28017-22	9J28017-23	9J28017-24	
Client ID No:	SVM-3-5	SVM-3-15	SVM-12-15	SVM-12-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	113%	114%	110%	111%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by EPA TO-3	**Units:**	ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-25	9J28017-26	9J28017-27	9J28017-28	
Client ID No:	SVM-12-22	SVM-11-7	SVM-11-15	SVM-11-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	115%	109%	113%	115%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by EPA TO-3	**Units:**	ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/06/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/06/19	
AA ID No:	9J28017-29	9J28017-30	9J28017-31	9J28017-32	
Client ID No:	SVM-13-7	SVM-13-15	SVM-13-22	SVM-13-22DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	116%	113%	112%	114%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/06/19	11/06/19	11/06/19	11/06/19	
Date Analyzed:	11/06/19	11/06/19	11/06/19	11/06/19	
AA ID No:	9J28017-33	9J28017-34	9J28017-35	9J28017-36	
Client ID No:	SVM-14R-22	SVM-14R-8	SVM-14R-16	SVP-108-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	111%	112%	107%	112%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/09/19	11/06/19	11/08/19	11/08/19	
Date Analyzed:	11/09/19	11/06/19	11/09/19	11/11/19	
AA ID No:	9J28017-37	9J28017-38	9J28017-39	9J28017-40	
Client ID No:	SVP-108-10	Ambient Air	SV-230-10	SV-230-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	**130**	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	112%	112%	99%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/08/19	11/08/19	11/08/19	
AA ID No:	9J28017-41	9J28017-42	9J28017-43	9J28017-44	
Client ID No:	SVM-21-14.5	SVM-21-5	SVM-20-10	SVM-20-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	100%	105%	102%	104%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/08/19	11/09/19	11/09/19	11/09/19	
Date Analyzed:	11/08/19	11/09/19	11/09/19	11/09/19	
AA ID No:	9J28017-45	9J28017-46	9J28017-47	9J28017-48	
Client ID No:	SVM-19-5	SVM-23-5	SVM-23-14.5	SVM-22-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	101%	107%	108%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/09/19	11/11/19	11/11/19	11/11/19	
Date Analyzed:	11/09/19	11/11/19	11/11/19	11/11/19	
AA ID No:	9J28017-49	9J28017-50	9J28017-51	9J28017-52	
Client ID No:	SVM-22-5	SVM-9-5	SVM-9-14.5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	104%	107%	107%	110%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/12/19	11/12/19	11/12/19	11/12/19	
Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-53	9J28017-54	9J28017-55	9J28017-56	
Client ID No:	SVM-18-14.5	SVM-18-5	SVM-17-5	SVM-17-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	106%	105%	103%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by EPA TO-3

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/12/19	11/12/19	11/12/19	11/12/19	
Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-57	9J28017-58	9J28017-59	9J28017-60	
Client ID No:	SVP-109-5	SVP-109-10	SVP-109-10DUP	SV-227-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<20	<20	<20	<20	20
Surrogates					**%REC Limits**
4-Bromofluorobenzene	108%	111%	107%	105%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by EPA TO-3	**Units:**	ug/L

Date Sampled:	10/30/19	
Date Prepared:	11/12/19	
Date Analyzed:	11/12/19	
AA ID No:	9J28017-61	
Client ID No:	SV-227-5	
Matrix:	Vapor	
Dilution Factor:	1	MRL
TO-3 (TO-3)		
Gasoline Range Organics (GRO)	<20	20

Surrogates		**%REC Limits**
4-Bromofluorobenzene	109%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-01	9J28017-02	9J28017-03	9J28017-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	SVM-15-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-01	9J28017-02	9J28017-03	9J28017-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	SVM-15-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-01	9J28017-02	9J28017-03	9J28017-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	SVM-15-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	101%	102%	100%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-05	9J28017-06	9J28017-07	9J28017-08	
Client ID No:	SVM-15-15	SVM-15-22	SVM-6-7	SVM-6-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-05	9J28017-06	9J28017-07	9J28017-08	
Client ID No:	SVM-15-15	SVM-15-22	SVM-6-7	SVM-6-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/01/19	11/01/19	
Date Analyzed:	11/01/19	11/01/19	11/01/19	11/01/19	
AA ID No:	9J28017-05	9J28017-06	9J28017-07	9J28017-08	
Client ID No:	SVM-15-15	SVM-15-22	SVM-6-7	SVM-6-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	104%	100%	100%	101%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/02/19	11/02/19	
Date Analyzed:	11/01/19	11/01/19	11/02/19	11/02/19	
AA ID No:	9J28017-09	9J28017-10	9J28017-11	9J28017-12	
Client ID No:	SVM-7-7	SVM-7-13	SVM-7-13DUP	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/02/19	11/02/19	
Date Analyzed:	11/01/19	11/01/19	11/02/19	11/02/19	
AA ID No:	9J28017-09	9J28017-10	9J28017-11	9J28017-12	
Client ID No:	SVM-7-7	SVM-7-13	SVM-7-13DUP	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/01/19	11/01/19	11/02/19	11/02/19	
Date Analyzed:	11/01/19	11/01/19	11/02/19	11/02/19	
AA ID No:	9J28017-09	9J28017-10	9J28017-11	9J28017-12	
Client ID No:	SVM-7-7	SVM-7-13	SVM-7-13DUP	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	100%	101%	103%	100%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/02/19	11/02/19	11/05/19	11/04/19	
Date Analyzed:	11/02/19	11/02/19	11/05/19	11/04/19	
AA ID No:	9J28017-13	9J28017-14	9J28017-15	9J28017-16	
Client ID No:	SVM-10-15	SVM-5-5	SVM-5-15	SVM-8-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	**Units:**	ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/02/19	11/02/19	11/05/19	11/04/19	
Date Analyzed:	11/02/19	11/02/19	11/05/19	11/04/19	
AA ID No:	9J28017-13	9J28017-14	9J28017-15	9J28017-16	
Client ID No:	SVM-10-15	SVM-5-5	SVM-5-15	SVM-8-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/02/19	11/02/19	11/05/19	11/04/19	
Date Analyzed:	11/02/19	11/02/19	11/05/19	11/04/19	
AA ID No:	9J28017-13	9J28017-14	9J28017-15	9J28017-16	
Client ID No:	SVM-10-15	SVM-5-5	SVM-5-15	SVM-8-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	103%	101%	107%	111%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/2019	10/28/2019	10/28/2019	10/28/2019	
Date Prepared:	11/04/19	11/04/19	11/04/19	11/04/19	
Date Analyzed:	11/04/19	11/04/19	11/04/19	11/04/19	
AA ID No:	9J28017-17	9J28017-18	9J28017-19	9J28017-20	
Client ID No:	SVM-8-15	SVM-16-7	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/2019	10/28/2019	10/28/2019	10/28/2019	
Date Prepared:	11/04/19	11/04/19	11/04/19	11/04/19	
Date Analyzed:	11/04/19	11/04/19	11/04/19	11/04/19	
AA ID No:	9J28017-17	9J28017-18	9J28017-19	9J28017-20	
Client ID No:	SVM-8-15	SVM-16-7	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	**0.016**	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/28/2019	10/28/2019	10/28/2019	10/28/2019	
Date Prepared:	11/04/19	11/04/19	11/04/19	11/04/19	
Date Analyzed:	11/04/19	11/04/19	11/04/19	11/04/19	
AA ID No:	9J28017-17	9J28017-18	9J28017-19	9J28017-20	
Client ID No:	SVM-8-15	SVM-16-7	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	107%	108%	107%	110%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-21	9J28017-22	9J28017-23	9J28017-24	
Client ID No:	SVM-3-5	SVM-3-15	SVM-12-15	SVM-12-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-21	9J28017-22	9J28017-23	9J28017-24	
Client ID No:	SVM-3-5	SVM-3-15	SVM-12-15	SVM-12-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-21	9J28017-22	9J28017-23	9J28017-24	
Client ID No:	SVM-3-5	SVM-3-15	SVM-12-15	SVM-12-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	107%	108%	103%	104%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-25	9J28017-26	9J28017-27	9J28017-28	
Client ID No:	SVM-12-22	SVM-11-7	SVM-11-15	SVM-11-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-25	9J28017-26	9J28017-27	9J28017-28	
Client ID No:	SVM-12-22	SVM-11-7	SVM-11-15	SVM-11-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.021**	<0.010	<0.010	**0.15**	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/05/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/05/19	
AA ID No:	9J28017-25	9J28017-26	9J28017-27	9J28017-28	
Client ID No:	SVM-12-22	SVM-11-7	SVM-11-15	SVM-11-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	108%	103%	108%	109%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/06/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/06/19	
AA ID No:	9J28017-29	9J28017-30	9J28017-31	9J28017-32	
Client ID No:	SVM-13-7	SVM-13-15	SVM-13-22	SVM-13-22DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/06/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/06/19	
AA ID No:	9J28017-29	9J28017-30	9J28017-31	9J28017-32	
Client ID No:	SVM-13-7	SVM-13-15	SVM-13-22	SVM-13-22DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	**0.012**	**0.012**	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/05/19	11/05/19	11/05/19	11/06/19	
Date Analyzed:	11/05/19	11/05/19	11/05/19	11/06/19	
AA ID No:	9J28017-29	9J28017-30	9J28017-31	9J28017-32	
Client ID No:	SVM-13-7	SVM-13-15	SVM-13-22	SVM-13-22DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	109%	106%	105%	107%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/06/19	11/06/19	11/06/19	11/06/19	
Date Analyzed:	11/06/19	11/06/19	11/06/19	11/06/19	
AA ID No:	9J28017-33	9J28017-34	9J28017-35	9J28017-36	
Client ID No:	SVM-14R-22	SVM-14R-8	SVM-14R-16	SVP-108-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/06/19	11/06/19	11/06/19	11/06/19	
Date Analyzed:	11/06/19	11/06/19	11/06/19	11/06/19	
AA ID No:	9J28017-33	9J28017-34	9J28017-35	9J28017-36	
Client ID No:	SVM-14R-22	SVM-14R-8	SVM-14R-16	SVP-108-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/06/19	11/06/19	11/06/19	11/06/19	
Date Analyzed:	11/06/19	11/06/19	11/06/19	11/06/19	
AA ID No:	9J28017-33	9J28017-34	9J28017-35	9J28017-36	
Client ID No:	SVM-14R-22	SVM-14R-8	SVM-14R-16	SVP-108-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	104%	106%	101%	105%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/09/19	11/06/19	11/06/19	11/08/19	
Date Analyzed:	11/09/19	11/06/19	11/06/19	11/08/19	
AA ID No:	9J28017-37	9J28017-38	9J28017-39	9J28017-40	
Client ID No:	SVP-108-10	Ambient Air	SV-230-10	SV-230-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	16	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.32 [4]	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Benzene	<0.048 [4]	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Bromoform	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<320 [4]	<20	<20	<20	20
Carbon Disulfide	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Chloroform	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.064 [4]	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.32 [4]	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/09/19	11/06/19	11/06/19	11/08/19	
Date Analyzed:	11/09/19	11/06/19	11/06/19	11/08/19	
AA ID No:	9J28017-37	9J28017-38	9J28017-39	9J28017-40	
Client ID No:	SVP-108-10	Ambient Air	SV-230-10	SV-230-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	16	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Ethanol	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Heptane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<3.2 [4]	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.32 [4]	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.048 [4]	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Styrene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.16 [4]	<0.010	<0.010	**0.038**	0.010
Tetrahydrofuran (THF)	<0.32 [4]	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/09/19	11/06/19	11/06/19	11/08/19	
Date Analyzed:	11/09/19	11/06/19	11/06/19	11/08/19	
AA ID No:	9J28017-37	9J28017-38	9J28017-39	9J28017-40	
Client ID No:	SVP-108-10	Ambient Air	SV-230-10	SV-230-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	16	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.32 [4]	<0.020	<0.020	**0.12**	0.020
Trichlorofluoromethane (R11)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.32 [4]	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.32 [4]	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.32 [4]	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.32 [4]	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	109% [4]	105%	96%	102%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/08/19	11/08/19	11/08/19	
AA ID No:	9J28017-41	9J28017-42	9J28017-43	9J28017-44	
Client ID No:	SVM-21-14.5	SVM-21-5	SVM-20-10	SVM-20-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/08/19	11/08/19	11/08/19	
AA ID No:	9J28017-41	9J28017-42	9J28017-43	9J28017-44	
Client ID No:	SVM-21-14.5	SVM-21-5	SVM-20-10	SVM-20-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.061**	**0.040**	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	**1.8**	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/08/19	11/08/19	11/08/19	
AA ID No:	9J28017-41	9J28017-42	9J28017-43	9J28017-44	
Client ID No:	SVM-21-14.5	SVM-21-5	SVM-20-10	SVM-20-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	**0.035**	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	100%	102%	100%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/08/19	11/09/19	11/09/19	11/09/19	
Date Analyzed:	11/08/19	11/09/19	11/09/19	11/09/19	
AA ID No:	9J28017-45	9J28017-46	9J28017-47	9J28017-48	
Client ID No:	SVM-19-5	SVM-23-5	SVM-23-14.5	SVM-22-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/08/19	11/09/19	11/09/19	11/09/19	
Date Analyzed:	11/08/19	11/09/19	11/09/19	11/09/19	
AA ID No:	9J28017-45	9J28017-46	9J28017-47	9J28017-48	
Client ID No:	SVM-19-5	SVM-23-5	SVM-23-14.5	SVM-22-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	**0.028**	**0.043**	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

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AA ID No:	9J28017-45	9J28017-46	9J28017-47	9J28017-48	
Client ID No:	SVM-19-5	SVM-23-5	SVM-23-14.5	SVM-22-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	100%	106%	107%	102%	70-130

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Date Prepared:	11/09/19	11/11/19	11/11/19	11/11/19	
Date Analyzed:	11/09/19	11/11/19	11/11/19	11/11/19	
AA ID No:	9J28017-49	9J28017-50	9J28017-51	9J28017-52	
Client ID No:	SVM-22-5	SVM-9-5	SVM-9-14.5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	**0.022**	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

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Date Analyzed:	11/09/19	11/11/19	11/11/19	11/11/19	
AA ID No:	9J28017-49	9J28017-50	9J28017-51	9J28017-52	
Client ID No:	SVM-22-5	SVM-9-5	SVM-9-14.5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	**0.029**	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	**0.0039**	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	**0.012**	**0.016**	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

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Date Analyzed:	11/09/19	11/11/19	11/11/19	11/11/19	
AA ID No:	9J28017-49	9J28017-50	9J28017-51	9J28017-52	
Client ID No:	SVM-22-5	SVM-9-5	SVM-9-14.5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	102%	105%	106%	109%	70-130

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Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-53	9J28017-54	9J28017-55	9J28017-56	
Client ID No:	SVM-18-14.5	SVM-18-5	SVM-17-5	SVM-17-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

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Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-53	9J28017-54	9J28017-55	9J28017-56	
Client ID No:	SVM-18-14.5	SVM-18-5	SVM-17-5	SVM-17-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/12/19	11/12/19	11/12/19	11/12/19	
Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-53	9J28017-54	9J28017-55	9J28017-56	
Client ID No:	SVM-18-14.5	SVM-18-5	SVM-17-5	SVM-17-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	103%	104%	102%	101%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/12/19	11/12/19	11/12/19	11/12/19	
Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-57	9J28017-58	9J28017-59	9J28017-60	
Client ID No:	SVP-109-5	SVP-109-10	SVP-109-10DUP	SV-227-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	<20	<20	<20	20
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.020	<0.020	<0.020	<0.020	0.020
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/12/19	11/12/19	11/12/19	11/12/19	
Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-57	9J28017-58	9J28017-59	9J28017-60	
Client ID No:	SVP-109-5	SVP-109-10	SVP-109-10DUP	SV-227-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.057**	**0.080**	**0.082**	**0.076**	0.010

