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SFPP Norwalk Pump Station
Norwalk, California

Fourth Quarter 2021 Remediation Progress Report

Final

February 15, 2022

Kinder Morgan, Inc.



SFPP Norwalk Pump Station

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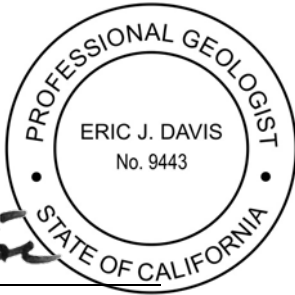

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February 15, 2022

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Contents

Acronyms and Abbreviations..... iii

1. Introduction 1

2. Description of Remediation Systems..... 2

 2.1 Biosparge System 3

 2.1.1 Biosparge Well BS-01 (Not Operating) 3

 2.1.2 Biosparge Well BS-02 (Operating) 3

 2.1.3 Biosparge Well BS-03 (Operating) 3

 2.2 Soil Vapor Extraction System 3

3. Remediation Progress and Optimization..... 5

 3.1 Hydrocarbon Mass Removal from the Biosparge and Soil Vapor Extraction Systems..... 5

 3.2 Natural Source Zone Depletion Assessment..... 12

4. Current Site Conditions, Trends, and Interpretation..... 16

 4.1 Groundwater Stability Trend Analysis and LNAPL Observations 16

 4.2 Soil Vapor Monitoring Program 17

 4.3 Soil Vapor Monitoring Results 18

5. Transition Metric Summary, Planned 2022 Activities, and Recommendations..... 19

 5.1 Transition Metric Summary 19

 5.2 Planned 2022 Activities 20

 5.3 Recommendations and Path Forward 21

6. References..... 22

Appendixes

A Laboratory Analytical Reports

B Phase I Natural Source Zone Depletion Preliminary Results – Technical Memorandum and Updated Helium Diffusion Calculations

C BS-02 Narrative and Operations Data

D HSVE-01 and BS-03 Narrative and Operations Data

E API Workbook (GMW-23)

Tables

- 1 Remediation Well Construction and Status
- 2 Extracted Vapor Analytical Results
- 3 Biosparge System Operation Summary
- 4 Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells
- 5 Vapor Remediation System Operation Summary
- 6 Field Measurements and Laboratory Soil Vapor Analytical Results – November 2021

Figures

- 1 Site Location Map
- 2 Remediation System Layout
- 3 Mass of VOCs Removed Quarterly by the Soil Vapor Extraction System
- 4 Influent VOC Concentrations into the Soil Vapor Extraction System
- 5 Current and Historical Extent of Dissolved Phase and LNAPL

Exhibits

- 1 Vapor Mass Recovery Rate Over Time
- 2 BS-02 Decline Curve VOCs versus Cumulative Mass Removed
- 3 BS-02 ¹⁴C Corrected Cumulative Mass Removed
- 4 BS-02 Influent VOCs and Oxygen Concentrations Over Time
- 5 Individual Well Decline Curves
- 6 HSVE-01 and BS-03 Flow-scfm and VOCs-ppmv from April 2021 through December 2021
- 7 Soil Vapor Monitoring Field Screening Data from April 2021 through December 2021
- 8 Preliminary NSZD Rates and Treatment Phases
- 9 Average Annual Gallons of Hydrocarbon per Area

Acronyms and Abbreviations

µg/L	microgram(s) per liter
API	American Petroleum Institute
ASTM	ASTM International
Ba ¹⁴ CO ₃	barium carbonate
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
CH2M	CH2M HILL, now part of Jacobs Engineering Group Inc.
CO ₂	carbon dioxide
COPC	contaminant(s) of potential concern
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
DFSP	Defense Fuel Support Point
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ft ² /day	square foot/feet per day
gal/year	gallon(s) per year
GWE	groundwater extraction
GWTS	groundwater treatment system
HSVE	horizontal soil vapor extraction
IRAP	interim remedial action plan
ITRC	Interstate Technology and Regulatory Council
Jacobs	Jacobs Engineering Group Inc.
Kinder Morgan	Kinder Morgan, Inc.
lb(s)	pound(s)
lb(s)/day	pound(s) per day
lb(s)/yr	pound(s) per year
LNAPL	light nonaqueous phase liquid
MTBE	methyl tertiary butyl ether
No.	number
NSZD	natural source zone depletion
O ₂	oxygen
PCE	tetrachloroethylene
ppmv	parts per million by volume

Regional Board	California Regional Water Quality Control Board, Los Angeles Region
RSL	regional screening level
RTO	regenerative thermal oxidizer
scfm	standard cubic feet per minute
SFPP	SFPP, L.P., an indirect subsidiary of Kinder Morgan, Inc.
SGI	The Source Group, Inc.
site	SFPP, L.P. Norwalk Pump Station located within Defense Fuel Support Point Norwalk, at 15306 Norwalk Boulevard, Norwalk, California
SVE	soil vapor extraction
SVM	soil vapor monitoring
SVP	soil vapor monitoring probe
TFE	total fluids extraction
TPH-g	total petroleum hydrocarbons quantified as gasoline
VOC	volatile organic compound

1. Introduction

This progress report summarizes remediation activities performed by Kinder Morgan, Inc. (Kinder Morgan) 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 2021 reporting period.

This progress report is being submitted pursuant to a request from the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) in its letter dated October 25, 2006 (Regional Board, 2006). Additional site background information can be found in the *Conceptual Site Model and Proposed Alternate Interim Remedy for Soil, Groundwater, and Light Nonaqueous Phase Liquid* report and *Light Nonaqueous Phase Liquid Conceptual Site Model Update* (CH2M¹, 2013 and 2018), as well as the recently published *Interim Remedial Action Plan (IRAP) – Implementing an NSZD Remedy* (Jacobs, 2022a). In addition, previously published quarterly remediation progress reports and semiannual groundwater monitoring reports, available for download on “GeoTracker,” the Regional Board’s internet-accessible database system, contain site background information, historical data, and updates on remedial activities.

This report summarizes the remediation systems and activities at the site for the period of October 1 through December 31, 2021, including:

- Operation and maintenance of active remediation systems performed by Kinder Morgan field personnel and outside subcontractors, including laboratory analysis of compliance and performance samples (Appendix A).
- Implementation of remediation system improvements.
- Continued evaluation of the natural source zone depletion (NSZD) performance monitoring pilot study (Appendix B).

This report also provides recommendations regarding ongoing remediation optimization, remedial transition points, and supplemental documentation, including:

- A summary of NSZD performance at the site (Appendix B), barium carbonate ($\text{Ba}^{14}\text{CO}_3$) sample results, NSZD rate estimates, and other analyses performed.
- Remedial progress in the southeastern area associated with horizontal biosparge well BS-02. Supplemental BS-02 monitoring data are in Appendix C.
- Remedial progress in the offsite/south-central area associated with horizontal biosparge (BS-03) well and horizontal soil vapor extraction (HSVE) well (HSVE-01). Supplemental BS-03 data are in Appendix D.

As documented in previous quarterly remediation progress reports, the groundwater treatment system (GWTS), consisting of groundwater extraction (GWE) and total fluids extraction (TFE) wells, has not been operated since February 2021. Therefore, this report focuses on active treatment systems and NSZD performance. A discussion of previous remedial system data related to the GWTS is retained in the IRAP (Jacobs, 2022a).

¹ CH2M HILL (CH2M) is now part of Jacobs Engineering Group Inc. (Jacobs).

2. Description of Remediation Systems

Kinder Morgan currently operates remediation systems consisting of vertical soil vapor extraction (SVE), HSVE, horizontal biosparge, and treatment of extracted soil vapors to address the south-central, offsite/south-central, and southeastern areas, which are the three areas of ongoing treatment and monitoring at the site: the south-central area is in the 36-acre parcel, the offsite/south-central area is in the residential area south of the 36-acre parcel, and the southeastern area is in the 15-acre parcel. These three primary treatment areas are labeled on Figure 2. In addition, NSZD has been implemented across the site.

The objectives of the remediation systems are to reduce light nonaqueous phase liquid (LNAPL) saturations, change the LNAPL phase, and if necessary, contain hydrocarbon constituents in groundwater and soil vapor. The remediation systems consist of the following remediation wells:

South-central Area

- Currently inactive
 - 13 TFE wells
 - 24 onsite vertical SVE wells
 - 1 horizontal biosparge well (BS-01)
- Currently active
 - 8 individual soil vapor monitoring (SVM) probes used for NSZD monitoring

Offsite/south-central Area

- Currently inactive
 - 7 TFE wells
 - 6 offsite vertical SVE wells (five are collocated with TFE wells)
- Currently active
 - 1 horizontal biosparge well (BS-03)
 - 1 horizontal SVE well (HSVE-01)
 - 10 individual SVM probes used for NSZD monitoring

Southeastern Area

- Currently inactive
 - 4 TFE wells (GM W-O-15, GMW-O-18, GMW-36, and GMW-SF-9)
 - 1 GWE well (GMW-SF-10)
- Currently active
 - 9 vertical SVE wells (three are co-located with TFE wells)
 - 1 horizontal biosparge well (BS-02)
 - 13 individual SVM probes used for NSZD monitoring

A summary of remediation systems and their operational status at the end of the fourth quarter of 2021 is presented in Table 1. The remediation system layout is shown on Figure 2.

The biosparging and SVE systems will continue to be active in the southeastern and offsite/south-central areas until their remedial objectives are met. The south-central area transitioned from biosparging and SVE to NSZD in December 2019 after achieving the remedial objectives established in the IRAP. Details regarding the remedial objectives, metrics, and contingencies are provided in the IRAP (Jacobs, 2022a). The initial NSZD pilot study results are included in Appendix B of this remediation progress report. New NSZD data, including ongoing rate measurements, will continue to be presented in quarterly remediation progress reports.

2.1 Biosparge System

The layout of the horizontal biosparging wells at the site is illustrated on Figure 2. Each horizontal well is constructed of 4-inch-diameter polyvinyl chloride with varying screen lengths placed at approximately 45 feet below ground surface (ft bgs). All biosparging systems are interlocked with their respective SVE capture systems such that biosparging cannot operate without the SVE capture system also operating. Additional details regarding the operation of BS-01, BS-02, and BS-03 during the fourth quarter of 2021 are provided in Section 3.

2.1.1 Biosparge Well BS-01 (Not Operating)

Biosparge well (BS-01) was installed in December 2014 in the south-central area of the site and operated from December 2016 until December 2019 when it was turned off to facilitate evaluation of NSZD performance.

2.1.2 Biosparge Well BS-02 (Operating)

A second biosparge well (BS-02) was installed in the southeastern area of the site in November 2017. The screen interval of BS-02 is 240 feet centered below the southeastern area hydrocarbon plume. BS-02 (and BS-03) are supplied with air by a compressor (883 standard cubic feet per minute [scfm]) installed in the fourth quarter 2018. BS-02 was turned on in May 2020 and has operated at a flow of 160 to 170 scfm since December 2021.

2.1.3 Biosparge Well BS-03 (Operating)

Biosparge well (BS-03) was installed in the offsite/south-central area in December 2019. The length of the BS-03 well screen is 500 feet, and the total length of the well is 770 feet. A horizontal SVE well (HSVE-01) was installed above BS-03 and is described in Section 3. BS-03 is centered below the offsite/south-central area hydrocarbon plume.

Startup activities began at BS-03 in May 2021, shortly after startup and sustained operation of HSVE-01 in early April 2021 (see details of HSVE-01 startup and operation in Section 3). BS-03 is currently operating at a flow between 200 and 250 scfm, as of December 2021.

2.2 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 (i.e., condensate) from the soil vapors. When the knock-out tank is full, the condensate water is hauled offsite for proper disposal. The soil vapors are treated in a regenerative thermal oxidizer (RTO) where volatile organic compounds (VOCs) are converted to carbon dioxide (CO₂) and water prior to being discharged to the atmosphere. Operation of the SVE system is conducted in accordance with Permits to Operate (Permit No. G46188 A/N 578779 and No. G46187 A/N 578777) issued by the South Coast Air Quality Management District.

The south-central SVE system remains offline as the area has transitioned to a NSZD remedy. The expanded southeastern SVE system was restarted on May 15, 2020, as part of BS-02 biosparging operations; the well network includes VEW-3, VEW-4, PZ-5, GMW-O-16, GMW-O-19, and MW-8, and TFE/SVE wells GMW-O-15,

GMW-O-18, and GMW-36. These wells connect to the RTO via a dedicated 1,200-foot-long, 6-inch-diameter high-density polyethylene header. The southeastern SVE system flow is monitored through two methods, a summation of flows from the individual well heads and a combined flow measurement in the southeastern SVE header.

HSVE-01 was installed in the offsite/south-central area in December 2019 and is designed to extract vapors created from operating biosparge well BS-03. HSVE-01 is constructed of 6-inch-diameter Schedule 10 stainless-steel casing and screen and was completed to a depth of approximately 20 ft bgs. The length of the HSVE-01 screen is 500 feet, and the total length of the well is 745 feet.

Baseline soil vapor data and groundwater data were collected prior to the startup of HSVE-01. HSVE-01 startup activities began in April 2021. Supplemental data from wells and vapor points in the offsite/south-central area are routinely collected to optimize the operation of operation of both HSVE-01 and BS-03. HSVE-01 operated at flows ranging between 200 and 550 scfm, averaging 400 scfm during the reporting period. Additional details regarding the operation of HSVE-01 during the fourth quarter of 2021 are discussed in Section 3.1. Table 2 is a summary of extracted vapor analytical results.

3. Remediation Progress and Optimization

Currently, remedial progress is being measured against the performance metrics defined in the IRAP (Jacobs, 2022a), which are as follows:

- Recover LNAPL mass to the maximum hydraulic extent practicable using existing wells.
- Achieve an active LNAPL removal rate (e.g., through biosparging/SVE) that is below or of similar magnitude to the ambient NSZD degradation rate.
- Demonstrate a decrease in the ratio of more volatile to less volatile dissolved- and vapor-phase constituents over time.
- Demonstrate SVE systems have reached a transition point based on decline curve analysis.
- Demonstrate stable or decreasing dissolved-phase plume extents and concentrations across the site using spatial plume statistics.
- Ensure the dissolved- and vapor-phase extents and concentrations are stable or decreasing in extent on a sitewide scale.

As these metrics are achieved, a transition to NSZD will be implemented on an area-by-area basis, along with contingency measures, if needed. All of these metrics are important; however, the active mass removal rate relative to the NSZD mass removal rate is an important proxy for all other remediation performance metrics. The overarching site management philosophy is that there are diminishing returns in operating active remedies when they are no longer able to remove mass at a significantly greater rate than NSZD. Moreover, there are significant cost considerations in terms of environmental sustainability (i.e., carbon footprint) associated with long-term operation of energy intensive active treatment systems. The following sections present the remedial progress specifically related to each of these metrics and efforts being made to optimize the remedies. Section 4 focuses on remedial operation data evaluation and Section 5 focuses on the resulting trends in vapors and groundwater and their respective metrics.

3.1 Hydrocarbon Mass Removal from the Biosparge and Soil Vapor Extraction Systems

Exhibit 1 below provides an overview of the VOC mass removal at the site collected weekly from the RTO combined header (i.e., it represents total SVE mass collected at the site as VOCs and may combine individual system data when biosparging systems overlap in operation). Narrative indicators are placed relative to the operation of each of the recent biosparging systems. The three biosparging systems at the site remove VOC mass at the highest rate during initial startup, followed by a predictable decline in VOC removal rate as the LNAPL adjacent to each system is depleted. Although BS-01 is no longer operating, an overview of the mass removed from the BS-01 treatment area and additional analysis of that system are presented in the IRAP (Jacobs, 2022a). The overall removal rates of each biosparging system is as follows:

- BS-01: Initially approximately 360,000 pounds per year (lbs/yr), and 3,600 lbs/yr at the end of operation
- BS-02: Initially approximately 36,000 lbs/yr, and 360 lbs/yr currently (actively operating)
- BS-03: Initially approximately 36,000 lbs/yr, and 3,600 lbs/yr currently (actively operating)

Supplemental data have also been collected from the SVE header for the vertical SVE wells in the southeastern area associated with BS-02 and HSVE-01 in the offsite/south-central area associated with BS-03 (Exhibit 1). Seasonal variations are apparent over the course of SVE operations, which accounts for the divergence in mass recovery rate near the beginning of BS-02 startup; however, later operation data indicate that mass removal rates are similar for the overall system mass removal and the offsite/south-central area mass removal (detailed data and analysis of BS-03 operations are described later in this section). The offsite/south-central area (BS-03) data

on Exhibit 1 illustrate alignment to overall system mass removal data, indicating BS-02 is no longer contributing mass recovery at the site beyond what could be achieved by NSZD. This observation is one indication that mass recovery in the southeastern area related to BS-02 operations has reached a transition point as defined in the IRAP remedial metrics (Jacobs, 2022a).

In addition to VOC mass removal, the biosparging systems enhance the biodegradation of hydrocarbons. The calculation and trends of biodegradation of hydrocarbon removal as well as the resulting indicators of LNAPL phase change are discussed in detail in the following sections. The methods for estimating the biosparging biodegradation rates are defined in the *Biosparging Effectiveness Evaluation and Recommendations, South-Central Area* (Jacobs, 2019a).