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: ug/L

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/12/19	11/12/19	11/12/19	11/12/19	
Date Analyzed:	11/12/19	11/12/19	11/12/19	11/12/19	
AA ID No:	9J28017-57	9J28017-58	9J28017-59	9J28017-60	
Client ID No:	SVP-109-5	SVP-109-10	SVP-109-10DUP	SV-227-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	106%	111%	105%	106%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	**Units:**	ug/L

Date Sampled:	10/30/19	
Date Prepared:	11/12/19	
Date Analyzed:	11/12/19	
AA ID No:	9J28017-61	
Client ID No:	SV-227-5	
Matrix:	Vapor	
Dilution Factor:	1	MRL

TO-15 (Mid Level) (TO-15)

Acetone	<0.020	0.020
Allyl chloride	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020
Benzene	<0.0030	0.0030
Benzyl chloride	<0.020	0.020
Bromodichloromethane	<0.020	0.020
Bromoform	<0.020	0.020
Bromomethane	<0.020	0.020
1,3-Butadiene	<0.020	0.020
2-Butanone (MEK)	<0.020	0.020
tert-Butyl Alcohol (TBA)	<20	20
Carbon Disulfide	<0.020	0.020
Carbon Tetrachloride	<0.020	0.020
Chlorobenzene	<0.020	0.020
Chloroethane	<0.020	0.020
Chloroform	<0.020	0.020
Chloromethane	<0.020	0.020
Cyclohexane	<0.020	0.020
Dibromochloromethane	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	0.020
1,2-Dichlorobenzene	<0.020	0.020
1,3-Dichlorobenzene	<0.020	0.020
1,4-Dichlorobenzene	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	0.020
1,1-Dichloroethane	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	**Units:**	ug/L

Date Sampled:	10/30/19	
Date Prepared:	11/12/19	
Date Analyzed:	11/12/19	
AA ID No:	9J28017-61	
Client ID No:	SV-227-5	
Matrix:	Vapor	
Dilution Factor:	1	MRL

TO-15 (Mid Level) (TO-15) (continued)

1,1-Dichloroethylene	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	0.020
1,2-Dichloropropane	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	0.020
1,4-Dioxane	<0.020	0.020
Ethanol	<0.020	0.020
Ethyl Acetate	<0.020	0.020
Ethylbenzene	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020
4-Ethyltoluene	<0.020	0.020
Heptane	<0.020	0.020
Hexachlorobutadiene	<0.020	0.020
n-Hexane	<0.020	0.020
2-Hexanone (MBK)	<0.020	0.020
Isopropanol (IPA)	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020
Methylene Chloride	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	0.020
Naphthalene	<0.0030	0.0030
Propylene	<0.020	0.020
Styrene	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	0.020
Tetrachloroethylene (PCE)	**0.076**	0.010
Tetrahydrofuran (THF)	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	**Units:**	ug/L

Date Sampled:	10/30/19	
Date Prepared:	11/12/19	
Date Analyzed:	11/12/19	
AA ID No:	9J28017-61	
Client ID No:	SV-227-5	
Matrix:	Vapor	
Dilution Factor:	1	MRL

TO-15 (Mid Level) (TO-15) (continued)

Toluene	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	0.020
1,1,2-Trichloroethane	<0.020	0.020
1,1,1-Trichloroethane	<0.020	0.020
Trichloroethylene (TCE)	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	0.020
Vinyl acetate	<0.020	0.020
Vinyl bromide	<0.020	0.020
Vinyl chloride	<0.020	0.020
o-Xylene	<0.020	0.020
m,p-Xylenes	<0.020	0.020
1,2,3-Trichloropropane	<0.020	0.020
sec-Butylbenzene	<0.020	0.020
Isopropylbenzene	<0.020	0.020
n-Propylbenzene	<0.020	0.020
4-Isopropyltoluene	<0.020	0.020
n-Butylbenzene	<0.020	0.020

Surrogates		**%REC Limits**
4-Bromofluorobenzene	106%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	Fixed Gases by TCD	**Units:**	% by Volume

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/11/19	11/11/19	11/11/19	11/11/19	
Date Analyzed:	11/11/19	11/11/19	11/11/19	11/11/19	
AA ID No:	9J28017-01	9J28017-02	9J28017-03	9J28017-04	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	SVM-15-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**18**	**18**	**19**	0.10
Carbon Dioxide	<0.20	<0.20	**0.50**	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/11/19	11/11/19	11/11/19	11/11/19	
Date Analyzed:	11/11/19	11/11/19	11/11/19	11/11/19	
AA ID No:	9J28017-05	9J28017-06	9J28017-07	9J28017-08	
Client ID No:	SVM-15-15	SVM-15-22	SVM-6-7	SVM-6-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**20**	**21**	**19**	0.10
Carbon Dioxide	<0.20	**0.68**	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	Fixed Gases by TCD	**Units:**	% by Volume

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/11/19	11/11/19	11/12/19	11/12/19	
Date Analyzed:	11/11/19	11/11/19	11/12/19	11/12/19	
AA ID No:	9J28017-09	9J28017-10	9J28017-11	9J28017-13	
Client ID No:	SVM-7-7	SVM-7-13	SVM-7-13DUP	SVM-10-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**19**	**19**	**13**	0.10
Carbon Dioxide	<0.20	<0.20	**0.38**	**2.9**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/28/19	10/28/19	10/28/19	10/28/19	
Date Prepared:	11/12/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/12/19	11/08/19	11/08/19	11/08/19	
AA ID No:	9J28017-14	9J28017-15	9J28017-16	9J28017-17	
Client ID No:	SVM-5-5	SVM-5-15	SVM-8-5	SVM-8-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**19**	**19**	**17**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/28/2019	10/28/2019	10/28/2019	10/29/2019	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/12/19	11/12/19	11/08/19	
AA ID No:	9J28017-18	9J28017-19	9J28017-20	9J28017-21	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-3-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**17**	**18**	**4.5**	**18**	0.10
Carbon Dioxide	<0.20	<0.20	**8.8**	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19
Method:	Fixed Gases by TCD	**Units:**	% by Volume

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/12/19	11/12/19	11/08/19	
AA ID No:	9J28017-22	9J28017-23	9J28017-24	9J28017-25	
Client ID No:	SVM-3-15	SVM-12-15	SVM-12-7	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**17**	**18**	**10**	0.10
Carbon Dioxide	<0.20	**2.2**	**1.1**	**5.2**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/08/19	11/08/19	11/08/19	
AA ID No:	9J28017-26	9J28017-27	9J28017-28	9J28017-29	
Client ID No:	SVM-11-7	SVM-11-15	SVM-11-22	SVM-13-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**18**	**9.0**	**19**	0.10
Carbon Dioxide	<0.20	**0.62**	**7.0**	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/08/19	11/08/19	11/08/19	11/08/19	
Date Analyzed:	11/08/19	11/08/19	11/08/19	11/08/19	
AA ID No:	9J28017-30	9J28017-31	9J28017-32	9J28017-33	
Client ID No:	SVM-13-15	SVM-13-22	SVM-13-22DUP	SVM-14R-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**18**	**19**	**1.4**	0.10
Carbon Dioxide	<0.20	**0.74**	**0.47**	**3.3**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/29/19	10/29/19	10/29/19	10/29/19	
Date Prepared:	11/08/19	11/11/19	11/11/19	11/11/19	
Date Analyzed:	11/08/19	11/11/19	11/11/19	11/11/19	
AA ID No:	9J28017-34	9J28017-35	9J28017-36	9J28017-37	
Client ID No:	SVM-14R-8	SVM-14R-16	SVP-108-5	SVP-108-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**17**	**18**	**16**	**2.1**	0.10
Carbon Dioxide	**1.3**	<0.20	**0.51**	**12**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/29/19	10/29/19	10/30/19	10/30/19	
Date Prepared:	11/11/19	11/13/19	11/11/19	11/13/19	
Date Analyzed:	11/11/19	11/13/19	11/11/19	11/13/19	
AA ID No:	9J28017-39	9J28017-40	9J28017-41	9J28017-42	
Client ID No:	SV-230-10	SV-230-5	SVM-21-14.5	SVM-21-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**17**	**19**	**20**	**17**	0.10
Carbon Dioxide	**1.9**	<0.20	**0.61**	**0.62**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/11/19	11/11/19	11/12/19	11/12/19	
Date Analyzed:	11/11/19	11/11/19	11/12/19	11/12/19	
AA ID No:	9J28017-43	9J28017-44	9J28017-45	9J28017-46	
Client ID No:	SVM-20-10	SVM-20-5	SVM-19-5	SVM-23-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**17**	**20**	**19**	**18**	0.10
Carbon Dioxide	**0.49**	<0.20	<0.20	**1.3**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/12/19	11/12/19	11/12/19	11/13/19	
Date Analyzed:	11/12/19	11/12/19	11/12/19	11/13/19	
AA ID No:	9J28017-47	9J28017-48	9J28017-49	9J28017-50	
Client ID No:	SVM-23-14.5	SVM-22-14.5	SVM-22-5	SVM-9-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**17**	**19**	**19**	0.10
Carbon Dioxide	**0.32**	**0.32**	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/13/19	11/13/19	11/13/19	11/14/19	
Date Analyzed:	11/13/19	11/14/19	11/14/19	11/14/19	
AA ID No:	9J28017-51	9J28017-53	9J28017-54	9J28017-55	
Client ID No:	SVM-9-14.5	SVM-18-14.5	SVM-18-5	SVM-17-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**16**	**17**	**23**	**19**	0.10
Carbon Dioxide	**1.3**	**2.2**	<0.20	<0.20	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/30/19	10/30/19	10/30/19	10/30/19	
Date Prepared:	11/14/19	11/14/19	11/14/19	11/14/19	
Date Analyzed:	11/14/19	11/14/19	11/14/19	11/14/19	
AA ID No:	9J28017-56	9J28017-57	9J28017-58	9J28017-59	
Client ID No:	SVM-17-14.5	SVP-109-5	SVP-109-10	SVP-109-10DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases - Field (EPA 3CM)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**18**	**19**	**15**	**16**	0.10
Carbon Dioxide	**0.36**	**1.0**	**1.7**	**1.7**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19
Units: % by Volume