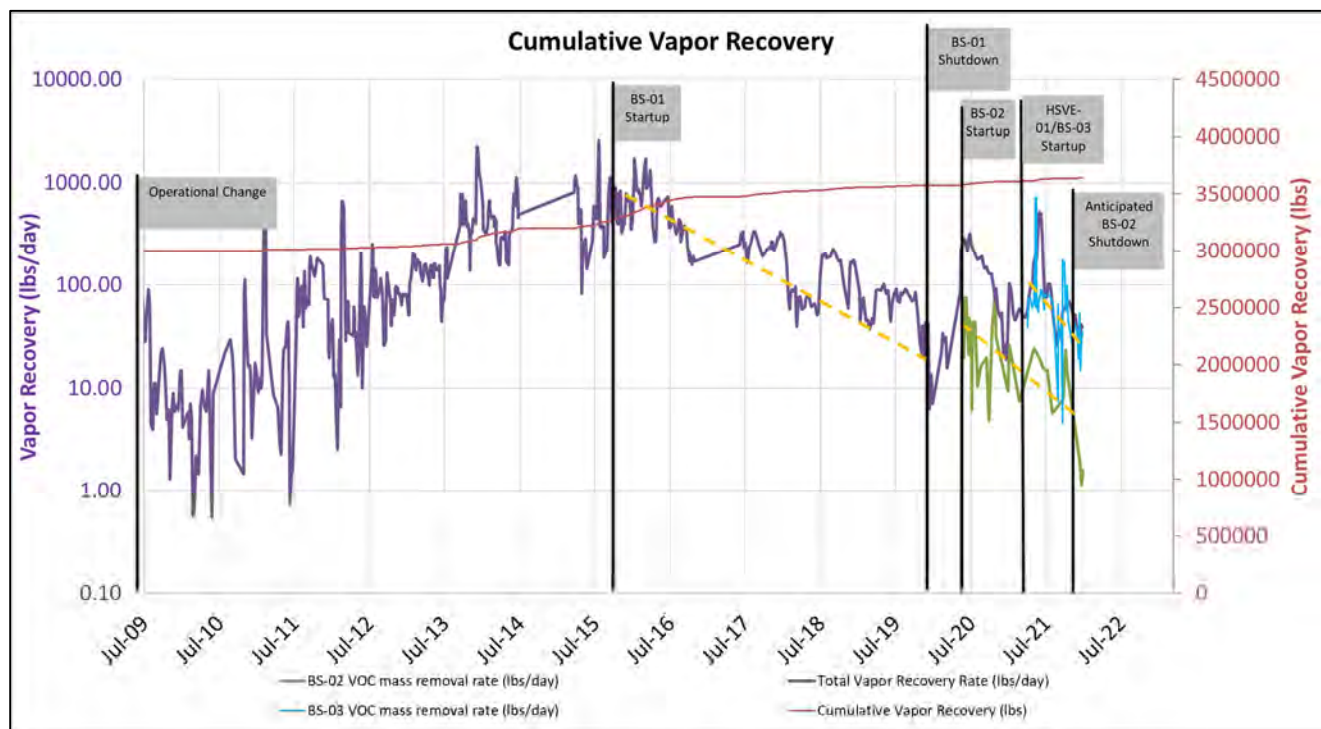


Exhibit 1. Vapor Mass Recovery Rate Over Time

Biosparge (BS-02)

The southeastern biosparge system (BS-02) operated for 1,600 hours with 74 percent uptime during the fourth quarter of 2021 (Table 3). A detailed narrative of the southeastern biosparge system is provided in the BS-02 supplemental data in Appendix C. Using the supplemental data from BS-02, a decline curve is illustrated in Exhibit 2 comparing VOC mass removal rate to cumulative VOC mass removed. The decline curve is useful for predicting the time to reach the transition point where the biosparging well starts removing less mass than NSZD would remove. The determination of NSZD rates is described in Section 3.2.

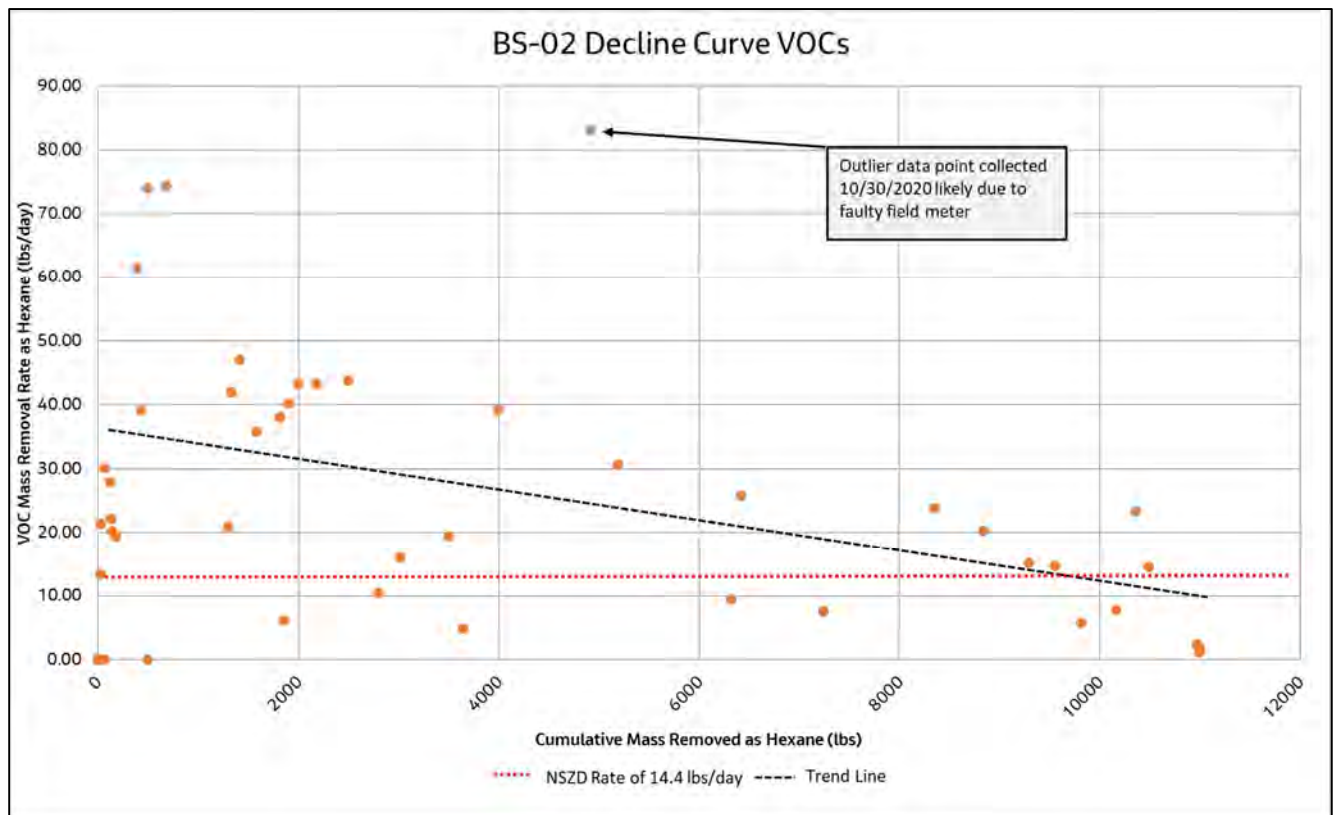


Exhibit 2. BS-02 Decline Curve VOCs versus Cumulative Mass Removed

In addition to total VOC mass removed, supplemental carbon-14 (¹⁴C) data allows for the estimation of mass removed specifically due to biodegradation. Although ¹⁴C sampling is typically part of the NSZD monitoring program, it is also used to monitor SVE gases to account for modern carbon fractions (i.e., degradation of hydrocarbons which are not sourced from petroleum). Essentially, ¹⁴C data is used to correct the VOC data from the SVE header.

Exhibit 3 illustrates this additional biodegradation mass removal. Biodegradation mass removed accounts for more than 70 percent of the mass removal and the increasing ¹⁴C correction factor from 0.55 to 0.70 (increasing fossil fuel fraction, not necessarily increasing fossil fuel degradation rate) indicates depletion of native hydrocarbon in the area.

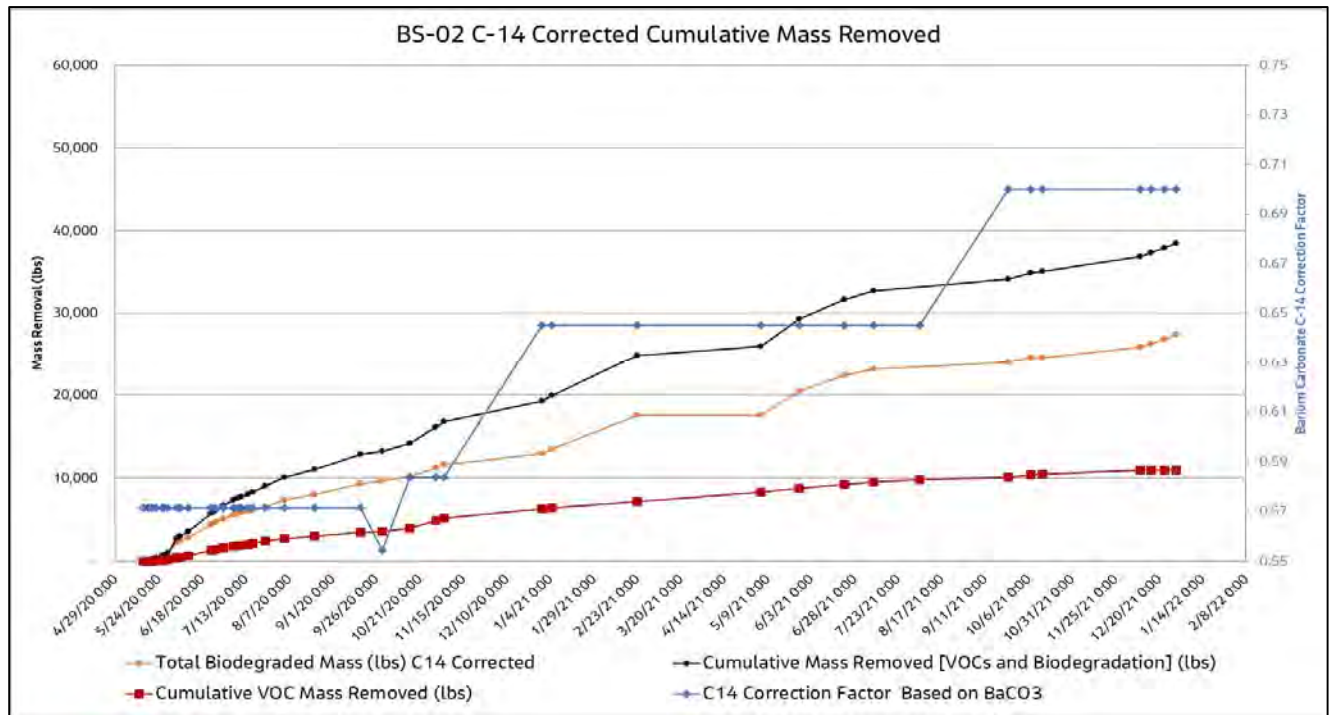


Exhibit 3. BS-02 ¹⁴C Corrected Cumulative Mass Removed

Exhibit 4 illustrates the VOCs and oxygen concentration at the SVE header in the southeastern area for BS-02 are diverging. Observed VOCs are declining from approximately 600 parts per million by volume (ppmv) to less than 100 ppmv and oxygen concentrations are increasing from approximately 18 to 20 percent; both trends support LNAPL in the area being depleted and phase changed (i.e., the reduction in the VOC content in the LNAPL).

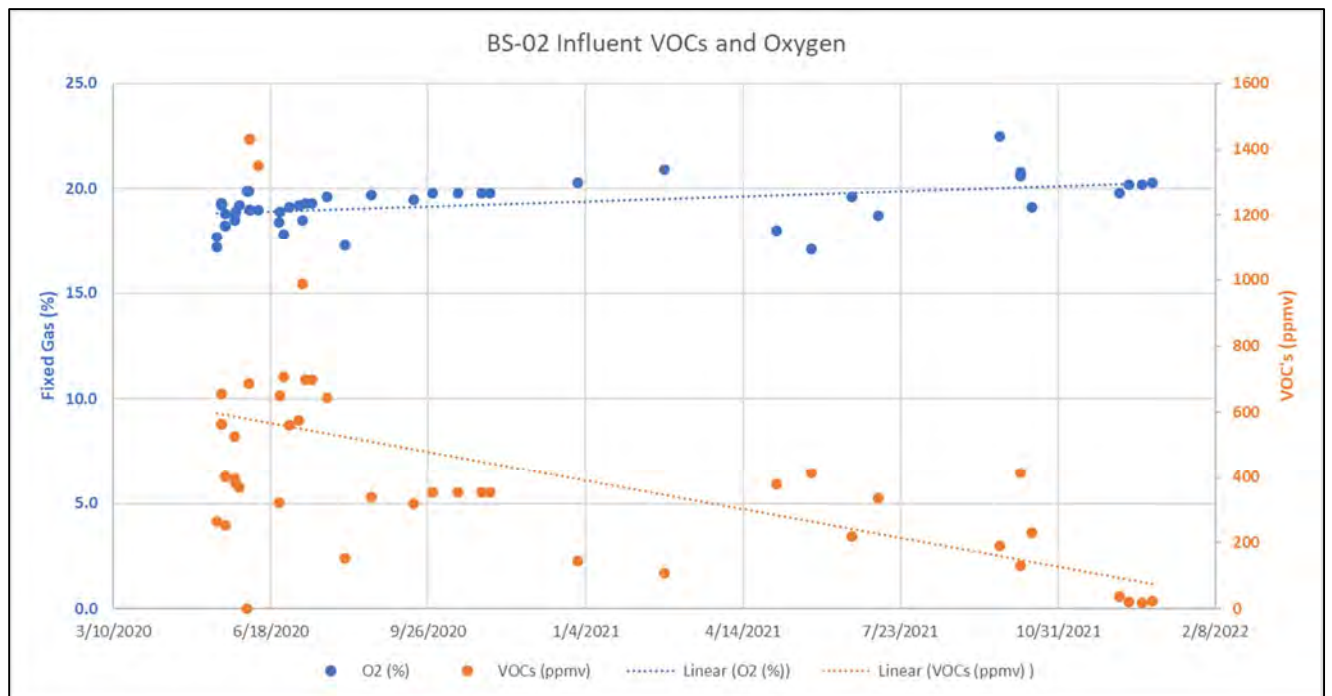


Exhibit 4. BS-02 Influent VOCs and Oxygen Concentrations over Time

Exhibit 5 illustrates individual SVE well decline curves (mass removal rate vs. cumulative mass removed per well) in the southeastern area, supporting observations at the SVE header (influent), demonstrating the granularized effect of biosparging in this area. Only two wells (PZ-5 and GMW-36) are contributing (<5 pounds per day [lbs/day]) to the overall VOCs observed at the header (BS-02). All other wells are no longer significantly contributing (<1.0 lb/day) to the mass removal in this area.

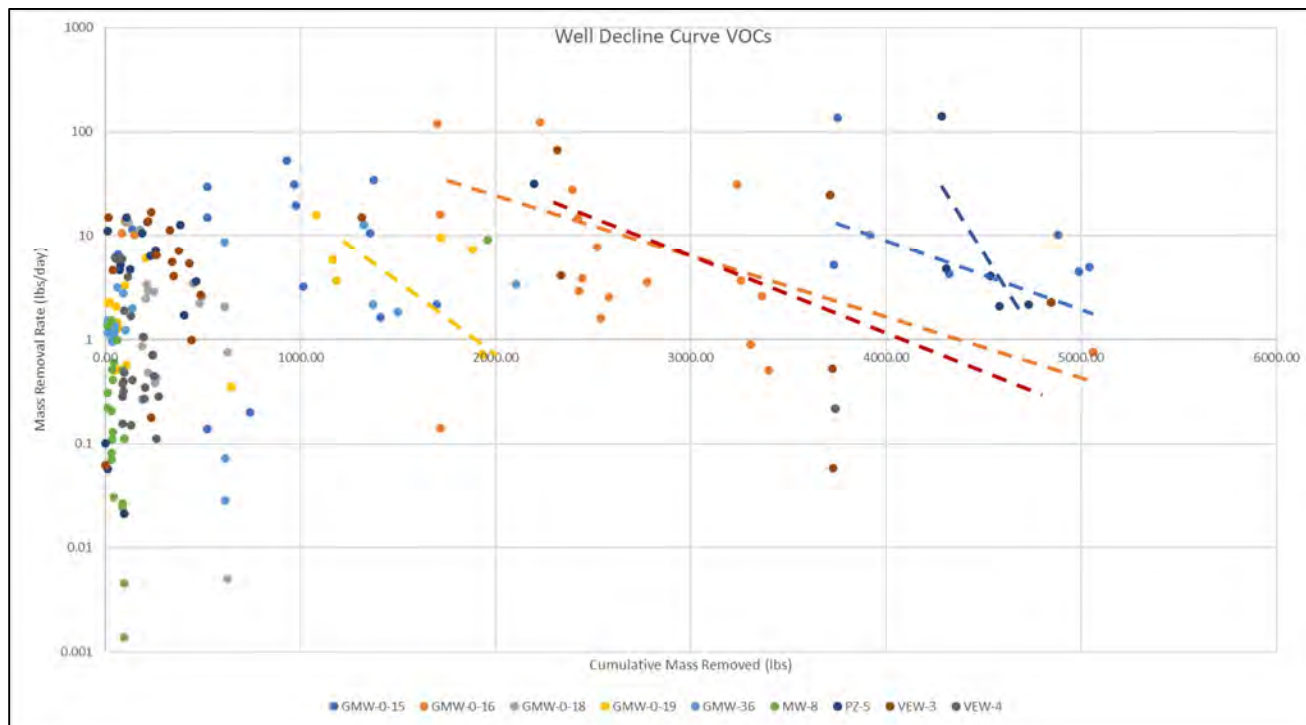


Exhibit 5. Individual Well Decline Curves (Mass Removal Rate lbs/day vs. Cumulative Mass Removed lbs)

The trends related to BS-02 and the southeastern area demonstrate the following transition metrics are being met:

- LNAPL mass has been recovered to the maximum hydraulic extent practicable.
- Active LNAPL removal rate (e.g., through biosparging/SVE) is below or of similar magnitude to the ambient NSZD degradation rate (discussed further in Section 3.2).
- The ratio of more volatile to less volatile vapor-phase constituents has decreased over time.
- The SVE systems have reached a transition point based on decline curve analysis.
- Vapor-phase extents and concentrations are stable or decreasing (SVE wellfield gases).

Soil Vapor Extraction Well (HSVE-01) and Biosparging Well BS-03

Operation of the offsite/south-central SVE system (HSVE-01) was initiated in the second quarter of 2021 and continued operating through the fourth quarter of 2021.

During the fourth quarter of 2021, HSVE-01 flow was on average 400 scfm and BS-03 operated at a flow ranging from 192-320 scfm. The flow rates, VOC mass removal, and VOC concentrations observed during operation of HSVE-01 during the fourth quarter of 2021 are illustrated on Exhibit 6. Observed patterns in flow and VOC concentrations are attributable to intermittent shutdown and restarts from various operational adjustments, as well as drip leg condensate clearings, which has been conducted weekly since the third quarter 2021.

Drip legs are collection pipes along the SVE conveyance line that trap and accumulate excess moisture from the air and prevent build up in the line that would otherwise hinder SVE performance.

The offsite/south-central biosparge (BS-03) operated for 1,800 hours with 86 percent uptime during the fourth quarter. The biosparge system flow (air injection) rate ranged from approximately 192-320 scfm. The relatively lower sparge flow reflects the gradual, stepwise startup procedure following intermittent operation of HSVE-01 due to frequent maintenance events (Exhibit 6). Since December 2021, BS-03 has been operating at approximately 250 scfm. A detailed data narrative for the offsite/south-central biosparge system is provided in Appendix D.