Date Sampled:	10/30/19	10/30/19	
Date Prepared:	11/14/19	11/14/19	
Date Analyzed:	11/14/19	11/14/19	
AA ID No:	9J28017-60	9J28017-61	
Client ID No:	SV-227-10	SV-227-5	
Matrix:	Vapor	Vapor	
Dilution Factor:	2	2	MRL
Fixed Gases - Field (EPA 3CM)			
Methane	<0.20	<0.20	0.10
Oxygen	**16**	**15**	0.10
Carbon Dioxide	**1.4**	**1.2**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B9K0815 - *** DEFAULT PREP ****										
Blank (B9K0815-BLK1)				Prepared & Analyzed: 11/01/19						
Gasoline Range Organics (GRO)	<20	20	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0348*		*ug/L*	*0.036*		*97.2*	*70-130*			
LCS (B9K0815-BS1)				Prepared & Analyzed: 11/02/19						
Gasoline Range Organics (GRO)	**0.808**	20	ug/L	0.82		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0355*		*ug/L*	*0.036*		*99.2*	*70-130*			
LCS Dup (B9K0815-BSD1)				Prepared & Analyzed: 11/02/19						
Gasoline Range Organics (GRO)	**0.804**	20	ug/L	0.82		98.2	70-130	0.528	30	
Surrogate: 4-Bromofluorobenzene	*0.0371*		*ug/L*	*0.036*		*104*	*70-130*			
*Batch B9K0816 - *** DEFAULT PREP ****										
Blank (B9K0816-BLK1)				Prepared & Analyzed: 11/04/19						
Gasoline Range Organics (GRO)	<20	20	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0355*		*ug/L*	*0.036*		*99.2*	*70-130*			
LCS (B9K0816-BS1)				Prepared & Analyzed: 11/05/19						
Gasoline Range Organics (GRO)	**0.788**	20	ug/L	0.82		96.4	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0368*		*ug/L*	*0.036*		*103*	*70-130*			
LCS Dup (B9K0816-BSD1)				Prepared & Analyzed: 11/05/19						
Gasoline Range Organics (GRO)	**0.794**	20	ug/L	0.82		97.0	70-130	0.677	30	
Surrogate: 4-Bromofluorobenzene	*0.0374*		*ug/L*	*0.036*		*105*	*70-130*			
*Batch B9K0819 - *** DEFAULT PREP ****										
Blank (B9K0819-BLK1)				Prepared & Analyzed: 11/05/19						
Gasoline Range Organics (GRO)	<20	20	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0344*		*ug/L*	*0.036*		*96.2*	*70-130*			
LCS (B9K0819-BS1)				Prepared & Analyzed: 11/06/19						
Gasoline Range Organics (GRO)	**0.771**	20	ug/L	0.82		94.2	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0357*		*ug/L*	*0.036*		*99.8*	*70-130*			
LCS Dup (B9K0819-BSD1)				Prepared & Analyzed: 11/06/19						
Gasoline Range Organics (GRO)	**0.644**	20	ug/L	0.82		78.8	70-130	17.9	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B9K0819 - *** DEFAULT PREP ****										
LCS Dup (B9K0819-BSD1) Continued				Prepared & Analyzed: 11/06/19						
Surrogate: 4-Bromofluorobenzene	*0.0366*		*ug/L*	*0.036*		*102*	*70-130*			
*Batch B9K1231 - *** DEFAULT PREP ****										
Blank (B9K1231-BLK1)				Prepared & Analyzed: 11/11/19						
Gasoline Range Organics (GRO)	<20	20	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0341*		*ug/L*	*0.036*		*95.4*	*70-130*			
LCS (B9K1231-BS1)				Prepared & Analyzed: 11/12/19						
Gasoline Range Organics (GRO)	**0.861**	20	ug/L	0.82		105	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0356*		*ug/L*	*0.036*		*99.4*	*70-130*			
LCS Dup (B9K1231-BSD1)				Prepared & Analyzed: 11/12/19						
Gasoline Range Organics (GRO)	**0.885**	20	ug/L	0.82		108	70-130	2.66	30	
Surrogate: 4-Bromofluorobenzene	*0.0372*		*ug/L*	*0.036*		*104*	*70-130*			
*Batch B9K1235 - *** DEFAULT PREP ****										
Blank (B9K1235-BLK1)				Prepared & Analyzed: 11/08/19						
Gasoline Range Organics (GRO)	<20	20	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0336*		*ug/L*	*0.036*		*93.8*	*70-130*			
LCS (B9K1235-BS1)				Prepared & Analyzed: 11/09/19						
Gasoline Range Organics (GRO)	**0.811**	20	ug/L	0.82		99.2	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0359*		*ug/L*	*0.036*		*100*	*70-130*			
LCS Dup (B9K1235-BSD1)				Prepared & Analyzed: 11/09/19						
Gasoline Range Organics (GRO)	**0.818**	20	ug/L	0.82		100	70-130	0.863	30	
Surrogate: 4-Bromofluorobenzene	*0.0365*		*ug/L*	*0.036*		*102*	*70-130*			
Duplicate (B9K1235-DUP1)		**Source: 9K07007-01**		Prepared & Analyzed: 11/08/19						
Gasoline Range Organics (GRO)	**<20**	20	ug/L						30	
Surrogate: 4-Bromofluorobenzene	*0.0393*		*ug/L*	*0.036*		*110*	*70-130*			
*Batch B9K1236 - *** DEFAULT PREP ****										
Blank (B9K1236-BLK1)				Prepared & Analyzed: 11/06/19						
Gasoline Range Organics (GRO)	<20	20	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
*Batch B9K1236 - *** DEFAULT PREP ****										
Blank (B9K1236-BLK1) Continued				Prepared & Analyzed: 11/06/19						
Surrogate: 4-Bromofluorobenzene	*0.0359*		*ug/L*	*0.036*		*100*	*70-130*			
LCS (B9K1236-BS1)				Prepared & Analyzed: 11/07/19						
Gasoline Range Organics (GRO)	**0.948**	20	ug/L	0.82		116	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0368*		*ug/L*	*0.036*		*103*	*70-130*			
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0523 - *** DEFAULT PREP ****										
Blank (B9K0523-BLK1)				Prepared & Analyzed: 11/04/19						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.020	0.020	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<20	20	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.020	0.020	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0523 - *** DEFAULT PREP ****										
Blank (B9K0523-BLK1) Continued				Prepared & Analyzed: 11/04/19						
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0523 - *** DEFAULT PREP ****										
Blank (B9K0523-BLK1) Continued				Prepared & Analyzed: 11/04/19						
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.134*		*ug/L*	*0.14*		*94.0*	*70-130*			
LCS (B9K0523-BS1)				Prepared & Analyzed: 11/04/19						
Acetone	**0.107**	0.020	ug/L	0.095		113	70-130		30	
Benzene	**0.131**	0.0030	ug/L	0.13		103	70-130		30	
Benzyl chloride	**0.260**	0.020	ug/L	0.21		126	70-130		30	
Bromodichloromethane	**0.303**	0.020	ug/L	0.27		113	70-130		30	
Bromoform	**0.446**	0.020	ug/L	0.41		108	70-130		30	
Bromomethane	**0.159**	0.020	ug/L	0.16		102	70-130		30	
2-Butanone (MEK)	**0.144**	0.020	ug/L	0.12		122	70-130		30	
Carbon Disulfide	**0.134**	0.020	ug/L	0.12		108	70-130		30	
Carbon Tetrachloride	**0.260**	0.020	ug/L	0.25		103	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0523 - *** DEFAULT PREP ****										
LCS (B9K0523-BS1) Continued				Prepared & Analyzed: 11/04/19						
Chlorobenzene	**0.168**	0.020	ug/L	0.18		91.4	70-130		30	
Chloroethane	**0.109**	0.020	ug/L	0.11		103	70-130		30	
Chloroform	**0.211**	0.020	ug/L	0.20		108	70-130		30	
Chloromethane	**0.0902**	0.020	ug/L	0.083		109	70-130		30	
Dibromochloromethane	**0.377**	0.020	ug/L	0.34		111	70-130		30	
1,2-Dibromoethane (EDB)	**0.311**	0.020	ug/L	0.31		101	70-130		30	
1,2-Dichlorobenzene	**0.200**	0.020	ug/L	0.24		83.0	70-130		30	
1,3-Dichlorobenzene	**0.207**	0.020	ug/L	0.24		86.1	70-130		30	
1,4-Dichlorobenzene	**0.200**	0.020	ug/L	0.24		83.4	70-130		30	
Dichlorodifluoromethane (R12)	**0.227**	0.020	ug/L	0.20		115	70-130		30	
1,1-Dichloroethane	**0.166**	0.020	ug/L	0.16		102	70-130		30	
1,2-Dichloroethane (EDC)	**0.189**	0.0040	ug/L	0.16		117	70-130		30	
cis-1,2-Dichloroethylene	**0.173**	0.020	ug/L	0.16		109	70-130		30	
1,1-Dichloroethylene	**0.179**	0.020	ug/L	0.16		113	70-130		30	
trans-1,2-Dichloroethylene	**0.184**	0.020	ug/L	0.16		116	70-130		30	
1,2-Dichloropropane	**0.185**	0.020	ug/L	0.18		100	70-130		30	
trans-1,3-Dichloropropylene	**0.198**	0.020	ug/L	0.18		109	70-130		30	
cis-1,3-Dichloropropylene	**0.192**	0.020	ug/L	0.18		106	70-130		30	
Dichlorotetrafluoroethane	**0.297**	0.020	ug/L	0.28		106	70-130		30	
Ethylbenzene	**0.158**	0.020	ug/L	0.17		90.9	70-130		30	
4-Ethyltoluene	**0.220**	0.020	ug/L	0.20		112	70-130		30	
Hexachlorobutadiene	**0.276**	0.020	ug/L	0.43		64.6	70-130		30	***
2-Hexanone (MBK)	**0.196**	0.020	ug/L	0.16		120	70-130		30	
Isopropanol (IPA)	**0.114**	0.20	ug/L	0.098		116	70-130		30	
Methylene Chloride	**0.150**	0.020	ug/L	0.14		108	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.192**	0.020	ug/L	0.16		117	70-130		30	
Styrene	**0.162**	0.020	ug/L	0.17		95.1	70-130		30	
1,1,2,2-Tetrachloroethane	**0.236**	0.020	ug/L	0.27		85.9	70-130		30	
Tetrachloroethylene (PCE)	**0.248**	0.010	ug/L	0.27		91.5	70-130		30	
Toluene	**0.144**	0.020	ug/L	0.15		95.3	70-130		30	
1,2,4-Trichlorobenzene	**0.194**	0.020	ug/L	0.30		65.2	70-130		30	***
1,1,2-Trichloroethane	**0.214**	0.020	ug/L	0.22		97.9	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0523 - *** DEFAULT PREP ****										
LCS (B9K0523-BS1) Continued				Prepared & Analyzed: 11/04/19						
1,1,1-Trichloroethane	**0.237**	0.020	ug/L	0.22		109	70-130		30	
Trichloroethylene (TCE)	**0.202**	0.020	ug/L	0.21		93.9	70-130		30	
Trichlorofluoromethane (R11)	**0.260**	0.020	ug/L	0.22		116	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.321**	0.020	ug/L	0.31		105	70-130		30	
1,3,5-Trimethylbenzene	**0.165**	0.020	ug/L	0.20		84.1	70-130		30	
1,2,4-Trimethylbenzene	**0.173**	0.020	ug/L	0.20		87.8	70-130		30	
Vinyl acetate	**0.175**	0.020	ug/L	0.14		124	70-130		30	
Vinyl chloride	**0.108**	0.020	ug/L	0.10		106	70-130		30	
o-Xylene	**0.151**	0.020	ug/L	0.17		86.9	70-130		30	
m,p-Xylenes	**0.314**	0.020	ug/L	0.35		90.5	70-130		30	
1,2,3-Trichloropropane	**0.296**	0.020	ug/L	0.24		123	70-130		30	
sec-Butylbenzene	**0.269**	0.020	ug/L	0.22		122	70-130		30	
Isopropylbenzene	**0.239**	0.020	ug/L	0.20		121	70-130		30	
n-Propylbenzene	**0.249**	0.020	ug/L	0.20		127	70-130		30	
4-Isopropyltoluene	**0.279**	0.020	ug/L	0.22		127	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.153*		*ug/L*	*0.14*		*107*	*70-130*			
LCS Dup (B9K0523-BSD1)				Prepared & Analyzed: 11/04/19						
Acetone	**0.0995**	0.020	ug/L	0.095		105	70-130	7.69	30	
Benzene	**0.131**	0.0030	ug/L	0.13		103	70-130	0.122	30	
Benzyl chloride	**0.267**	0.020	ug/L	0.21		129	70-130	2.71	30	
Bromodichloromethane	**0.313**	0.020	ug/L	0.27		117	70-130	3.16	30	
Bromoform	**0.462**	0.020	ug/L	0.41		112	70-130	3.58	30	
Bromomethane	**0.156**	0.020	ug/L	0.16		100	70-130	2.10	30	
2-Butanone (MEK)	**0.146**	0.020	ug/L	0.12		124	70-130	1.12	30	
Carbon Disulfide	**0.128**	0.020	ug/L	0.12		102	70-130	4.81	30	
Carbon Tetrachloride	**0.275**	0.020	ug/L	0.25		109	70-130	5.41	30	
Chlorobenzene	**0.175**	0.020	ug/L	0.18		95.3	70-130	4.18	30	
Chloroethane	**0.103**	0.020	ug/L	0.11		97.7	70-130	5.23	30	
Chloroform	**0.207**	0.020	ug/L	0.20		106	70-130	1.70	30	
Chloromethane	**0.0807**	0.020	ug/L	0.083		97.8	70-130	11.1	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0523 - *** DEFAULT PREP ****										
LCS Dup (B9K0523-BSD1) Continued				Prepared & Analyzed: 11/04/19						
Dibromochloromethane	**0.394**	0.020	ug/L	0.34		116	70-130	4.42	30	
1,2-Dibromoethane (EDB)	**0.336**	0.020	ug/L	0.31		109	70-130	7.76	30	
1,2-Dichlorobenzene	**0.209**	0.020	ug/L	0.24		86.8	70-130	4.45	30	
1,3-Dichlorobenzene	**0.210**	0.020	ug/L	0.24		87.1	70-130	1.18	30	
1,4-Dichlorobenzene	**0.207**	0.020	ug/L	0.24		86.1	70-130	3.25	30	
Dichlorodifluoromethane (R12)	**0.202**	0.020	ug/L	0.20		102	70-130	11.6	30	
1,1-Dichloroethane	**0.158**	0.020	ug/L	0.16		97.4	70-130	4.91	30	
1,2-Dichloroethane (EDC)	**0.187**	0.0040	ug/L	0.16		116	70-130	0.753	30	
cis-1,2-Dichloroethylene	**0.170**	0.020	ug/L	0.16		107	70-130	1.92	30	
1,1-Dichloroethylene	**0.158**	0.020	ug/L	0.16		99.4	70-130	12.7	30	
trans-1,2-Dichloroethylene	**0.179**	0.020	ug/L	0.16		113	70-130	2.68	30	
1,2-Dichloropropane	**0.189**	0.020	ug/L	0.18		102	70-130	1.78	30	
trans-1,3-Dichloropropylene	**0.208**	0.020	ug/L	0.18		115	70-130	5.27	30	
cis-1,3-Dichloropropylene	**0.199**	0.020	ug/L	0.18		110	70-130	3.44	30	
Dichlorotetrafluoroethane	**0.279**	0.020	ug/L	0.28		99.6	70-130	6.51	30	
Ethylbenzene	**0.164**	0.020	ug/L	0.17		94.4	70-130	3.70	30	
4-Ethyltoluene	**0.225**	0.020	ug/L	0.20		115	70-130	2.50	30	
Hexachlorobutadiene	**0.268**	0.020	ug/L	0.43		62.8	70-130	2.86	30	***
2-Hexanone (MBK)	**0.222**	0.020	ug/L	0.16		136	70-130	12.6	30	QL-03
Isopropanol (IPA)	**0.101**	0.20	ug/L	0.098		103	70-130	11.9	30	
Methylene Chloride	**0.139**	0.020	ug/L	0.14		99.8	70-130	7.76	30	
4-Methyl-2-pentanone (MIBK)	**0.205**	0.020	ug/L	0.16		125	70-130	6.69	30	
Styrene	**0.166**	0.020	ug/L	0.17		97.7	70-130	2.70	30	
1,1,2,2-Tetrachloroethane	**0.245**	0.020	ug/L	0.27		89.3	70-130	3.88	30	
Tetrachloroethylene (PCE)	**0.261**	0.010	ug/L	0.27		96.2	70-130	4.95	30	
Toluene	**0.149**	0.020	ug/L	0.15		99.1	70-130	3.94	30	
1,2,4-Trichlorobenzene	**0.201**	0.020	ug/L	0.30		67.7	70-130	3.73	30	***
1,1,2-Trichloroethane	**0.226**	0.020	ug/L	0.22		104	70-130	5.75	30	
1,1,1-Trichloroethane	**0.235**	0.020	ug/L	0.22		108	70-130	0.785	30	
Trichloroethylene (TCE)	**0.216**	0.020	ug/L	0.21		101	70-130	6.89	30	
Trichlorofluoromethane (R11)	**0.236**	0.020	ug/L	0.22		105	70-130	9.79	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0523 - *** DEFAULT PREP ****										
LCS Dup (B9K0523-BSD1) Continued				Prepared & Analyzed: 11/04/19						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.311**	0.020	ug/L	0.31		101	70-130	3.32	30	
1,3,5-Trimethylbenzene	**0.172**	0.020	ug/L	0.20		87.3	70-130	3.82	30	
1,2,4-Trimethylbenzene	**0.176**	0.020	ug/L	0.20		89.5	70-130	1.97	30	
Vinyl acetate	**0.170**	0.020	ug/L	0.14		121	70-130	3.20	30	
Vinyl chloride	**0.101**	0.020	ug/L	0.10		98.5	70-130	7.08	30	
o-Xylene	**0.155**	0.020	ug/L	0.17		89.4	70-130	2.92	30	
m,p-Xylenes	**0.319**	0.020	ug/L	0.35		91.8	70-130	1.43	30	
1,2,3-Trichloropropane	**0.303**	0.020	ug/L	0.24		126	70-130	2.34	30	
sec-Butylbenzene	**0.280**	0.020	ug/L	0.22		127	70-130	3.92	30	
Isopropylbenzene	**0.249**	0.020	ug/L	0.20		127	70-130	4.43	30	
n-Propylbenzene	**0.256**	0.020	ug/L	0.20		130	70-130	2.64	30	
4-Isopropyltoluene	**0.285**	0.020	ug/L	0.22		130	70-130	2.03	30	
Surrogate: 4-Bromofluorobenzene	*0.153*		*ug/L*	*0.14*		*107*	*70-130*			
*Batch B9K0524 - *** DEFAULT PREP ****										
Blank (B9K0524-BLK1)				Prepared & Analyzed: 11/01/19						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.020	0.020	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<20	20	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0524 - *** DEFAULT PREP ****										
Blank (B9K0524-BLK1) Continued				Prepared & Analyzed: 11/01/19						
Chloroform	<0.020	0.020	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0524 - *** DEFAULT PREP ****										
Blank (B9K0524-BLK1) Continued				Prepared & Analyzed: 11/01/19						
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.135*		*ug/L*	*0.14*		*94.4*	*70-130*			
LCS (B9K0524-BS1)				Prepared & Analyzed: 11/01/19						

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0524 - *** DEFAULT PREP ****										
LCS (B9K0524-BS1) Continued				Prepared & Analyzed: 11/01/19						
Acetone	**0.0857**	0.020	ug/L	0.095		90.2	70-130		30	
Benzene	**0.113**	0.0030	ug/L	0.13		88.2	70-130		30	
Benzyl chloride	**0.195**	0.020	ug/L	0.21		94.2	70-130		30	
Bromodichloromethane	**0.266**	0.020	ug/L	0.27		99.3	70-130		30	
Bromoform	**0.387**	0.020	ug/L	0.41		93.7	70-130		30	
Bromomethane	**0.140**	0.020	ug/L	0.16		90.0	70-130		30	
2-Butanone (MEK)	**0.110**	0.020	ug/L	0.12		93.5	70-130		30	
Carbon Disulfide	**0.122**	0.020	ug/L	0.12		97.7	70-130		30	
Carbon Tetrachloride	**0.224**	0.020	ug/L	0.25		89.1	70-130		30	
Chlorobenzene	**0.158**	0.020	ug/L	0.18		85.8	70-130		30	
Chloroethane	**0.100**	0.020	ug/L	0.11		95.1	70-130		30	
Chloroform	**0.182**	0.020	ug/L	0.20		93.3	70-130		30	
Chloromethane	**0.0770**	0.020	ug/L	0.083		93.2	70-130		30	
Dibromochloromethane	**0.334**	0.020	ug/L	0.34		97.9	70-130		30	
1,2-Dibromoethane (EDB)	**0.269**	0.020	ug/L	0.31		87.6	70-130		30	
1,2-Dichlorobenzene	**0.165**	0.020	ug/L	0.24		68.5	70-130		30	QL-02
1,3-Dichlorobenzene	**0.180**	0.020	ug/L	0.24		74.7	70-130		30	
1,4-Dichlorobenzene	**0.171**	0.020	ug/L	0.24		71.1	70-130		30	
Dichlorodifluoromethane (R12)	**0.186**	0.020	ug/L	0.20		94.2	70-130		30	
1,1-Dichloroethane	**0.155**	0.020	ug/L	0.16		95.5	70-130		30	
1,2-Dichloroethane (EDC)	**0.153**	0.0040	ug/L	0.16		94.3	70-130		30	
cis-1,2-Dichloroethylene	**0.145**	0.020	ug/L	0.16		91.5	70-130		30	
1,1-Dichloroethylene	**0.150**	0.020	ug/L	0.16		94.8	70-130		30	
trans-1,2-Dichloroethylene	**0.158**	0.020	ug/L	0.16		99.6	70-130		30	
1,2-Dichloropropane	**0.170**	0.020	ug/L	0.18		92.0	70-130		30	
trans-1,3-Dichloropropylene	**0.169**	0.020	ug/L	0.18		93.1	70-130		30	
cis-1,3-Dichloropropylene	**0.169**	0.020	ug/L	0.18		93.3	70-130		30	
Dichlorotetrafluoroethane	**0.258**	0.020	ug/L	0.28		92.3	70-130		30	
Ethylbenzene	**0.144**	0.020	ug/L	0.17		82.9	70-130		30	
4-Ethyltoluene	**0.187**	0.020	ug/L	0.20		94.8	70-130		30	
Hexachlorobutadiene	**0.150**	0.020	ug/L	0.43		35.1	70-130		30	***
2-Hexanone (MBK)	**0.157**	0.020	ug/L	0.16		95.9	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0524 - *** DEFAULT PREP ****										
LCS (B9K0524-BS1) Continued				Prepared & Analyzed: 11/01/19						
Isopropanol (IPA)	**0.0954**	0.20	ug/L	0.098		97.1	70-130		30	
Methylene Chloride	**0.125**	0.020	ug/L	0.14		90.2	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.151**	0.020	ug/L	0.16		92.0	70-130		30	
Styrene	**0.137**	0.020	ug/L	0.17		80.2	70-130		30	
1,1,2,2-Tetrachloroethane	**0.222**	0.020	ug/L	0.27		80.8	70-130		30	
Tetrachloroethylene (PCE)	**0.242**	0.010	ug/L	0.27		89.0	70-130		30	
Toluene	**0.131**	0.020	ug/L	0.15		86.9	70-130		30	
1,2,4-Trichlorobenzene	**0.122**	0.020	ug/L	0.30		41.2	70-130		30	***
1,1,2-Trichloroethane	**0.198**	0.020	ug/L	0.22		90.7	70-130		30	
1,1,1-Trichloroethane	**0.205**	0.020	ug/L	0.22		94.0	70-130		30	
Trichloroethylene (TCE)	**0.198**	0.020	ug/L	0.21		92.0	70-130		30	
Trichlorofluoromethane (R11)	**0.209**	0.020	ug/L	0.22		93.2	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.273**	0.020	ug/L	0.31		89.2	70-130		30	
1,3,5-Trimethylbenzene	**0.138**	0.020	ug/L	0.20		70.1	70-130		30	
1,2,4-Trimethylbenzene	**0.140**	0.020	ug/L	0.20		71.0	70-130		30	
Vinyl acetate	**0.122**	0.020	ug/L	0.14		86.4	70-130		30	
Vinyl chloride	**0.115**	0.020	ug/L	0.10		112	70-130		30	
o-Xylene	**0.134**	0.020	ug/L	0.17		77.4	70-130		30	
m,p-Xylenes	**0.271**	0.020	ug/L	0.35		78.0	70-130		30	
1,2,3-Trichloropropane	**0.247**	0.020	ug/L	0.24		102	70-130		30	
sec-Butylbenzene	**0.221**	0.020	ug/L	0.22		101	70-130		30	
Isopropylbenzene	**0.200**	0.020	ug/L	0.20		102	70-130		30	
n-Propylbenzene	**0.206**	0.020	ug/L	0.20		105	70-130		30	
4-Isopropyltoluene	**0.233**	0.020	ug/L	0.22		106	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.145*		*ug/L*	*0.14*		*101*	*70-130*			
LCS Dup (B9K0524-BSD1)				Prepared & Analyzed: 11/02/19						
Acetone	**0.0951**	0.020	ug/L	0.095		100	70-130	10.4	30	
Benzene	**0.124**	0.0030	ug/L	0.13		96.8	70-130	9.32	30	
Benzyl chloride	**0.226**	0.020	ug/L	0.21		109	70-130	14.7	30	
Bromodichloromethane	**0.313**	0.020	ug/L	0.27		117	70-130	16.2	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0524 - *** DEFAULT PREP ****										
LCS Dup (B9K0524-BSD1) Continued				Prepared & Analyzed: 11/02/19						
Bromoform	**0.447**	0.020	ug/L	0.41		108	70-130	14.2	30	
Bromomethane	**0.128**	0.020	ug/L	0.16		82.7	70-130	8.42	30	
2-Butanone (MEK)	**0.125**	0.020	ug/L	0.12		106	70-130	12.5	30	
Carbon Disulfide	**0.125**	0.020	ug/L	0.12		101	70-130	3.07	30	
Carbon Tetrachloride	**0.265**	0.020	ug/L	0.25		105	70-130	16.7	30	
Chlorobenzene	**0.192**	0.020	ug/L	0.18		104	70-130	19.2	30	
Chloroethane	**0.0857**	0.020	ug/L	0.11		81.2	70-130	15.8	30	
Chloroform	**0.198**	0.020	ug/L	0.20		101	70-130	8.30	30	
Chloromethane	**0.0881**	0.020	ug/L	0.083		107	70-130	13.4	30	
Dibromochloromethane	**0.390**	0.020	ug/L	0.34		115	70-130	15.6	30	
1,2-Dibromoethane (EDB)	**0.337**	0.020	ug/L	0.31		110	70-130	22.3	30	
1,2-Dichlorobenzene	**0.203**	0.020	ug/L	0.24		84.5	70-130	20.9	30	
1,3-Dichlorobenzene	**0.203**	0.020	ug/L	0.24		84.5	70-130	12.2	30	
1,4-Dichlorobenzene	**0.210**	0.020	ug/L	0.24		87.4	70-130	20.6	30	
Dichlorodifluoromethane (R12)	**0.194**	0.020	ug/L	0.20		98.2	70-130	4.16	30	
1,1-Dichloroethane	**0.165**	0.020	ug/L	0.16		102	70-130	6.83	30	
1,2-Dichloroethane (EDC)	**0.169**	0.0040	ug/L	0.16		105	70-130	10.4	30	
cis-1,2-Dichloroethylene	**0.157**	0.020	ug/L	0.16		99.0	70-130	7.85	30	
1,1-Dichloroethylene	**0.160**	0.020	ug/L	0.16		101	70-130	6.13	30	
trans-1,2-Dichloroethylene	**0.172**	0.020	ug/L	0.16		108	70-130	8.28	30	
1,2-Dichloropropane	**0.198**	0.020	ug/L	0.18		107	70-130	15.2	30	
trans-1,3-Dichloropropylene	**0.200**	0.020	ug/L	0.18		110	70-130	17.1	30	
cis-1,3-Dichloropropylene	**0.197**	0.020	ug/L	0.18		109	70-130	15.3	30	
Dichlorotetrafluoroethane	**0.280**	0.020	ug/L	0.28		100	70-130	8.11	30	
Ethylbenzene	**0.178**	0.020	ug/L	0.17		102	70-130	20.8	30	
4-Ethyltoluene	**0.223**	0.020	ug/L	0.20		113	70-130	17.7	30	
Hexachlorobutadiene	**0.188**	0.020	ug/L	0.43		44.1	70-130	22.8	30	***
2-Hexanone (MBK)	**0.204**	0.020	ug/L	0.16		124	70-130	26.0	30	
Isopropanol (IPA)	**0.106**	0.20	ug/L	0.098		108	70-130	10.4	30	
Methylene Chloride	**0.136**	0.020	ug/L	0.14		97.6	70-130	7.85	30	
4-Methyl-2-pentanone (MIBK)	**0.197**	0.020	ug/L	0.16		120	70-130	26.8	30	
Styrene	**0.169**	0.020	ug/L	0.17		99.0	70-130	21.0	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0524 - *** DEFAULT PREP ****										
LCS Dup (B9K0524-BSD1) Continued				Prepared & Analyzed: 11/02/19						
1,1,2,2-Tetrachloroethane	**0.270**	0.020	ug/L	0.27		98.4	70-130	19.6	30	
Tetrachloroethylene (PCE)	**0.301**	0.010	ug/L	0.27		111	70-130	21.9	30	
Toluene	**0.161**	0.020	ug/L	0.15		107	70-130	20.4	30	
1,2,4-Trichlorobenzene	**0.151**	0.020	ug/L	0.30		50.9	70-130	21.1	30	***
1,1,2-Trichloroethane	**0.244**	0.020	ug/L	0.22		112	70-130	20.6	30	
1,1,1-Trichloroethane	**0.229**	0.020	ug/L	0.22		105	70-130	10.9	30	
Trichloroethylene (TCE)	**0.229**	0.020	ug/L	0.21		107	70-130	14.8	30	
Trichlorofluoromethane (R11)	**0.236**	0.020	ug/L	0.22		105	70-130	12.0	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.308**	0.020	ug/L	0.31		101	70-130	12.0	30	
1,3,5-Trimethylbenzene	**0.169**	0.020	ug/L	0.20		86.1	70-130	20.5	30	
1,2,4-Trimethylbenzene	**0.167**	0.020	ug/L	0.20		84.9	70-130	17.9	30	
Vinyl acetate	**0.140**	0.020	ug/L	0.14		99.3	70-130	13.8	30	
Vinyl chloride	**0.0995**	0.020	ug/L	0.10		97.3	70-130	14.4	30	
o-Xylene	**0.164**	0.020	ug/L	0.17		94.6	70-130	20.1	30	
m,p-Xylenes	**0.330**	0.020	ug/L	0.35		95.1	70-130	19.8	30	
1,2,3-Trichloropropane	**0.293**	0.020	ug/L	0.24		122	70-130	17.1	30	
sec-Butylbenzene	**0.273**	0.020	ug/L	0.22		125	70-130	21.1	30	
Isopropylbenzene	**0.243**	0.020	ug/L	0.20		124	70-130	19.3	30	
n-Propylbenzene	**0.252**	0.020	ug/L	0.20		128	70-130	19.9	30	
4-Isopropyltoluene	**0.290**	0.020	ug/L	0.22		132	70-130	21.9	30	QL-03
Surrogate: 4-Bromofluorobenzene	*0.144*		*ug/L*	*0.14*		*100*	*70-130*			
*Batch B9K0817 - *** DEFAULT PREP ****										
Blank (B9K0817-BLK1)				Prepared & Analyzed: 11/05/19						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.020	0.020	ug/L							
Bromoform	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0817 - *** DEFAULT PREP ****										
Blank (B9K0817-BLK1) Continued				Prepared & Analyzed: 11/05/19						
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<20	20	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.020	0.020	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0817 - *** DEFAULT PREP ****										
Blank (B9K0817-BLK1) Continued				Prepared & Analyzed: 11/05/19						
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0817 - *** DEFAULT PREP ****										
Blank (B9K0817-BLK1) Continued				Prepared & Analyzed: 11/05/19						
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.129*		*ug/L*	*0.14*		*90.0*	*70-130*			
LCS (B9K0817-BS1)				Prepared & Analyzed: 11/05/19						
Acetone	**0.0962**	0.020	ug/L	0.095		101	70-130		30	
Benzene	**0.131**	0.0030	ug/L	0.13		103	70-130		30	
Benzyl chloride	**0.235**	0.020	ug/L	0.21		114	70-130		30	
Bromodichloromethane	**0.283**	0.020	ug/L	0.27		106	70-130		30	
Bromoform	**0.421**	0.020	ug/L	0.41		102	70-130		30	
Bromomethane	**0.151**	0.020	ug/L	0.16		96.9	70-130		30	
2-Butanone (MEK)	**0.142**	0.020	ug/L	0.12		120	70-130		30	
Carbon Disulfide	**0.135**	0.020	ug/L	0.12		109	70-130		30	
Carbon Tetrachloride	**0.241**	0.020	ug/L	0.25		95.7	70-130		30	
Chlorobenzene	**0.166**	0.020	ug/L	0.18		90.4	70-130		30	
Chloroethane	**0.107**	0.020	ug/L	0.11		102	70-130		30	
Chloroform	**0.200**	0.020	ug/L	0.20		103	70-130		30	
Chloromethane	**0.0933**	0.020	ug/L	0.083		113	70-130		30	
Dibromochloromethane	**0.357**	0.020	ug/L	0.34		105	70-130		30	
1,2-Dibromoethane (EDB)	**0.298**	0.020	ug/L	0.31		96.8	70-130		30	
1,2-Dichlorobenzene	**0.192**	0.020	ug/L	0.24		79.8	70-130		30	
1,3-Dichlorobenzene	**0.193**	0.020	ug/L	0.24		80.2	70-130		30	
1,4-Dichlorobenzene	**0.191**	0.020	ug/L	0.24		79.4	70-130		30	
Dichlorodifluoromethane (R12)	**0.198**	0.020	ug/L	0.20		100	70-130		30	
1,1-Dichloroethane	**0.168**	0.020	ug/L	0.16		104	70-130		30	
1,2-Dichloroethane (EDC)	**0.171**	0.0040	ug/L	0.16		106	70-130		30	
cis-1,2-Dichloroethylene	**0.169**	0.020	ug/L	0.16		107	70-130		30	
1,1-Dichloroethylene	**0.168**	0.020	ug/L	0.16		106	70-130		30	
trans-1,2-Dichloroethylene	**0.179**	0.020	ug/L	0.16		113	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0817 - *** DEFAULT PREP ****										
LCS (B9K0817-BS1) Continued				Prepared & Analyzed: 11/05/19						
1,2-Dichloropropane	**0.188**	0.020	ug/L	0.18		102	70-130		30	
trans-1,3-Dichloropropylene	**0.182**	0.020	ug/L	0.18		100	70-130		30	
cis-1,3-Dichloropropylene	**0.186**	0.020	ug/L	0.18		102	70-130		30	
Dichlorotetrafluoroethane	**0.275**	0.020	ug/L	0.28		98.4	70-130		30	
Ethylbenzene	**0.157**	0.020	ug/L	0.17		90.4	70-130		30	
4-Ethyltoluene	**0.213**	0.020	ug/L	0.20		108	70-130		30	
Hexachlorobutadiene	**0.249**	0.020	ug/L	0.43		58.3	70-130		30	***
2-Hexanone (MBK)	**0.190**	0.020	ug/L	0.16		116	70-130		30	
Isopropanol (IPA)	**0.112**	0.20	ug/L	0.098		114	70-130		30	
Methylene Chloride	**0.150**	0.020	ug/L	0.14		108	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.185**	0.020	ug/L	0.16		113	70-130		30	
Styrene	**0.156**	0.020	ug/L	0.17		91.6	70-130		30	
1,1,2,2-Tetrachloroethane	**0.239**	0.020	ug/L	0.27		87.2	70-130		30	
Tetrachloroethylene (PCE)	**0.239**	0.010	ug/L	0.27		88.1	70-130		30	
Toluene	**0.142**	0.020	ug/L	0.15		93.9	70-130		30	
1,2,4-Trichlorobenzene	**0.166**	0.020	ug/L	0.30		55.8	70-130		30	***
1,1,2-Trichloroethane	**0.214**	0.020	ug/L	0.22		97.9	70-130		30	
1,1,1-Trichloroethane	**0.220**	0.020	ug/L	0.22		101	70-130		30	
Trichloroethylene (TCE)	**0.198**	0.020	ug/L	0.21		92.0	70-130		30	
Trichlorofluoromethane (R11)	**0.242**	0.020	ug/L	0.22		108	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.312**	0.020	ug/L	0.31		102	70-130		30	
1,3,5-Trimethylbenzene	**0.157**	0.020	ug/L	0.20		79.7	70-130		30	
1,2,4-Trimethylbenzene	**0.164**	0.020	ug/L	0.20		83.6	70-130		30	
Vinyl acetate	**0.155**	0.020	ug/L	0.14		110	70-130		30	
Vinyl chloride	**0.105**	0.020	ug/L	0.10		103	70-130		30	
o-Xylene	**0.147**	0.020	ug/L	0.17		84.8	70-130		30	
m,p-Xylenes	**0.300**	0.020	ug/L	0.35		86.3	70-130		30	
1,2,3-Trichloropropane	**0.287**	0.020	ug/L	0.24		119	70-130		30	
sec-Butylbenzene	**0.263**	0.020	ug/L	0.22		120	70-130		30	
Isopropylbenzene	**0.231**	0.020	ug/L	0.20		117	70-130		30	
n-Propylbenzene	**0.242**	0.020	ug/L	0.20		123	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0817 - *** DEFAULT PREP ****										
LCS (B9K0817-BS1) Continued				Prepared & Analyzed: 11/05/19						
4-Isopropyltoluene	**0.263**	0.020	ug/L	0.22		120	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.153*		*ug/L*	*0.14*		*107*	*70-130*			
LCS Dup (B9K0817-BSD1)				Prepared: 11/05/19 Analyzed: 11/06/19						
Acetone	**0.0971**	0.020	ug/L	0.095		102	70-130	0.958	30	
Benzene	**0.134**	0.0030	ug/L	0.13		105	70-130	2.38	30	
Benzyl chloride	**0.261**	0.020	ug/L	0.21		126	70-130	10.3	30	
Bromodichloromethane	**0.293**	0.020	ug/L	0.27		109	70-130	3.46	30	
Bromoform	**0.437**	0.020	ug/L	0.41		106	70-130	3.83	30	
Bromomethane	**0.155**	0.020	ug/L	0.16		99.9	70-130	3.02	30	
2-Butanone (MEK)	**0.153**	0.020	ug/L	0.12		130	70-130	7.73	30	
Carbon Disulfide	**0.135**	0.020	ug/L	0.12		108	70-130	0.461	30	
Carbon Tetrachloride	**0.246**	0.020	ug/L	0.25		97.8	70-130	2.20	30	
Chlorobenzene	**0.178**	0.020	ug/L	0.18		96.9	70-130	6.97	30	
Chloroethane	**0.111**	0.020	ug/L	0.11		105	70-130	3.46	30	
Chloroform	**0.192**	0.020	ug/L	0.20		98.6	70-130	3.95	30	
Chloromethane	**0.0971**	0.020	ug/L	0.083		118	70-130	3.97	30	
Dibromochloromethane	**0.376**	0.020	ug/L	0.34		110	70-130	5.37	30	
1,2-Dibromoethane (EDB)	**0.322**	0.020	ug/L	0.31		105	70-130	8.03	30	
1,2-Dichlorobenzene	**0.208**	0.020	ug/L	0.24		86.4	70-130	7.95	30	
1,3-Dichlorobenzene	**0.208**	0.020	ug/L	0.24		86.5	70-130	7.53	30	
1,4-Dichlorobenzene	**0.206**	0.020	ug/L	0.24		85.5	70-130	7.43	30	
Dichlorodifluoromethane (R12)	**0.194**	0.020	ug/L	0.20		98.3	70-130	1.91	30	
1,1-Dichloroethane	**0.164**	0.020	ug/L	0.16		101	70-130	2.63	30	
1,2-Dichloroethane (EDC)	**0.166**	0.0040	ug/L	0.16		103	70-130	3.09	30	
cis-1,2-Dichloroethylene	**0.169**	0.020	ug/L	0.16		106	70-130	0.188	30	
1,1-Dichloroethylene	**0.166**	0.020	ug/L	0.16		105	70-130	0.736	30	
trans-1,2-Dichloroethylene	**0.181**	0.020	ug/L	0.16		114	70-130	1.32	30	
1,2-Dichloropropane	**0.202**	0.020	ug/L	0.18		109	70-130	7.00	30	
trans-1,3-Dichloropropylene	**0.202**	0.020	ug/L	0.18		111	70-130	10.4	30	
cis-1,3-Dichloropropylene	**0.198**	0.020	ug/L	0.18		109	70-130	6.62	30	
Dichlorotetrafluoroethane	**0.273**	0.020	ug/L	0.28		97.7	70-130	0.790	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K0817 - *** DEFAULT PREP ****										
LCS Dup (B9K0817-BSD1) Continued				Prepared: 11/05/19 Analyzed: 11/06/19						
Ethylbenzene	**0.163**	0.020	ug/L	0.17		94.0	70-130	3.91	30	
4-Ethyltoluene	**0.221**	0.020	ug/L	0.20		112	70-130	3.83	30	
Hexachlorobutadiene	**0.261**	0.020	ug/L	0.43		61.2	70-130	4.85	30	***
2-Hexanone (MBK)	**0.230**	0.020	ug/L	0.16		140	70-130	19.1	30	QL-03
Isopropanol (IPA)	**0.107**	0.20	ug/L	0.098		109	70-130	4.08	30	
Methylene Chloride	**0.145**	0.020	ug/L	0.14		105	70-130	3.25	30	
4-Methyl-2-pentanone (MIBK)	**0.212**	0.020	ug/L	0.16		129	70-130	13.3	30	
Styrene	**0.168**	0.020	ug/L	0.17		98.4	70-130	7.11	30	
1,1,2,2-Tetrachloroethane	**0.255**	0.020	ug/L	0.27		93.0	70-130	6.47	30	
Tetrachloroethylene (PCE)	**0.252**	0.010	ug/L	0.27		92.9	70-130	5.28	30	
Toluene	**0.152**	0.020	ug/L	0.15		101	70-130	7.33	30	
1,2,4-Trichlorobenzene	**0.196**	0.020	ug/L	0.30		66.1	70-130	16.9	30	***
1,1,2-Trichloroethane	**0.228**	0.020	ug/L	0.22		105	70-130	6.55	30	
1,1,1-Trichloroethane	**0.213**	0.020	ug/L	0.22		97.6	70-130	3.25	30	
Trichloroethylene (TCE)	**0.211**	0.020	ug/L	0.21		98.0	70-130	6.34	30	
Trichlorofluoromethane (R11)	**0.213**	0.020	ug/L	0.22		94.6	70-130	13.1	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.311**	0.020	ug/L	0.31		101	70-130	0.394	30	
1,3,5-Trimethylbenzene	**0.163**	0.020	ug/L	0.20		82.8	70-130	3.72	30	
1,2,4-Trimethylbenzene	**0.172**	0.020	ug/L	0.20		87.6	70-130	4.64	30	
Vinyl acetate	**0.167**	0.020	ug/L	0.14		119	70-130	7.51	30	
Vinyl chloride	**0.106**	0.020	ug/L	0.10		104	70-130	0.922	30	
o-Xylene	**0.153**	0.020	ug/L	0.17		87.8	70-130	3.51	30	
m,p-Xylenes	**0.313**	0.020	ug/L	0.35		90.0	70-130	4.14	30	
1,2,3-Trichloropropane	**0.298**	0.020	ug/L	0.24		123	70-130	3.82	30	
sec-Butylbenzene	**0.271**	0.020	ug/L	0.22		124	70-130	3.02	30	
Isopropylbenzene	**0.241**	0.020	ug/L	0.20		123	70-130	4.58	30	
n-Propylbenzene	**0.252**	0.020	ug/L	0.20		128	70-130	4.08	30	
4-Isopropyltoluene	**0.279**	0.020	ug/L	0.22		127	70-130	5.67	30	
Surrogate: 4-Bromofluorobenzene	*0.145*		*ug/L*	*0.14*		*101*	*70-130*			
*Batch B9K1232 - *** DEFAULT PREP ****										