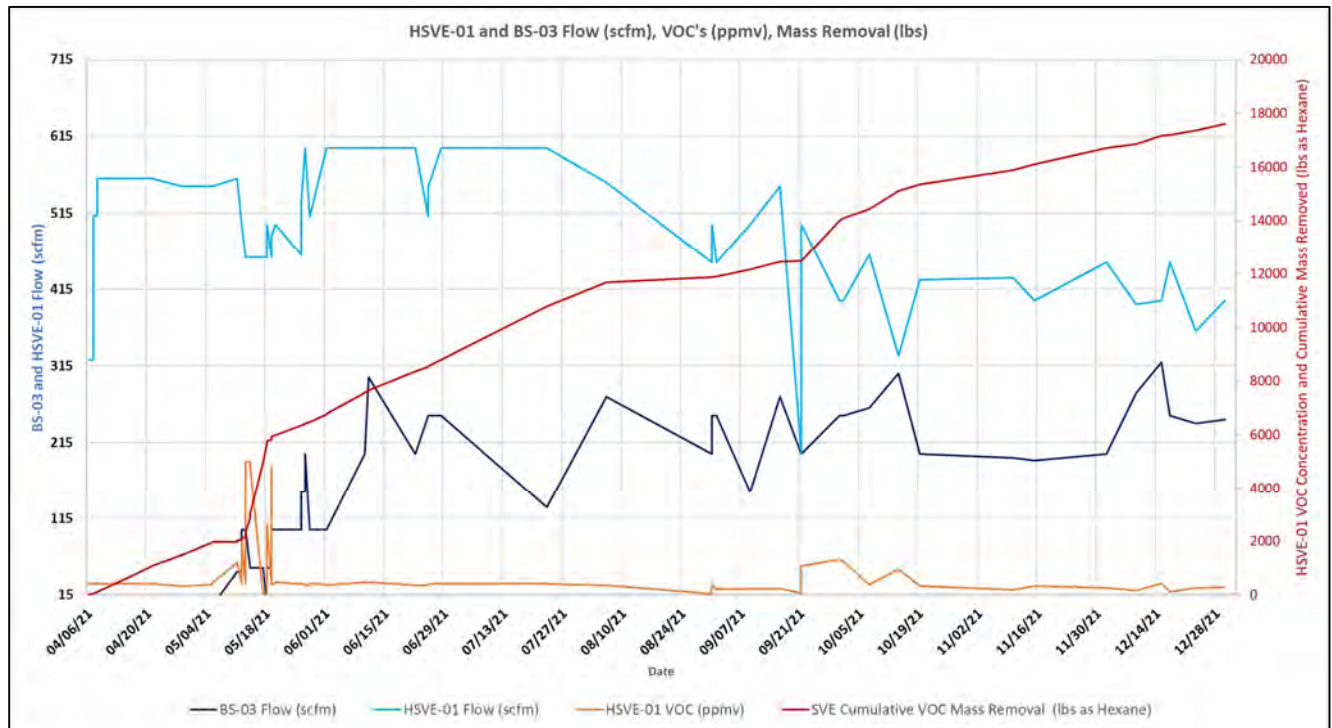


Exhibit 6. HSVE-01 and BS-03 Flow-scfm and VOCs-ppmv from April 2021 through December 2021

Groundwater elevations and LNAPL thicknesses were continuously evaluated in the field during startup of HSVE-01 and BS-03. Additional details and analysis regarding these thicknesses and elevations can be found in previous quarterly remediation progress reports. Table 4 provides updated elevations and thicknesses from the fourth quarter 2021.

Monthly vapor samples from the SVE system (influent, influent post-dilution, and effluent) were collected in October, November, and December 2021. The vapor samples were delivered to Air Technology Laboratories in City of Industry, California, for the following analyses:

- Fixed gases (methane, CO₂, oxygen, and argon) using ASTM International (ASTM) D1946
- VOCs using U.S. Environmental Protection Agency (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 A.

Based on weekly monitoring of the influent vapor concentration, vapor extraction flow rate, and hours of operation, the total mass of VOCs removed by combined SVE systems was 3,630 pounds during the fourth quarter of 2021. Total mass recovered by the SVE system has consistently decreased since the first quarter

of 2016 (where a high of 74,148 pounds of VOCs were recovered), when biosparging in the south-central area was implemented (see Figure 3). This finding is consistent with laboratory analytical data demonstrating that the influent VOC concentrations (benzene, toluene, ethylbenzene, and xylene [BTEX] and methyl tert butyl ether [MTBE]) have consistently decreased since initiating biosparging activities (Table 3, Figure 4), until startup of BS-02 (May 2020) and BS-03 (May 2021). The cumulative mass of VOCs removed since SVE was implemented in September 1995 is 3,641,507 pounds (Table 5). This cumulative mass removed by SVE does not include the mass removed by naturally occurring in-situ biodegradation.

Exhibit 7 illustrates the soil vapor field monitoring data prior to startup and during sustained operation of HSVE-01 and BS-03.

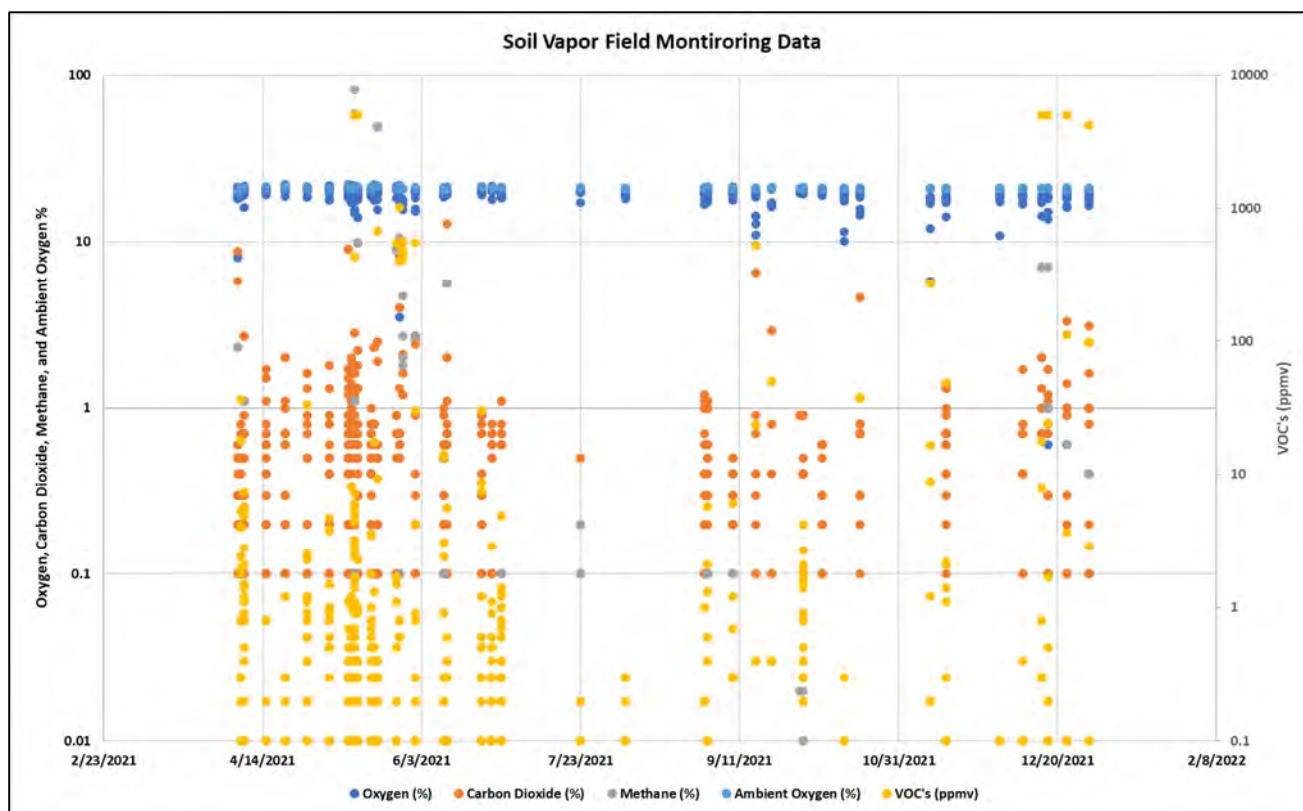


Exhibit 7. Soil Vapor Monitoring Field Screening Data (oxygen-%, carbon dioxide-%, methane-%, ambient oxygen-%, and VOCs-ppmv) from April 2021 through December 2021

Existing SVE wells and monitoring wells were included as part of the vapor monitoring program; however, their relatively long screens that intersect the water table allow for direct volatilization of vapors from groundwater. Additionally, these SVE wells contain a large volume of air that is not purged during every sampling event; therefore, they can only be directly compared with a subset of SVM probes. Generally, these existing SVE wells and monitoring wells contain higher VOC concentrations and over- or under-estimate actual vacuum or pressure in the subsurface; however, they are still a useful indicator for optimization of BS-03 flows.

During the fourth quarter 2021 operation of HSVE-01 and BS-03, soil vapor field monitoring data (VOCs) were slightly elevated (>10 ppmv) at the following locations: GMW-O-11 on October 19 and November 15; SVM-15D and SVM-15M on November 10; SVM-06D and SVM-07D on December 15; and SVM-06D and SVM-06S starting in December 17 (see Exhibit 7 above). Concentrations at SVM-06D and SVM-06S began to decline on December 30 and have since been approaching concentrations below 10 ppmv. This temporary increase in VOCs at SVM-06S/SVM-06D was likely due to an increase in the flow at BS-03 to 280 scfm in mid-December coupled

with significant rainfall events that month that would have introduced a destabilizing, yet transient, slug of porewater into the formation. Since then, the flow has been reduced to 150 scfm and VOC concentrations have continued to reduce to their prior concentrations. All other locations became elevated after drip leg clearing, which causes accumulation of VOCs at certain locations (i.e., SVM-07). These VOC accumulations are transient and discontinuous and decrease after clearing condensate. All other monitoring locations during the fourth quarter of 2021 were observed to be below 10 ppmv for VOCs.