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1232 - *** DEFAULT PREP ****										
Blank (B9K1232-BLK1)				Prepared & Analyzed: 11/11/19						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.020	0.020	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<20	20	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.020	0.020	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1232 - *** DEFAULT PREP ****										
Blank (B9K1232-BLK1) Continued				Prepared & Analyzed: 11/11/19						
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1232 - *** DEFAULT PREP ****										
Blank (B9K1232-BLK1) Continued				Prepared & Analyzed: 11/11/19						
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.135*		*ug/L*	*0.14*		*94.4*	*70-130*			
LCS (B9K1232-BS1)				Prepared & Analyzed: 11/11/19						
Acetone	**0.0839**	0.020	ug/L	0.095		88.4	70-130		30	
Benzene	**0.127**	0.0030	ug/L	0.13		99.1	70-130		30	
Benzyl chloride	**0.212**	0.020	ug/L	0.21		103	70-130		30	
Bromodichloromethane	**0.295**	0.020	ug/L	0.27		110	70-130		30	
Bromoform	**0.429**	0.020	ug/L	0.41		104	70-130		30	
Bromomethane	**0.165**	0.020	ug/L	0.16		106	70-130		30	
2-Butanone (MEK)	**0.124**	0.020	ug/L	0.12		106	70-130		30	
Carbon Disulfide	**0.130**	0.020	ug/L	0.12		105	70-130		30	
Carbon Tetrachloride	**0.266**	0.020	ug/L	0.25		106	70-130		30	
Chlorobenzene	**0.187**	0.020	ug/L	0.18		102	70-130		30	
Chloroethane	**0.119**	0.020	ug/L	0.11		113	70-130		30	
Chloroform	**0.202**	0.020	ug/L	0.20		103	70-130		30	
Chloromethane	**0.0923**	0.020	ug/L	0.083		112	70-130		30	
Dibromochloromethane	**0.372**	0.020	ug/L	0.34		109	70-130		30	
1,2-Dibromoethane (EDB)	**0.326**	0.020	ug/L	0.31		106	70-130		30	
1,2-Dichlorobenzene	**0.223**	0.020	ug/L	0.24		92.6	70-130		30	
1,3-Dichlorobenzene	**0.214**	0.020	ug/L	0.24		89.1	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1232 - *** DEFAULT PREP ****										
LCS (B9K1232-BS1) Continued				Prepared & Analyzed: 11/11/19						
1,4-Dichlorobenzene	**0.229**	0.020	ug/L	0.24		95.2	70-130		30	
Dichlorodifluoromethane (R12)	**0.214**	0.020	ug/L	0.20		108	70-130		30	
1,1-Dichloroethane	**0.170**	0.020	ug/L	0.16		105	70-130		30	
1,2-Dichloroethane (EDC)	**0.169**	0.0040	ug/L	0.16		104	70-130		30	
cis-1,2-Dichloroethylene	**0.160**	0.020	ug/L	0.16		101	70-130		30	
1,1-Dichloroethylene	**0.169**	0.020	ug/L	0.16		106	70-130		30	
trans-1,2-Dichloroethylene	**0.166**	0.020	ug/L	0.16		105	70-130		30	
1,2-Dichloropropane	**0.200**	0.020	ug/L	0.18		108	70-130		30	
trans-1,3-Dichloropropylene	**0.205**	0.020	ug/L	0.18		113	70-130		30	
cis-1,3-Dichloropropylene	**0.203**	0.020	ug/L	0.18		112	70-130		30	
Dichlorotetrafluoroethane	**0.312**	0.020	ug/L	0.28		112	70-130		30	
Ethylbenzene	**0.171**	0.020	ug/L	0.17		98.6	70-130		30	
4-Ethyltoluene	**0.190**	0.020	ug/L	0.20		96.5	70-130		30	
Hexachlorobutadiene	**0.292**	0.020	ug/L	0.43		68.4	70-130		30	***
2-Hexanone (MBK)	**0.174**	0.020	ug/L	0.16		106	70-130		30	
Isopropanol (IPA)	**0.104**	0.20	ug/L	0.098		106	70-130		30	
Methylene Chloride	**0.136**	0.020	ug/L	0.14		98.2	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.172**	0.020	ug/L	0.16		105	70-130		30	
Styrene	**0.165**	0.020	ug/L	0.17		96.7	70-130		30	
1,1,2,2-Tetrachloroethane	**0.272**	0.020	ug/L	0.27		99.1	70-130		30	
Tetrachloroethylene (PCE)	**0.294**	0.010	ug/L	0.27		108	70-130		30	
Toluene	**0.154**	0.020	ug/L	0.15		102	70-130		30	
1,2,4-Trichlorobenzene	**0.232**	0.020	ug/L	0.30		78.1	70-130		30	
1,1,2-Trichloroethane	**0.239**	0.020	ug/L	0.22		109	70-130		30	
1,1,1-Trichloroethane	**0.233**	0.020	ug/L	0.22		107	70-130		30	
Trichloroethylene (TCE)	**0.235**	0.020	ug/L	0.21		109	70-130		30	
Trichlorofluoromethane (R11)	**0.237**	0.020	ug/L	0.22		106	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.309**	0.020	ug/L	0.31		101	70-130		30	
1,3,5-Trimethylbenzene	**0.176**	0.020	ug/L	0.20		89.3	70-130		30	
1,2,4-Trimethylbenzene	**0.181**	0.020	ug/L	0.20		92.0	70-130		30	
Vinyl acetate	**0.124**	0.020	ug/L	0.14		87.8	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1232 - *** DEFAULT PREP ****										
LCS (B9K1232-BS1) Continued				Prepared & Analyzed: 11/11/19						
Vinyl chloride	**0.116**	0.020	ug/L	0.10		114	70-130		30	
o-Xylene	**0.161**	0.020	ug/L	0.17		92.7	70-130		30	
m,p-Xylenes	**0.322**	0.020	ug/L	0.35		92.6	70-130		30	
1,2,3-Trichloropropane	**0.240**	0.020	ug/L	0.24		99.4	70-130		30	
sec-Butylbenzene	**0.210**	0.020	ug/L	0.22		95.7	70-130		30	
Isopropylbenzene	**0.194**	0.020	ug/L	0.20		98.5	70-130		30	
n-Propylbenzene	**0.200**	0.020	ug/L	0.20		102	70-130		30	
4-Isopropyltoluene	**0.221**	0.020	ug/L	0.22		101	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.143*		*ug/L*	*0.14*		*99.7*	*70-130*			
LCS Dup (B9K1232-BSD1)				Prepared & Analyzed: 11/11/19						
Acetone	**0.0976**	0.020	ug/L	0.095		103	70-130	15.0	30	
Benzene	**0.136**	0.0030	ug/L	0.13		107	70-130	7.41	30	
Benzyl chloride	**0.211**	0.020	ug/L	0.21		102	70-130	0.513	30	
Bromodichloromethane	**0.299**	0.020	ug/L	0.27		112	70-130	1.37	30	
Bromoform	**0.431**	0.020	ug/L	0.41		104	70-130	0.577	30	
Bromomethane	**0.177**	0.020	ug/L	0.16		114	70-130	7.16	30	
2-Butanone (MEK)	**0.135**	0.020	ug/L	0.12		114	70-130	7.96	30	
Carbon Disulfide	**0.132**	0.020	ug/L	0.12		106	70-130	1.07	30	
Carbon Tetrachloride	**0.280**	0.020	ug/L	0.25		111	70-130	4.82	30	
Chlorobenzene	**0.194**	0.020	ug/L	0.18		105	70-130	3.21	30	
Chloroethane	**0.123**	0.020	ug/L	0.11		117	70-130	3.38	30	
Chloroform	**0.216**	0.020	ug/L	0.20		110	70-130	6.48	30	
Chloromethane	**0.110**	0.020	ug/L	0.083		133	70-130	17.2	30	QL-03
Dibromochloromethane	**0.379**	0.020	ug/L	0.34		111	70-130	1.82	30	
1,2-Dibromoethane (EDB)	**0.336**	0.020	ug/L	0.31		109	70-130	3.16	30	
1,2-Dichlorobenzene	**0.227**	0.020	ug/L	0.24		94.5	70-130	2.00	30	
1,3-Dichlorobenzene	**0.226**	0.020	ug/L	0.24		93.8	70-130	5.11	30	
1,4-Dichlorobenzene	**0.232**	0.020	ug/L	0.24		96.6	70-130	1.51	30	
Dichlorodifluoromethane (R12)	**0.233**	0.020	ug/L	0.20		118	70-130	8.14	30	
1,1-Dichloroethane	**0.184**	0.020	ug/L	0.16		114	70-130	7.87	30	
1,2-Dichloroethane (EDC)	**0.182**	0.0040	ug/L	0.16		112	70-130	7.36	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1232 - *** DEFAULT PREP ****										
LCS Dup (B9K1232-BSD1) Continued				Prepared & Analyzed: 11/11/19						
cis-1,2-Dichloroethylene	**0.174**	0.020	ug/L	0.16		110	70-130	8.33	30	
1,1-Dichloroethylene	**0.180**	0.020	ug/L	0.16		114	70-130	6.55	30	
trans-1,2-Dichloroethylene	**0.177**	0.020	ug/L	0.16		112	70-130	6.57	30	
1,2-Dichloropropane	**0.206**	0.020	ug/L	0.18		111	70-130	2.66	30	
trans-1,3-Dichloropropylene	**0.211**	0.020	ug/L	0.18		116	70-130	3.02	30	
cis-1,3-Dichloropropylene	**0.207**	0.020	ug/L	0.18		114	70-130	2.33	30	
Dichlorotetrafluoroethane	**0.335**	0.020	ug/L	0.28		120	70-130	7.09	30	
Ethylbenzene	**0.174**	0.020	ug/L	0.17		100	70-130	1.81	30	
4-Ethyltoluene	**0.202**	0.020	ug/L	0.20		103	70-130	6.37	30	
Hexachlorobutadiene	**0.294**	0.020	ug/L	0.43		68.9	70-130	0.656	30	***
2-Hexanone (MBK)	**0.173**	0.020	ug/L	0.16		105	70-130	0.898	30	
Isopropanol (IPA)	**0.111**	0.20	ug/L	0.098		112	70-130	5.69	30	
Methylene Chloride	**0.145**	0.020	ug/L	0.14		104	70-130	5.74	30	
4-Methyl-2-pentanone (MIBK)	**0.176**	0.020	ug/L	0.16		107	70-130	2.62	30	
Styrene	**0.171**	0.020	ug/L	0.17		100	70-130	3.80	30	
1,1,2,2-Tetrachloroethane	**0.278**	0.020	ug/L	0.27		101	70-130	2.24	30	
Tetrachloroethylene (PCE)	**0.309**	0.010	ug/L	0.27		114	70-130	5.15	30	
Toluene	**0.164**	0.020	ug/L	0.15		109	70-130	6.32	30	
1,2,4-Trichlorobenzene	**0.230**	0.020	ug/L	0.30		77.5	70-130	0.900	30	
1,1,2-Trichloroethane	**0.250**	0.020	ug/L	0.22		115	70-130	4.60	30	
1,1,1-Trichloroethane	**0.249**	0.020	ug/L	0.22		114	70-130	6.41	30	
Trichloroethylene (TCE)	**0.241**	0.020	ug/L	0.21		112	70-130	2.55	30	
Trichlorofluoromethane (R11)	**0.256**	0.020	ug/L	0.22		114	70-130	7.76	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.332**	0.020	ug/L	0.31		108	70-130	7.15	30	
1,3,5-Trimethylbenzene	**0.180**	0.020	ug/L	0.20		91.7	70-130	2.68	30	
1,2,4-Trimethylbenzene	**0.182**	0.020	ug/L	0.20		92.7	70-130	0.704	30	
Vinyl acetate	**0.134**	0.020	ug/L	0.14		95.4	70-130	8.27	30	
Vinyl chloride	**0.120**	0.020	ug/L	0.10		117	70-130	3.11	30	
o-Xylene	**0.166**	0.020	ug/L	0.17		95.5	70-130	2.98	30	
m,p-Xylenes	**0.332**	0.020	ug/L	0.35		95.5	70-130	3.06	30	
1,2,3-Trichloropropane	**0.245**	0.020	ug/L	0.24		101	70-130	2.04	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1232 - *** DEFAULT PREP ****										
LCS Dup (B9K1232-BSD1) Continued				Prepared & Analyzed: 11/11/19						
sec-Butylbenzene	**0.214**	0.020	ug/L	0.22		97.6	70-130	1.91	30	
Isopropylbenzene	**0.200**	0.020	ug/L	0.20		102	70-130	3.03	30	
n-Propylbenzene	**0.205**	0.020	ug/L	0.20		104	70-130	2.35	30	
4-Isopropyltoluene	**0.228**	0.020	ug/L	0.22		104	70-130	3.23	30	
Surrogate: 4-Bromofluorobenzene	*0.142*		*ug/L*	*0.14*		*99.4*	*70-130*			
*Batch B9K1234 - *** DEFAULT PREP ****										
Blank (B9K1234-BLK1)				Prepared & Analyzed: 11/08/19						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.020	0.020	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<20	20	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							
Chloroform	<0.020	0.020	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1234 - *** DEFAULT PREP ****										
Blank (B9K1234-BLK1) Continued				Prepared & Analyzed: 11/08/19						
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1234 - *** DEFAULT PREP ****										
Blank (B9K1234-BLK1) Continued				Prepared & Analyzed: 11/08/19						
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.132*		*ug/L*	*0.14*		*92.3*	*70-130*			
LCS (B9K1234-BS1)				Prepared & Analyzed: 11/09/19						
Acetone	**0.0972**	0.020	ug/L	0.095		102	70-130		30	
Benzene	**0.133**	0.0030	ug/L	0.13		104	70-130		30	
Benzyl chloride	**0.207**	0.020	ug/L	0.21		99.9	70-130		30	
Bromodichloromethane	**0.298**	0.020	ug/L	0.27		111	70-130		30	
Bromoform	**0.433**	0.020	ug/L	0.41		105	70-130		30	
Bromomethane	**0.171**	0.020	ug/L	0.16		110	70-130		30	
2-Butanone (MEK)	**0.119**	0.020	ug/L	0.12		101	70-130		30	
Carbon Disulfide	**0.126**	0.020	ug/L	0.12		101	70-130		30	
Carbon Tetrachloride	**0.276**	0.020	ug/L	0.25		110	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1234 - *** DEFAULT PREP ****										
LCS (B9K1234-BS1) Continued				Prepared & Analyzed: 11/09/19						
Chlorobenzene	**0.194**	0.020	ug/L	0.18		105	70-130		30	
Chloroethane	**0.117**	0.020	ug/L	0.11		111	70-130		30	
Chloroform	**0.210**	0.020	ug/L	0.20		108	70-130		30	
Chloromethane	**0.0948**	0.020	ug/L	0.083		115	70-130		30	
Dibromochloromethane	**0.371**	0.020	ug/L	0.34		109	70-130		30	
1,2-Dibromoethane (EDB)	**0.335**	0.020	ug/L	0.31		109	70-130		30	
1,2-Dichlorobenzene	**0.227**	0.020	ug/L	0.24		94.3	70-130		30	
1,3-Dichlorobenzene	**0.230**	0.020	ug/L	0.24		95.5	70-130		30	
1,4-Dichlorobenzene	**0.234**	0.020	ug/L	0.24		97.3	70-130		30	
Dichlorodifluoromethane (R12)	**0.223**	0.020	ug/L	0.20		113	70-130		30	
1,1-Dichloroethane	**0.177**	0.020	ug/L	0.16		110	70-130		30	
1,2-Dichloroethane (EDC)	**0.176**	0.0040	ug/L	0.16		109	70-130		30	
cis-1,2-Dichloroethylene	**0.168**	0.020	ug/L	0.16		106	70-130		30	
1,1-Dichloroethylene	**0.174**	0.020	ug/L	0.16		109	70-130		30	
trans-1,2-Dichloroethylene	**0.171**	0.020	ug/L	0.16		108	70-130		30	
1,2-Dichloropropane	**0.210**	0.020	ug/L	0.18		114	70-130		30	
trans-1,3-Dichloropropylene	**0.210**	0.020	ug/L	0.18		116	70-130		30	
cis-1,3-Dichloropropylene	**0.208**	0.020	ug/L	0.18		115	70-130		30	
Dichlorotetrafluoroethane	**0.331**	0.020	ug/L	0.28		118	70-130		30	
Ethylbenzene	**0.178**	0.020	ug/L	0.17		102	70-130		30	
4-Ethyltoluene	**0.198**	0.020	ug/L	0.20		100	70-130		30	
Hexachlorobutadiene	**0.283**	0.020	ug/L	0.43		66.4	70-130		30	***
2-Hexanone (MBK)	**0.174**	0.020	ug/L	0.16		106	70-130		30	
Isopropanol (IPA)	**0.106**	0.20	ug/L	0.098		108	70-130		30	
Methylene Chloride	**0.145**	0.020	ug/L	0.14		105	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.178**	0.020	ug/L	0.16		109	70-130		30	
Styrene	**0.172**	0.020	ug/L	0.17		101	70-130		30	
1,1,2,2-Tetrachloroethane	**0.280**	0.020	ug/L	0.27		102	70-130		30	
Tetrachloroethylene (PCE)	**0.308**	0.010	ug/L	0.27		113	70-130		30	
Toluene	**0.162**	0.020	ug/L	0.15		107	70-130		30	
1,2,4-Trichlorobenzene	**0.213**	0.020	ug/L	0.30		71.7	70-130		30	
1,1,2-Trichloroethane	**0.248**	0.020	ug/L	0.22		113	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1234 - *** DEFAULT PREP ****										
LCS (B9K1234-BS1) Continued				Prepared & Analyzed: 11/09/19						
1,1,1-Trichloroethane	**0.245**	0.020	ug/L	0.22		112	70-130		30	
Trichloroethylene (TCE)	**0.239**	0.020	ug/L	0.21		111	70-130		30	
Trichlorofluoromethane (R11)	**0.251**	0.020	ug/L	0.22		112	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.328**	0.020	ug/L	0.31		107	70-130		30	
1,3,5-Trimethylbenzene	**0.179**	0.020	ug/L	0.20		91.2	70-130		30	
1,2,4-Trimethylbenzene	**0.188**	0.020	ug/L	0.20		95.4	70-130		30	
Vinyl acetate	**0.134**	0.020	ug/L	0.14		95.4	70-130		30	
Vinyl chloride	**0.119**	0.020	ug/L	0.10		117	70-130		30	
o-Xylene	**0.169**	0.020	ug/L	0.17		97.1	70-130		30	
m,p-Xylenes	**0.336**	0.020	ug/L	0.35		96.8	70-130		30	
1,2,3-Trichloropropane	**0.248**	0.020	ug/L	0.24		103	70-130		30	
sec-Butylbenzene	**0.218**	0.020	ug/L	0.22		99.1	70-130		30	
Isopropylbenzene	**0.199**	0.020	ug/L	0.20		101	70-130		30	
n-Propylbenzene	**0.205**	0.020	ug/L	0.20		104	70-130		30	
4-Isopropyltoluene	**0.228**	0.020	ug/L	0.22		104	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.144*		*ug/L*	*0.14*		*101*	*70-130*			
LCS Dup (B9K1234-BSD1)				Prepared & Analyzed: 11/09/19						
Acetone	**0.0905**	0.020	ug/L	0.095		95.2	70-130	7.16	30	
Benzene	**0.132**	0.0030	ug/L	0.13		103	70-130	0.794	30	
Benzyl chloride	**0.216**	0.020	ug/L	0.21		104	70-130	4.48	30	
Bromodichloromethane	**0.301**	0.020	ug/L	0.27		112	70-130	1.12	30	
Bromoform	**0.439**	0.020	ug/L	0.41		106	70-130	1.35	30	
Bromomethane	**0.173**	0.020	ug/L	0.16		111	70-130	1.40	30	
2-Butanone (MEK)	**0.136**	0.020	ug/L	0.12		115	70-130	13.4	30	
Carbon Disulfide	**0.126**	0.020	ug/L	0.12		101	70-130	0.223	30	
Carbon Tetrachloride	**0.281**	0.020	ug/L	0.25		112	70-130	1.90	30	
Chlorobenzene	**0.196**	0.020	ug/L	0.18		106	70-130	1.06	30	
Chloroethane	**0.121**	0.020	ug/L	0.11		114	70-130	2.77	30	
Chloroform	**0.216**	0.020	ug/L	0.20		111	70-130	2.54	30	
Chloromethane	**0.0967**	0.020	ug/L	0.083		117	70-130	1.96	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1234 - *** DEFAULT PREP ****										
LCS Dup (B9K1234-BSD1) Continued				Prepared & Analyzed: 11/09/19						
Dibromochloromethane	**0.385**	0.020	ug/L	0.34		113	70-130	3.72	30	
1,2-Dibromoethane (EDB)	**0.340**	0.020	ug/L	0.31		111	70-130	1.57	30	
1,2-Dichlorobenzene	**0.235**	0.020	ug/L	0.24		97.9	70-130	3.69	30	
1,3-Dichlorobenzene	**0.220**	0.020	ug/L	0.24		91.3	70-130	4.50	30	
1,4-Dichlorobenzene	**0.233**	0.020	ug/L	0.24		96.8	70-130	0.464	30	
Dichlorodifluoromethane (R12)	**0.223**	0.020	ug/L	0.20		113	70-130	0.0664	30	
1,1-Dichloroethane	**0.181**	0.020	ug/L	0.16		112	70-130	2.17	30	
1,2-Dichloroethane (EDC)	**0.177**	0.0040	ug/L	0.16		109	70-130	0.390	30	
cis-1,2-Dichloroethylene	**0.168**	0.020	ug/L	0.16		106	70-130	0.519	30	
1,1-Dichloroethylene	**0.173**	0.020	ug/L	0.16		109	70-130	0.481	30	
trans-1,2-Dichloroethylene	**0.171**	0.020	ug/L	0.16		108	70-130	0.139	30	
1,2-Dichloropropane	**0.210**	0.020	ug/L	0.18		113	70-130	0.418	30	
trans-1,3-Dichloropropylene	**0.209**	0.020	ug/L	0.18		115	70-130	0.672	30	
cis-1,3-Dichloropropylene	**0.205**	0.020	ug/L	0.18		113	70-130	1.32	30	
Dichlorotetrafluoroethane	**0.341**	0.020	ug/L	0.28		122	70-130	3.01	30	
Ethylbenzene	**0.178**	0.020	ug/L	0.17		103	70-130	0.341	30	
4-Ethyltoluene	**0.205**	0.020	ug/L	0.20		104	70-130	3.90	30	
Hexachlorobutadiene	**0.303**	0.020	ug/L	0.43		71.0	70-130	6.55	30	
2-Hexanone (MBK)	**0.178**	0.020	ug/L	0.16		109	70-130	2.40	30	
Isopropanol (IPA)	**0.109**	0.20	ug/L	0.098		111	70-130	2.75	30	
Methylene Chloride	**0.146**	0.020	ug/L	0.14		105	70-130	0.239	30	
4-Methyl-2-pentanone (MIBK)	**0.180**	0.020	ug/L	0.16		110	70-130	0.802	30	
Styrene	**0.175**	0.020	ug/L	0.17		103	70-130	1.55	30	
1,1,2,2-Tetrachloroethane	**0.284**	0.020	ug/L	0.27		103	70-130	1.41	30	
Tetrachloroethylene (PCE)	**0.312**	0.010	ug/L	0.27		115	70-130	1.38	30	
Toluene	**0.163**	0.020	ug/L	0.15		108	70-130	0.650	30	
1,2,4-Trichlorobenzene	**0.239**	0.020	ug/L	0.30		80.7	70-130	11.7	30	
1,1,2-Trichloroethane	**0.246**	0.020	ug/L	0.22		113	70-130	0.641	30	
1,1,1-Trichloroethane	**0.246**	0.020	ug/L	0.22		113	70-130	0.267	30	
Trichloroethylene (TCE)	**0.242**	0.020	ug/L	0.21		113	70-130	1.25	30	
Trichlorofluoromethane (R11)	**0.249**	0.020	ug/L	0.22		111	70-130	1.06	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1234 - *** DEFAULT PREP ****										
LCS Dup (B9K1234-BSD1) Continued				Prepared & Analyzed: 11/09/19						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.328**	0.020	ug/L	0.31		107	70-130	0.0234	30	
1,3,5-Trimethylbenzene	**0.184**	0.020	ug/L	0.20		93.4	70-130	2.44	30	
1,2,4-Trimethylbenzene	**0.190**	0.020	ug/L	0.20		96.4	70-130	1.04	30	
Vinyl acetate	**0.132**	0.020	ug/L	0.14		93.6	70-130	1.93	30	
Vinyl chloride	**0.121**	0.020	ug/L	0.10		119	70-130	1.70	30	
o-Xylene	**0.170**	0.020	ug/L	0.17		97.7	70-130	0.616	30	
m,p-Xylenes	**0.336**	0.020	ug/L	0.35		96.7	70-130	0.0259	30	
1,2,3-Trichloropropane	**0.250**	0.020	ug/L	0.24		104	70-130	0.727	30	
sec-Butylbenzene	**0.219**	0.020	ug/L	0.22		99.8	70-130	0.679	30	
Isopropylbenzene	**0.204**	0.020	ug/L	0.20		104	70-130	2.76	30	
n-Propylbenzene	**0.209**	0.020	ug/L	0.20		106	70-130	1.59	30	
4-Isopropyltoluene	**0.234**	0.020	ug/L	0.22		106	70-130	2.35	30	
Surrogate: 4-Bromofluorobenzene	*0.145*		*ug/L*	*0.14*		*101*	*70-130*			
*Batch B9K1237 - *** DEFAULT PREP ****										
Blank (B9K1237-BLK1)				Prepared & Analyzed: 11/06/19						
Acetone	<0.020	0.020	ug/L							
Allyl chloride	<0.020	0.020	ug/L							
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L							
Benzene	<0.0030	0.0030	ug/L							
Benzyl chloride	<0.020	0.020	ug/L							
Bromodichloromethane	<0.020	0.020	ug/L							
Bromoform	<0.020	0.020	ug/L							
Bromomethane	<0.020	0.020	ug/L							
1,3-Butadiene	<0.020	0.020	ug/L							
2-Butanone (MEK)	<0.020	0.020	ug/L							
tert-Butyl Alcohol (TBA)	<20	20	ug/L							
Carbon Disulfide	<0.020	0.020	ug/L							
Carbon Tetrachloride	<0.020	0.020	ug/L							
Chlorobenzene	<0.020	0.020	ug/L							
Chloroethane	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1237 - *** DEFAULT PREP ****										
Blank (B9K1237-BLK1) Continued				Prepared & Analyzed: 11/06/19						
Chloroform	<0.020	0.020	ug/L							
Chloromethane	<0.020	0.020	ug/L							
Cyclohexane	<0.020	0.020	ug/L							
Dibromochloromethane	<0.020	0.020	ug/L							
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L							
1,2-Dichlorobenzene	<0.020	0.020	ug/L							
1,3-Dichlorobenzene	<0.020	0.020	ug/L							
1,4-Dichlorobenzene	<0.020	0.020	ug/L							
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L							
1,1-Dichloroethane	<0.020	0.020	ug/L							
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L							
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,1-Dichloroethylene	<0.020	0.020	ug/L							
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L							
1,2-Dichloropropane	<0.020	0.020	ug/L							
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L							
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L							
Dichlorotetrafluoroethane	<0.020	0.020	ug/L							
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L							
1,4-Dioxane	<0.020	0.020	ug/L							
Ethanol	<0.020	0.020	ug/L							
Ethyl Acetate	<0.020	0.020	ug/L							
Ethylbenzene	<0.020	0.020	ug/L							
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L							
4-Ethyltoluene	<0.020	0.020	ug/L							
Heptane	<0.020	0.020	ug/L							
Hexachlorobutadiene	<0.020	0.020	ug/L							
n-Hexane	<0.020	0.020	ug/L							
2-Hexanone (MBK)	<0.020	0.020	ug/L							
Isopropanol (IPA)	<0.20	0.20	ug/L							
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L							
Methylene Chloride	<0.020	0.020	ug/L							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1237 - *** DEFAULT PREP ****										
Blank (B9K1237-BLK1) Continued				Prepared & Analyzed: 11/06/19						
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L							
Naphthalene	<0.0030	0.0030	ug/L							
Propylene	<0.020	0.020	ug/L							
Styrene	<0.020	0.020	ug/L							
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.136*		*ug/L*	*0.14*		*95.1*	*70-130*			
LCS (B9K1237-BS1)				Prepared & Analyzed: 11/06/19						