Cumulative VOCs captured by HSVE-01 from startup (April 2021) through December 2021, were calculated using the same method used for previous SVE mass removal estimates and were observed to be approximately 15,500 pounds, averaging 30.4 lbs/day over the 91-day operation period. With biodegradation included, HSVE-01 has removed approximately 65,000 pounds of mass in this area. See Appendix D for a detailed data and operations narrative.

Overall, the combination of limited VOC detection SVM probes in the offsite/south-central area combined with the sustained radius of capture on average of at least 200 feet (as detailed in previous quarterly remediation progress reports), supports continued operation and optimization of BS-03 and HSVE-01 without adversely affecting surficial soil vapors or aboveground residential locations. The trends related to HSVE-01/BS-03 and the offsite/south-central area demonstrate the following transition metrics are in progress:

- HSVE-01/BS-03 continues to work towards LNAPL mass recovery to the maximum hydraulic extent practicable using existing wells.
- Active LNAPL removal rate (e.g., through biosparging/SVE) is decreasing towards ambient NSZD degradation rate.
- A decrease in the volatile concentration of vapor-phase constituents over time.
- SVE systems are starting to illustrate a declining trend (similar to BS-01 and BS-02) based on decline curve analysis.
- Vapor-phase extents and concentrations are stable or decreasing in extent.

3.2 Natural Source Zone Depletion Assessment

Updated NSZD calculations and analysis, as detailed in the recently published IRAP (Jacobs, 2022a), and discussed below, are also available to review in the *Natural Source Zone Depletion Preliminary Results* technical memorandum (Jacobs, 2020) provided in Appendix B. That technical memorandum explains in detail the NSZD monitoring methodology used at the site. Additional NSZD evaluations are ongoing and recent Ba¹⁴CO₃ sample results, received January 28, 2022, are incorporated into the *Natural Source Zone Depletion Final Results* technical memorandum (Jacobs, 2022b; in press). These results will complete the work proposed in the *Natural Source Zone Depletion Work Plan* (Jacobs, 2019b).

The comparative analysis of E-Flux trap and Ba¹⁴CO₃ sampling techniques for the analysis of the ¹⁴C signature of CO₂ efflux showed that both methods produce comparable results. Going forward, only Ba¹⁴CO₃ sampling techniques will be used at the site as they allow collection of NSZD data in the offsite/south-central area where surface flux meters would not be effective because the area is mostly paved private (residential) property, and Ba¹⁴CO₃ sampling techniques allow the collection of a higher density of samples across the site.

This NSZD evaluation evaluates NSZD processes occurring in the subsurface with consideration of historical and future remedial activities (e.g., biosparging operation). In 2019, NSZD rates with active remedies temporarily suspended were measured at up to approximately 1,400 gallons per year (gal/year) (10,000 lb/year) in terms of biodegradation occurring in the subsurface.

The south-central area NSZD footprint is approximately 7 acres, the southeastern area is approximately 3 acres, and the offsite/south-central area is approximately 4 acres based on current dissolved-phase extents.

On average across the site, this equates to approximately 100 gallons per acre per year (700 pounds per acre per year), recognizing each area at the site is at a different remedial phase and those average degradation rates vary in each area accordingly.

Exhibit 8 summarizes the overall preliminary NSZD rates for each area and separated by treatment phase. While biosparging is active in a given area, the NSZD rate is estimated based on the total biodegradation captured by the SVE network in that area. While biosparging is not active in a given area, the NSZD rate is calculated using either a gradient method with vapor probe data or NSZD surface flux measurements (i.e., LICOR meter). For example, Exhibit 8 illustrates the pre-biosparging NSZD rate for all areas, followed by the biosparging NSZD rate combined with VOC mass removal rate where data were available based on SVE influent analysis, followed by the post-biosparging NSZD rate. As illustrated in Exhibit 8, pre-biosparging NSZD rates are elevated due to the total degradation mass remaining in treatment areas. These rates then increase initially during biosparging (the higher range of the rates) and decrease near their transition point to NSZD (the lower range of the rates). Finally, the post-biosparging NSZD rate represents an ongoing NSZD rate without active biosparging. These metrics are not absolute as there is a limited overall petroleum mass to degrade, but do support the transition from active remediation to passive remedies. In summary, each of these areas is ready to transition to an NSZD remedy when the active biosparging mass removal rates decrease to a mass removal rate of a similar order of magnitude as the post-biosparging NSZD rate, keeping in mind the total remaining LNAPL mass has been depleted compared to pre-biosparging LNAPL mass.

	NSZD Rate/Active Remedy Removal Rate (gal/year) [year]	Range	Pre-Biosparging	During Biosparging	Post-Biosparging
Treatment Area	SOUTH-CENTRAL ONSITE AVERAGE	Max [year]	1,800 [2014]	2,100 [2016 VOC mass removal only]	1,200 [2021]
		Min [year]	800 [2016]	1,100 [2018 VOC mass removal only]	800 [2020]
	SOUTHEASTERN AVERAGE	Max [year]	1,000 [2014]	20,000 [2020]	100 [2021] Collected following BS-02 Shutdown
		Min [year]	500 [2020]	300 [2021]	Pending Biosparge Transition
	OFFSITE/SOUTH CENTRAL	Max [year]	600 [2014]	11,200 [2021 through Q3]	Pending Biosparge Transition
		Min [year]	200 [2021]	7,300 [2021 Q4, Still operating]	Pending Biosparge Transition

Legend				
Mass Removal Data Source	LICOR	Gradient Method (Global ¹⁴ C correction up to 2021 operational data 0.56)	Biosparge System Operational Data	

Exhibit 8. Preliminary NSZD Rates and Treatment Phases

In the offsite/south-central area, a majority of the surface cover consists of buildings and roadways, making it difficult to measure NSZD using NSZD surface flux methods (flux chamber or flux traps). Therefore, NSZD is calculated using the existing SVM probes and the NSZD gradient method (CRC CARE, 2018). The gradient method requires measuring the permeability in the vadose zone. To determine the permeability, helium diffusion tests were conducted in October 2020. Helium was injected and extracted at a series of nested SVM probes (SVM-9, SVM-12, SVM-17, SVM-18, SVM-19, SVM-20, SVM-21, SVM-23, SVM-24, and SVM-25), each of which has either two or three depths (approximately – 5 feet, 10+ feet, or 15+ feet) per location (see Appendix B for soil vapor probe depth details). Note that the locations tested were distributed across the entire site as the gradient method will be used as a comparative method to evaluate NSZD across all areas of the site. A helium diffusion rate was calculated for each depth interval in the nested locations using the methods outlined in the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Memorandum No. 44 (CRC CARE, 2018). As additional operational data are collected, location-specific helium diffusion values will be used to refine the location-specific NSZD rates; however, for these preliminary calculations, the calculated helium diffusion values were averaged and then converted into diffusion rates for O₂ and CO₂ using defined stoichiometric ratios. Additionally, the soil type in the vadose zone is relatively homogeneous at the site and averaging the diffusion values (similar to hydraulic conductivity values) provides a representative value.

Mass of O₂ and CO₂ was calculated by converting the historical average, annually from 2014 to the November 2021 sampling event, to percent concentration of each respective gas at each location into grams of gas per volume using the method outlined in the CRC CARE Technical Memorandum No. 44 (CRC CARE, 2018).

The NSZD rate for each location was then calculated using the diffusion and mass gradient values into Fick's Law (CRC CARE, 2018). Locations that did not observe an upward CO₂ gradient were assumed to have an NSZD rate of zero. These NSZD rates were corrected to account for modern carbon by applying the preliminary correction factor established from Ba¹⁴CO₃ samples collected at the site previously (see Appendix B). This NSZD gradient method is only comprehensively applicable to areas of the site when they are not undergoing biosparging operations because during biosparging operations most of the gas distribution is under advective flow. The corrected NSZD rates for the sampled SVM probes across the site areas from 2014 to 2021, while biosparging systems were not active, ranged from 50 to 1,800 gal/year of hydrocarbon, averaging 600 gal/year of hydrocarbon.

- For the south-central area the range was 800 to 1,800 gal/year of hydrocarbon, averaging 1,100 gal/year of hydrocarbon.
- For the southeastern area the range was 50 to 1,000 gal/year of hydrocarbon, averaging 300 gal/year of hydrocarbon.
- For the offsite/south-central area the range was 100 to 600 gal/year of hydrocarbon, averaging 300 gal/year of hydrocarbon.

Exhibit 9 illustrates a breakdown of NSZD rates by site area over time. For more detail on the helium diffusion and gradient method calculations, see Appendix B.

A graphic representation of the preliminary average of yearly NSZD rates across the site, as calculated using the gradient method, is included as Exhibit 9.