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1237 - *** DEFAULT PREP ****										
LCS (B9K1237-BS1) Continued				Prepared & Analyzed: 11/06/19						
Acetone	**0.0890**	0.020	ug/L	0.095		93.6	70-130		30	
Benzene	**0.136**	0.0030	ug/L	0.13		106	70-130		30	
Benzyl chloride	**0.241**	0.020	ug/L	0.21		116	70-130		30	
Bromodichloromethane	**0.274**	0.020	ug/L	0.27		102	70-130		30	
Bromoform	**0.423**	0.020	ug/L	0.41		102	70-130		30	
Bromomethane	**0.157**	0.020	ug/L	0.16		101	70-130		30	
2-Butanone (MEK)	**0.149**	0.020	ug/L	0.12		127	70-130		30	
Carbon Disulfide	**0.141**	0.020	ug/L	0.12		113	70-130		30	
Carbon Tetrachloride	**0.238**	0.020	ug/L	0.25		94.7	70-130		30	
Chlorobenzene	**0.173**	0.020	ug/L	0.18		93.9	70-130		30	
Chloroethane	**0.113**	0.020	ug/L	0.11		107	70-130		30	
Chloroform	**0.199**	0.020	ug/L	0.20		102	70-130		30	
Chloromethane	**0.0913**	0.020	ug/L	0.083		110	70-130		30	
Dibromochloromethane	**0.360**	0.020	ug/L	0.34		106	70-130		30	
1,2-Dibromoethane (EDB)	**0.312**	0.020	ug/L	0.31		101	70-130		30	
1,2-Dichlorobenzene	**0.197**	0.020	ug/L	0.24		82.0	70-130		30	
1,3-Dichlorobenzene	**0.197**	0.020	ug/L	0.24		82.0	70-130		30	
1,4-Dichlorobenzene	**0.196**	0.020	ug/L	0.24		81.5	70-130		30	
Dichlorodifluoromethane (R12)	**0.199**	0.020	ug/L	0.20		100	70-130		30	
1,1-Dichloroethane	**0.171**	0.020	ug/L	0.16		106	70-130		30	
1,2-Dichloroethane (EDC)	**0.165**	0.0040	ug/L	0.16		102	70-130		30	
cis-1,2-Dichloroethylene	**0.172**	0.020	ug/L	0.16		108	70-130		30	
1,1-Dichloroethylene	**0.171**	0.020	ug/L	0.16		108	70-130		30	
trans-1,2-Dichloroethylene	**0.184**	0.020	ug/L	0.16		116	70-130		30	
1,2-Dichloropropane	**0.198**	0.020	ug/L	0.18		107	70-130		30	
trans-1,3-Dichloropropylene	**0.190**	0.020	ug/L	0.18		105	70-130		30	
cis-1,3-Dichloropropylene	**0.190**	0.020	ug/L	0.18		105	70-130		30	
Dichlorotetrafluoroethane	**0.276**	0.020	ug/L	0.28		98.7	70-130		30	
Ethylbenzene	**0.159**	0.020	ug/L	0.17		91.8	70-130		30	
4-Ethyltoluene	**0.216**	0.020	ug/L	0.20		110	70-130		30	
Hexachlorobutadiene	**0.255**	0.020	ug/L	0.43		59.9	70-130		30	***
2-Hexanone (MBK)	**0.200**	0.020	ug/L	0.16		122	70-130		30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B9K1237 - *** DEFAULT PREP ****										
LCS (B9K1237-BS1) Continued				Prepared & Analyzed: 11/06/19						
Isopropanol (IPA)	**0.106**	0.20	ug/L	0.098		108	70-130		30	
Methylene Chloride	**0.151**	0.020	ug/L	0.14		109	70-130		30	
4-Methyl-2-pentanone (MIBK)	**0.192**	0.020	ug/L	0.16		117	70-130		30	
Styrene	**0.161**	0.020	ug/L	0.17		94.7	70-130		30	
1,1,2,2-Tetrachloroethane	**0.247**	0.020	ug/L	0.27		90.1	70-130		30	
Tetrachloroethylene (PCE)	**0.247**	0.010	ug/L	0.27		90.9	70-130		30	
Toluene	**0.149**	0.020	ug/L	0.15		98.6	70-130		30	
1,2,4-Trichlorobenzene	**0.186**	0.020	ug/L	0.30		62.7	70-130		30	***
1,1,2-Trichloroethane	**0.221**	0.020	ug/L	0.22		101	70-130		30	
1,1,1-Trichloroethane	**0.216**	0.020	ug/L	0.22		98.9	70-130		30	
Trichloroethylene (TCE)	**0.205**	0.020	ug/L	0.21		95.6	70-130		30	
Trichlorofluoromethane (R11)	**0.213**	0.020	ug/L	0.22		94.9	70-130		30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.316**	0.020	ug/L	0.31		103	70-130		30	
1,3,5-Trimethylbenzene	**0.161**	0.020	ug/L	0.20		82.0	70-130		30	
1,2,4-Trimethylbenzene	**0.167**	0.020	ug/L	0.20		85.0	70-130		30	
Vinyl acetate	**0.165**	0.020	ug/L	0.14		117	70-130		30	
Vinyl chloride	**0.106**	0.020	ug/L	0.10		103	70-130		30	
o-Xylene	**0.149**	0.020	ug/L	0.17		85.7	70-130		30	
m,p-Xylenes	**0.306**	0.020	ug/L	0.35		88.1	70-130		30	
1,2,3-Trichloropropane	**0.296**	0.020	ug/L	0.24		123	70-130		30	
sec-Butylbenzene	**0.265**	0.020	ug/L	0.22		121	70-130		30	
Isopropylbenzene	**0.236**	0.020	ug/L	0.20		120	70-130		30	
n-Propylbenzene	**0.249**	0.020	ug/L	0.20		126	70-130		30	
4-Isopropyltoluene	**0.267**	0.020	ug/L	0.22		122	70-130		30	
Surrogate: 4-Bromofluorobenzene	*0.147*		*ug/L*	*0.14*		*103*	*70-130*			
Fixed Gases by TCD - Quality Control										
*Batch B9K0626 - *** DEFAULT PREP ****										
Blank (B9K0626-BLK1)				Prepared & Analyzed: 11/11/19						
Methane	<0.10	0.10	% by Volume							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B9K0626 - *** DEFAULT PREP ****										
Blank (B9K0626-BLK1) Continued				Prepared & Analyzed: 11/11/19						
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B9K0626-BS1)				Prepared & Analyzed: 11/11/19						
Methane	**2.51**	0.10	% by Volume	2.5		100	75-125			
Oxygen	**2.20**	0.10	% by Volume	2.0		110	75-125			
Carbon Dioxide	**8.76**	0.10	% by Volume	7.5		117	75-125			
LCS Dup (B9K0626-BSD1)				Prepared & Analyzed: 11/11/19						
Methane	**2.63**	0.10	% by Volume	2.5		105	75-125	4.83	30	
Oxygen	**2.24**	0.10	% by Volume	2.0		112	75-125	1.53	30	
Carbon Dioxide	**8.81**	0.10	% by Volume	7.5		117	75-125	0.546	30	
Duplicate (B9K0626-DUP1)				**Source: 9J28017-01**	Prepared & Analyzed: 11/11/19					
Methane	**<1.0**	1.0	% by Volume		<0.20				30	
Oxygen	**19.6**	1.0	% by Volume		19.7			0.764	30	
Carbon Dioxide	**<1.0**	1.0	% by Volume		<0.20				30	
*Batch B9K0706 - *** DEFAULT PREP ****										
Blank (B9K0706-BLK1)				Prepared & Analyzed: 11/07/19						
Methane	<0.20	0.20	% by Volume							
Oxygen	**0.382**	0.20	% by Volume							

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B9K0706 - *** DEFAULT PREP ****										
Blank (B9K0706-BLK1) Continued				Prepared & Analyzed: 11/07/19						
Carbon Dioxide	<0.20	0.20	% by Volume							
Duplicate (B9K0706-DUP1)			**Source: 9J28017-20**	Prepared & Analyzed: 11/07/19						
Methane	**<0.20**	0.20	% by Volume						30	
Oxygen	**4.42**	0.20	% by Volume		4.50			1.97	30	
Carbon Dioxide	**8.95**	0.20	% by Volume		8.81			1.58	30	
*Batch B9K0806 - *** DEFAULT PREP ****										
Blank (B9K0806-BLK1)				Prepared & Analyzed: 11/08/19						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B9K0806-BS1)				Prepared & Analyzed: 11/08/19						
Methane	**2.38**	0.10	% by Volume	2.5		95.0	75-125			
Oxygen	**2.16**	0.10	% by Volume	2.0		108	75-125			
Carbon Dioxide	**8.59**	0.10	% by Volume	7.5		115	75-125			
LCS Dup (B9K0806-BSD1)				Prepared & Analyzed: 11/08/19						
Methane	**2.73**	0.10	% by Volume	2.5		109	75-125	14.1	30	
Oxygen	**2.26**	0.10	% by Volume	2.0		113	75-125	4.44	30	
Carbon Dioxide	**9.14**	0.10	% by Volume	7.5		122	75-125	6.24	30	
Duplicate (B9K0806-DUP1)			**Source: 9J28017-33**	Prepared & Analyzed: 11/08/19						