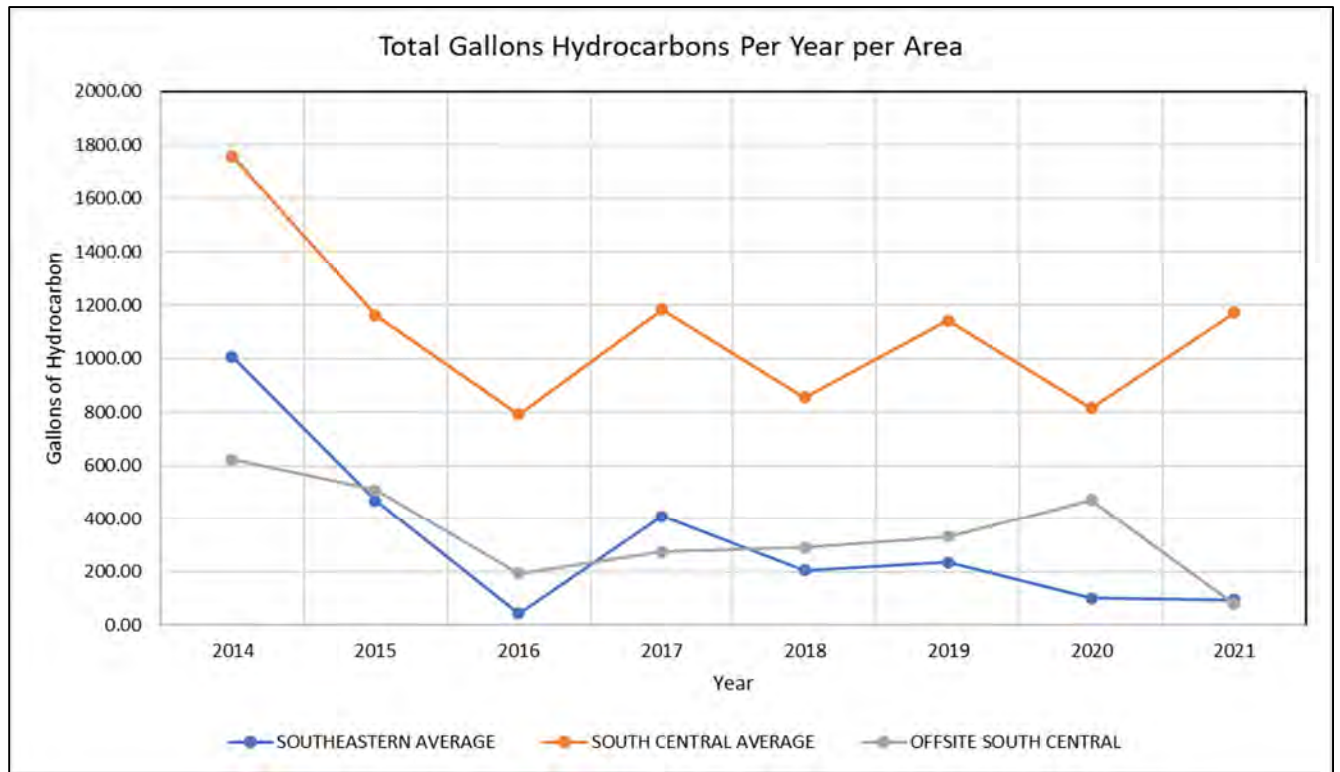


Exhibit 9. Average Annual Gallons of Hydrocarbon per Area

These trends related to NSZD demonstrate the following transition metrics have been met or are in progress:

- The ambient NSZD degradation rate is of a similar magnitude as active biosparging mass removal rates, considering the depletion of LNAPL in biosparging areas.
 - In particular, the south-central area and southeastern areas have reached the transition point based on NSZD rates.
 - The offsite/south-central area biosparging continues to make progress towards an NSZD transition point.

4. Current Site Conditions, Trends, and Interpretation

Routine sampling and monitoring of groundwater, soil gas, and SVE influent and effluent are performed to evaluate changes to the nature and extent of petroleum hydrocarbon impacts across the site as a result of ongoing remedial activities, including active treatment systems and natural biodegradation. Currently, limited groundwater sampling as part of the active remedial operations is performed during the first and third quarter of each year by Jacobs. In addition, sitewide groundwater monitoring is performed by Jacobs and The Source Group, Inc. (SGI) during the second quarter (first semiannual monitoring event) and fourth quarter (second semiannual monitoring event) of each year. The most recent report and data are presented in the *First Semiannual 2021 Groundwater Monitoring and Sampling Report, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California* (SGI, 2021), submitted to the Regional Board in July 2021, and *Third Quarter 2021 Remediation Progress Report, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California* (Jacobs, 2021), submitted to the Regional Board in October 2021.

4.1 Groundwater Stability Trend Analysis and LNAPL Observations

As discussed in the recently published IRAP report (Jacobs, 2022a), groundwater monitoring data indicate that the dissolved-phase plumes are decreasing or stable across the site because of operating treatment systems and due to natural biodegradation. A statistical analysis of site groundwater data collected through November 2021 was conducted for total petroleum hydrocarbons quantified as gasoline (TPH-g) and benzene. Only TPH-g trend analysis is discussed in this report, as benzene results are similar to TPH-g results and TPH-g is a more useful (and conservative) proxy for evaluation of both sitewide dissolved phase hydrocarbons and LNAPL. The other, less prevalent contaminants of potential concern (COPCs) are detailed in previously published semiannual groundwater monitoring reports. The most recent fourth quarter 2021 (second semiannual) groundwater monitoring data will be presented under separate cover by SGI in the standalone *Second Semiannual 2021 Groundwater Monitoring and Sampling Report* (SGI, 2022; in press).

To summarize, the statistical groundwater analysis for TPH-g, which includes the fourth quarter 2021 reporting period, demonstrated that most wells at the site (241 of 246 analyzed, or 98 percent) were either nondetect, decreasing, or stable in trends for TPH-g (using the whole dataset). The exceptions to nondetect, decreasing, or stable trends were at GMW-4 (south-central area), GMW-O-18 (southeastern area), MW-15 (south-central area), PZ-5 (southeastern area), and TF-23 (north central area). An analysis of more recent data (post-2016) for these five wells illustrates that one is stable (GMW-O-18), one is decreasing (PZ-5), two have not been sampled recently (MW-15 in 2014, now decommissioned and replaced with MW-15R, which as of May 2021 is nondetect with a stable trend) and (GMW-4 in 2013, now decommissioned and replaced with GMW-4R, which was 120 micrograms per liter ($\mu\text{g/L}$) TPH-g as of November 2021 exhibits a stable trend). Finally, one well (TF-23) exhibits an overall increasing trend but is outside of the remediation treatment area described in this report and therefore will not be discussed further.

These statistical analyses and compilation of the TPH-g trends demonstrate that the dissolved-phase plumes are stable and decreasing, have been stable/decreasing, and will continue decreasing across the site as a result of remedial operations at the site and ongoing NSZD processes.

LNAPL thicknesses historically are compiled in the groundwater elevation and gauging table, provided most recently in the IRAP (Jacobs, 2022a), for different sets of wells within the south-central, offsite/south-central, and southeastern areas. During recent years, LNAPL has been detected in only a few wells (approximately 9 out of 265 in 2021, 4 of which are in the remedial areas described in this report) at thicknesses of primarily 1 foot or less. These wells include GMW-23, GMW-29, GMW-30, and GMW-O-12, all of which have intermittent LNAPL presence with a maximum thickness of 0.61 foot, with the exception of GMW-23 (observed 5.62 feet of LNAPL in August 2021). The observed thickness in GMW-23 is likely a result of continued decline in groundwater elevations in the uppermost groundwater zone (Figure 5).

An updated LNAPL extent map is included on Figure 5. Overall, the horizontal and vertical distribution of LNAPL at this site is well defined. Most of the wells containing LNAPL at the site exhibit exaggerated LNAPL thickness behavior due to changes in groundwater elevation/precipitation.

Following the baildown of LNAPL and sampling at GMW-23 in August 2021, gauging was continued throughout the quarter at this well to assist in calculating transmissivity. Using the American Petroleum Institute (API) transmissivity workbook (API, 2016), gauging data (depth to product, depth to water) were input to calculate an estimated transmissivity at the well. Transmissivity at this well was calculated to be less than 0.01 square foot per day (ft²/day). Calculations of these testing events and results are available in Appendix E. Overall, transmissivity data indicate LNAPL beneath the site is at or near residual saturation and recovery of LNAPL from the limited locations where it currently exists would be ineffective based on published guidance from the Interstate Technology and Regulatory Council (ITRC) (ITRC, 2018).

The trends related to dissolved-phase groundwater and LNAPL (if present) at the site demonstrate the following transition metrics have been met:

- LNAPL mass recovery to the maximum hydraulic extent practicable:
 - Only four wells remain with measurable LNAPL; three are less than 1 foot in thickness and intermittent in presence, and the fourth is greater than 1 foot in thickness, which demonstrates a transmissivity an order of magnitude lower than ITRC guidance for recoverability

Dissolved-phase groundwater data demonstrate:

- Decrease in the ratio of more volatile to less volatile dissolved-phase constituents over time
- Stable or decreasing dissolved-phase plume extents and concentrations across the site
 - Downgradient contingency wells have been and remain nondetect

4.2 Soil Vapor Monitoring Program

Kinder Morgan utilizes a network of 31 dual- or triple-nested SVM probes located within and around their three areas of ongoing treatment and monitoring at the site (Figure 2). These SVPs comprise 65 unique sample intervals from approximately 5, 10, and 15 ft bgs that are available for monitoring. This network of SVPs has expanded in recent years to support ongoing remedial action and performance monitoring.

Additional site background information and historical data from long-term SVM can be found in the recently published IRAP (Jacobs, 2022a), in previously submitted quarterly remediation progress reports available for download on GeoTracker, and in the standalone *Fourth Quarter 2021 Soil Vapor Monitoring* technical memorandum (SGI, 2022; in press).