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B9K0806 - *** DEFAULT PREP ****										
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**1.37**	0.20	% by Volume		1.35			1.62	30	
Carbon Dioxide	**3.37**	0.20	% by Volume		3.29			2.40	30	
*Batch B9K1215 - *** DEFAULT PREP ****										
Blank (B9K1215-BLK1)				Prepared & Analyzed: 11/12/19						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B9K1215-BS1)				Prepared & Analyzed: 11/12/19						
Methane	**2.47**	0.10	% by Volume	2.5		98.9	75-125			
Oxygen	**2.17**	0.10	% by Volume	2.0		109	75-125			
Carbon Dioxide	**8.53**	0.10	% by Volume	7.5		114	75-125			
LCS Dup (B9K1215-BSD1)				Prepared & Analyzed: 11/12/19						
Methane	**2.69**	0.10	% by Volume	2.5		108	75-125	8.56	30	
Oxygen	**2.23**	0.10	% by Volume	2.0		111	75-125	2.41	30	
Carbon Dioxide	**9.16**	0.10	% by Volume	7.5		122	75-125	7.08	30	
Duplicate (B9K1215-DUP1)			**Source: 9J28017-45**	Prepared & Analyzed: 11/12/19						
Methane	**<1.0**	1.0	% by Volume		<0.20				30	
Oxygen	**19.9**	1.0	% by Volume		19.2			3.73	30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B9K1215 - *** DEFAULT PREP ****										
Duplicate (B9K1215-DUP1) Continued			**Source: 9J28017-45**	Prepared & Analyzed: 11/12/19						
Carbon Dioxide	**<1.0**	1.0	% by Volume		<0.20				30	
*Batch B9K1326 - *** DEFAULT PREP ****										
Blank (B9K1326-BLK1)				Prepared & Analyzed: 11/13/19						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B9K1326-BS1)				Prepared & Analyzed: 11/13/19						
Methane	**2.43**	0.10	% by Volume	2.5		97.3	75-125			
Oxygen	**2.09**	0.10	% by Volume	2.0		104	75-125			
Carbon Dioxide	**8.65**	0.10	% by Volume	7.5		115	75-125			
LCS Dup (B9K1326-BSD1)				Prepared & Analyzed: 11/13/19						
Methane	**2.65**	0.10	% by Volume	2.5		106	75-125	8.65	30	
Oxygen	**2.28**	0.10	% by Volume	2.0		114	75-125	8.83	30	
Carbon Dioxide	**8.99**	0.10	% by Volume	7.5		120	75-125	3.83	30	
Duplicate (B9K1326-DUP1)			**Source: 9J28017-50**	Prepared & Analyzed: 11/13/19						
Methane	**<1.0**	1.0	% by Volume		<0.20				30	
Oxygen	**18.8**	1.0	% by Volume		18.8			0.00	30	
Carbon Dioxide	**<1.0**	1.0	% by Volume		<0.20				30	
*Batch B9K1406 - *** DEFAULT PREP ****										

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187331
Date Received: 10/30/19
Date Reported: 11/21/19

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
*Batch B9K1406 - *** DEFAULT PREP ****										
Blank (B9K1406-BLK1)				Prepared & Analyzed: 11/14/19						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B9K1406-BS1)				Prepared & Analyzed: 11/14/19						
Methane	**2.94**	0.10	% by Volume	2.5		117	75-125			
Oxygen	**2.27**	0.10	% by Volume	2.0		114	75-125			
Carbon Dioxide	**8.96**	0.10	% by Volume	7.5		120	75-125			
LCS Dup (B9K1406-BSD1)				Prepared & Analyzed: 11/14/19						
Methane	**2.91**	0.10	% by Volume	2.5		116	75-125	0.855	30	
Oxygen	**2.24**	0.10	% by Volume	2.0		112	75-125	1.60	30	
Carbon Dioxide	**8.77**	0.10	% by Volume	7.5		117	75-125	2.20	30	
Duplicate (B9K1406-DUP1)				**Source: 9J28017-55**	Prepared & Analyzed: 11/14/19					
Methane	**<1.0**	1.0	% by Volume		<0.20				30	
Oxygen	**18.1**	1.0	% by Volume		19.0			4.64	30	
Carbon Dioxide	**<1.0**	1.0	% by Volume		<0.20				30	

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	**AA Project No:**	MB187331
Project No:	693142	**Date Received:**	10/30/19
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	11/21/19

Special Notes

[1] = ******* : Exceeds lower control limit.

[2] = **QL-02** : The recovery for this analyte is outside of the acceptance control limits for the LCS. The data was validated based on the acceptable recovery for this analyte in the LCSD.

[3] = **QL-03** : The recovery for this analyte is outside of the acceptance control limits for the LCSD. The data was validated based on the acceptable recovery for this analyte in the LCS.

[4] = **R-05** : The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.

Allen Aminian
QA/QC Manager

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 19136
70056434
Page ___ of ___

Client: JACO35	**Project Name / No.:** VENDOR MONROE NORWALK	**Sampler's Name:** [illegible]	
Project Manager:	**Site Address:** 15306 NORWALK BLVD	**Sampler's Signature:**	
Phone:	**City:** NORWALK	**P.O. No.:**	
Fax:	**State & Zip:** CA	**Quote No.:**	

TAT Turnaround Codes **

(1) = Same Day Rush
(2) = 24 Hour Rush
(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	7015	703	Fixed Gases	Special Instructions
SVM-1-5	9J28017 -01	10-28-19	0727	V	1	X	X	X	
SVM-1-15	-02		0728	V	1	X	X	X	
SVM-2-5	-03		0757	V	1	X	X	X	
SVM-15-7	-04		0911	V	1	X	X	X	
SVM-15-15	-05		0915	V	1	X	X	X	
SVM-15-22	-06		0916	V	1	X	X	X	
SVM-6-7	-07		0942	V	1	X	X	X	
SVM-6-13	-08		0943	V	1	X	X	X	
SVM-7-7	-09		1010	V	1	X	X	X	
SVM-7-13	-10		1015	V	1	X	X	X	
SVM-7-13 DUP	-11		1015	V	1	X	X	X	
AMBIENT AIR	-12		1040	V	1	X	X		
SVM-10-15	-13		1053	V	1	X	X	X	
SVM-5-5	-14		1142	V	1	X	X	X	
SVM-5-15	-15		1150	V	1	X	X	X	

For Laboratory Use

Date 11/1/19 Time 13:46
TAT 5 Days

A.A. Project No.: MB187331 / 9J28017

Relinquished by	Date	Time	Received by
[signature]	10-28-19	1325	[signature]
[signature]	10-28-19	15:00	[signature]

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 19137
70056427
Page 2 of 2

Client: SAIC35	Project Name / No.: KINDER MORGAN NORWALK	Sampler's Name: WILLIAM SCHOPPERT
Project Manager:	Site Address: 15306 NORWALK BLVD	Sampler's Signature:
Phone:	City: NORWALK	P.O. No.:
Fax:	State & Zip: CA.	Quote No.:

TAT Turnaround Codes **

(1) = Same Day Rush
(2) = 24 Hour Rush
(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TDS	TDS	Ferrocyanide							Special Instructions
SVM-8-5	9J28017 -16	10/28/19	1223	W	1	X	X	X							
SVM-8-15	-17		1225	W	1	X	X	X							
SVM-16-7	-18		1306	W	1	X	X	X							
SVM-16-16	-19		1307	W	1	X									
SVM-16-22	-20		1309	W	1	X	X	X							
															'19 OCT 28 1652

For Laboratory Use

Date 11/1/19 Time 13:48
Temp 5 Date Time

A.A. Project No.: MB187331 (9J28017)

	Date	Time	
Relinquished by	10-28-19	1345	Received by
Relinquished by	10/28/19	15:00	Received by
Relinquished by	Date	Time	Received by

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 19144
70056429
Page 1 of 2

Client: JACOBS	**Project Name / No.:** KINDER MORGAN NORWALK	**Sampler's Name:** WILLIAM SCHLOSSMACHER
Project Manager:	**Site Address:** 15306 NORWALK BLVD	**Sampler's Signature:**
Phone:	**City:** NORWALK	**P.O. No.:**
Fax:	**State & Zip:** CA.	**Quote No.:**

TAT Turnaround Codes **

(1) = Same Day Rush
(2) = 24 Hour Rush
(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO15	TO3	FIXED GAS							Special Instructions
SVM-3-5	9J28017 -21	10-29-19	0728	V	1	X	X	X							
SVM-3-15	-22		0734	V	1	X	X	X							
SVM-12-15	-23		0818	V	1	X	X	X							
SVM-12-7	-24		0823	V	1	X	X	X							
SVM-12-22	-25		0829	V	1	X	X	X							
SVM-11-7	-26		0903	V	1	X	X	X							
SVM-11-15	-27		0903	V	1	X	X	X							
SVM-11-22	-28		0905	V	1	X	X	X							
SVM-13-7	-29		0922	V	1	X	X	X							
SVM-13-15	-30		0923	V	1	X	X	X							
SVM-13-22	-31		0930	V	1	X	X	X							
SVM-13-22 DUP	-32		0930	V	1	X	X	X							
SVM-14R-22	-33		1000	V	1	X	X	X							
SVM-14R-8	-34		1006	V	1	X	X	X							
SVM-14R-16	-35		1009	V	1	X	X	X							

For Laboratory Use

11/1/19 13:48
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A.A. Project No.: MB 187351 / 9J28017

	Date	Time	
Relinquished by	10-29-19	1155	Received by
Relinquished by	10/29/19	1500	Received by
Relinquished by	Date	Time	Received by

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AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 19145
70056430
Page 2 of 2

Client: JACOBS	**Project Name / No.:** KINDER MORGAN NORWALK	**Sampler's Name:** WILLIAM SCHRUMPF	
Project Manager:	**Site Address:** 15306 NORWALK BLVD	**Sampler's Signature:**	
Phone:	**City:** NORWALK	**P.O. No.:**	
Fax:	**State & Zip:** CA	**Quote No.:**	

TAT Turnaround Codes **

(1) = Same Day Rush
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(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO15	TO3	FIXED GAS							Special Instructions
						Please enter the TAT Turnaround Codes ** below									
SVP-108-5	9J28017-36	10-29-19	1106	V	1	X	X	X							
SVP-109-10	-37		1110	V	1	X	X	X							
AMBIENT AIR	-38		1133	V	1	X	X	X							
SV-230-10	-39		1144	V	1	X	X	X							
SV-230-5	-40		1146	V	1	X	X	X							

For Laboratory Use

MB1R7331
11/1/19 13:48
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A.A. Project No.: MB1R7331 / 9J28017

	Relinquished by	Date	Time	Received by
		10-29-19	1155	
		10-29-19	1500	

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AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 1915 J
70056301
Page 1 of 2

Client: JACO135	**Project Name / No.:** KINDER MORGAN NORWALK	**Sampler's Name:** WILLIAM SCHRAMECK	
Project Manager:	**Site Address:** 15306 NORWALK BLVD	**Sampler's Signature:**	
Phone:	**City:** NORWALK	**P.O. No.:**	
Fax:	**State & Zip:** CA.	**Quote No.:**	

TAT Turnaround Codes **

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(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO15	TO3	ENGINEER							Special Instructions
SVM-21-14.5	9J28017 -41	10-30-19	0745	V	1	X	X	X							
SVM-21-5	-42		0757	V	1	X	X	X							
SVM-20-10	-43		0830	V	1	X	X	X							
SVM-20-5	-44		0832	V	1	X	X	X							
SVM-19-5	-45		0852	V	1	X	X	X							
SVM-23-5	-46		0925	V	1	X	X	X							
SVM-23-14.5	-47		0929	V	1	X	X	X							
SVM-22-14.5	-48		0937	V	1	X	X	X							
SVM-22-5	-49		0952	V	1	X	X	X							
SVM-9-5	-50		1007	V	1	X	X	X							
SVM-9-14.5	-51		1008	V	1	X	X	X							
AMBIENT AIR	-52		1025	V	1	X	X								
SVM-18-14.5	-53		1047	V	1	X	X	X							
SVM-18-5	-54		1045	V	1	X	X	X							
SVM-17-5	-55		1123	V	1	X	X	X							

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11/1/19 13:48
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A.A. Project No.: MB187331 / 9J28017

	Relinquished by	Date	Time	Received by
1		10-30-19	1230	
2		10-30-19	15:00	
3				

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AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

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Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 19182
70056433
Page 2 of 2

Client: JACOBS	**Project Name / No.:** KINDER MORGAN NORWALK	**Sampler's Name:** WILLIAM SCHOONMAKER
Project Manager:	**Site Address:** 15306 NORWALK BLVD	**Sampler's Signature:**
Phone:	**City:** NORWALK	**P.O. No.:**
Fax:	**State & Zip:** CA	**Quote No.:**

TAT Turnaround Codes **

(1) = Same Day Rush
(2) = 24 Hour Rush
(3) = 48 Hour Rush
(4) = 72 Hour Rush
(5) = 5 Day Rush
X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	1015	783	PAH (625)								Special Instructions
						Please enter the TAT Turnaround Codes ** below										
SVM-17-14.5	9J28017-56	10-30-19	1124	V	1	X	X	X								
SVP-109-5	-57		1205	V	1	X	X	X								
SVP-109-10	-58		1206	V	1	X	X	X								
SVP-109-10 DUP	-59		1206	V	1	X	X	X								
SV-227-10	-60		1214	V	1	X	X	X								
SV-227-5	-61		1221	V	1	X	X	X								

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11/1/19 13:48
5

A.A. Project No.: MB 187331 / 9J28017

	Relinquished by	Date	Time	Received by
		10-30-19	1230	
	Relinquished by	Date	Time	Received by
		10-30-19	15:00	
	Relinquished by	Date	Time	Received by

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project. Payment for services is due within 30 days from the date of invoice. Sample(s) will be disposed of after 45 days following the submittal of the sample(s) to American Analytics.