During the fourth quarter of 2021, 55 native samples were collected from 26 SVPs (Figure 2) using 1.4-liter Summa canisters. Four ambient air samples were also collected. Sampling was performed in accordance with the Department of Toxic Substances Control's (DTSC) Advisory for Active Soil Gas Investigations (DTSC, 2015). The samples were analyzed by the American Analytics laboratory for the following analytes:

- VOCs using EPA Method TO-15
- TPH-g using EPA Method TO-3
- Fixed gases (CO₂, methane, and O₂) using EPA Method 3CM

Included in the TO-15 list of analytes were BTEX, MTBE, naphthalene, tertiary butyl alcohol, 1,2-dichloroethane, 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 Vapor Intrusion Sampling and Human Health Risk Assessment (Geomatrix, 2006).

4.3 Soil Vapor Monitoring Results

Table 6 presents the analytical results for samples collected during the November 2021 sampling event. Laboratory analytical reports are included in Appendix A. A summary of results is provided as follows:

- During the fourth quarter 2021 sampling event, no COPCs were detected in any SVPs.
- The offsite probes SVM-25 (5-foot depth) and SVM-27 (5- and 10-foot depths) were the only probes with COPC detections. Naphthalene was detected in SVM-25 (5-foot depth) at 0.0082 µg/L and in SVM-27 (10-foot depth) at 0.0039 µg/L. 1,2-Dichloroethane was detected at a concentration of 0.0045 µg/L in SVM-27 (5-foot depth). All COPCs were below EPA's residential regional screening level (RSL) for air (EPA, 2021). In addition, COPCs were below screening levels based on the attenuation factor in Human and Ecological Risk Office (HERO) Note 2 for calculating DTSC-modified screening levels (DTSC, 2020).
- Other (i.e., non-COPC) compounds that were also detected during the fourth quarter 2021 sampling event included bromodichloromethane, chloroform, ethanol, tetrachloroethylene (PCE), trichloroethylene, and TPH-g. Most of those detections were below DTSC-modified screening levels (DTSC, 2020), and EPA RSLs (EPA, 2021), or there are no established screening levels. The SVPs where concentrations exceeded the current RSLs were: SVM-2 (PCE at 5 ft bgs), SVM-3 (bromodichloromethane and chloroform at 5 ft and 15 ft bgs); SVM-7 (chloroform at 13 ft bgs); SVM-9 (PCE at 5 ft bgs); SVM-11 (PCE at 22 ft bgs); SVM-12 (PCE at 22 ft bgs); SVM-14R (chloroform at 16 ft bgs); SVM-15 (PCE at 15 ft bgs); SVM-22 (bromodichloromethane at 14.5 ft bgs and chloroform at 5 ft and 14.5 ft bgs); SVM-24 (chloroform at 5 ft and 10 ft bgs); SVM-25 (chloroform at 5 ft and 10 ft bgs); and SVM-27 (chloroform at 5 ft and 10 ft bgs).

5. Transition Metric Summary, Planned 2022 Activities, and Recommendations

This section provides summary-level descriptions of the remedy transition metrics, planned 2022 activities, and recommendations for a path forward.

5.1 Transition Metric Summary

The primary observations in this report are as follows:

BS-01 (South-Central Area)

- BS-01 previously met all transition metrics as defined in the IRAP and the NSZD remedy is operating.
- BS-01 continues to meet dissolved-phase groundwater and vapor contingency metrics:
 - All shallow SVM probes in the south-central area, which function as part of the contingency metrics defined in the IRAP, have been and continue to be below EPA RSLs (with and without active remediation).
- The LNAPL present in GMW-23, also continues to meet the LNAPL contingency criteria (transmissivity of 0.01 ft²/day, an order of magnitude below the ITRC effective recoverability endpoint):
 - Monitoring at GMW-23 will continue as it is still recovering to static fluid levels.

BS-02 (Southeastern Area)

The trends related to BS-02 and the southeastern area demonstrate all transition metrics are being met:

- LNAPL mass has been recovered to the extent practicable.
 - No wells in this area had measurable LNAPL during the fourth quarter 2021.
- Active LNAPL removal rate (e.g., through biosparging/SVE) is of similar magnitude to the ambient NSZD degradation rate.
- The ratio of more volatile to less volatile vapor-phase constituents has decreased over time.
- SVE systems have reached a transition point based on decline curve analysis:
 - The initial observation of BS-02 biosparging performance with initial VOC mass removal rates of 36,000 lbs/yr has showed a steady decline in a similar trend as BS-01, currently at a VOC mass removal rate of approximately 360 lbs/yr (even less than the transition point for BS-01, 3,600 lbs/yr).
- Vapor-phase extents and concentrations are stable or decreasing (SVE wellfield gases).
 - All shallow SVM probes in the southeastern area, which function as part of the contingency metrics defined in the IRAP, have been and continue to be below EPA RSLs (with and without active remediation).
- Dissolved-phase groundwater data demonstrate:
 - A decrease in the ratio of more volatile to less volatile dissolved-phase constituents over time
 - Stable or decreasing dissolved-phase plume extents and concentrations across the site
- Contingencies in the southeastern area will be primarily based on dissolved-phase plume stability:
 - Currently downgradient contingency wells have been and remain nondetect

HSVE-01 and BS-03 (Offsite/South-Central Area)

The trends related to HSVE-01/BS-03 and the offsite/south-central area demonstrate that the following transition metrics are in progress:

- HSVE-01/BS-03 continues to work towards LNAPL mass recovery to the maximum hydraulic extent practicable using existing wells.
- Active LNAPL removal rate (e.g., through biosparging/SVE) is decreasing toward the ambient NSZD degradation rate.
- Volatile concentration of vapor-phase constituents is decreasing over time.
- SVE systems are starting to exhibit a declining trend (similar to BS-01 and BS-02) based on decline curve analysis:
 - HSVE-01 has removed approximately 15,500 pounds of VOCs since startup (April 2021), averaging 30 lbs/day over the 91-day operation period during the fourth quarter of 2021.
 - With biodegradation included, HSVE-01 has removed approximately 65,000 pounds of mass in this area.
- Vapor-phase extents and concentrations are stable or decreasing in extent:
 - All shallow probes in the offsite/south-central area function as part of the contingency metrics defined in the IRAP; the probes have been and continue to be below EPA RSLs (with and without active remediation).
 - Combined with the sustained radius of capture of at least 200 feet, observed system performance supports continued operation and optimization of BS-03 and HSVE-01 without adversely affecting surficial soil vapors or aboveground residential locations.
- Other than biosparge system optimization (i.e., adjustment of flow rates), there are no contingencies active as the offsite/south-central area is continuing to undergo active biosparging.

NSZD

- NSZD observations relevant to each subarea are described above. Sitewide NSZD observations are summarized as follows:
 - Ongoing NSZD occurred under ambient conditions at rates of at least 600 gal/year and up to 1,800 gal/year (at least 4,000 lb/year and up to 12,000 lb/year) across the entire site.
 - NSZD rates continue to decline over time as the overall LNAPL mass remaining at the site is depleted.
 - Based on the receipt of final ¹⁴C laboratory analysis in January of 2022, the *Natural Source Zone Depletion Final Results* technical memorandum (Jacobs, 2022b; in press) provides a comprehensive review of spatial and temporal distributions of NSZD rates and methods.

5.2 Planned 2022 Activities

The following maintenance activities and other tasks are planned for 2022:

- Conduct quarterly SVM events and quarterly groundwater monitoring events.
- Submit quarterly SVM technical memorandums to Regional Board.
- Submit *Natural Source Zone Depletion Final Results* technical memorandum to Regional Board.

- Obtain IRAP approval and suspend BS-02 and vertical SVE operations in the southeastern area for implementation of NSZD.
- Conduct a NSZD data collection event in the southeastern area in second or third quarter 2022.
- Submit a soil vapor monitoring optimization work plan.
- Continue to operate and optimize the offsite/south-central horizontal SVE well, HSVE-01, and horizontal biosparge well BS-03 with opportunistic site visits (approximately biweekly to monthly).
- Perform system maintenance and 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 for VOCs using EPA Method TO-15, total VOCs as hexane using method TO-3, and fixed gases using method ASTM D1946.

5.3 Recommendations and Path Forward

During the first quarter 2022, Kinder Morgan plans to continue remedial activities in the offsite/south-central area of the site with the operation of BS-03 and HSVE-01. Kinder Morgan plans to suspend operations at BS-02 and associated vertical SVE well network and transition to NSZD upon approval of the recently published IRAP (Jacobs, 2022a). Continued collection and evaluation of monitoring data for the offsite/south-central remedial system (BS-03 and HSVE-01) will occur as part of first quarter 2022 operations. These data will be presented in the next quarterly remediation progress report.

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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	Well Screen Interval	Remediation Well Function	Well Operation Status During Fourth Quarter 2021	
			(feet msl)	(feet bgs)		SVE/BS	TFE/GWE
South-Central	MW-SF-1	6/18/1990	78.93	25 - 40	SVE	OFF	OFF
	MW-SF-2	6/18/1990	78.53	25 - 40	SVE; TFE	OFF	OFF
	MW-SF-3	6/18/1990	78.12	25 - 40	SVE; TFE	OFF	OFF
	MW-SF-4	6/19/1990	79.38	25 - 40	SVE	OFF	--
	MW-SF-5	9/19/1990	79.74	23 - 38	SVE	OFF	--
	MW-SF-6	9/19/1990	76.80	25 - 40	SVE; TFE	OFF	OFF
	MW-SF-9	6/15/1995	74.10	--	SVE	OFF	--
	MW-SF-10	9/23/2003	76.53	10 - 30	SVE	OFF	--
	MW-SF-11	6/19/2007	78.56	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-12	6/18/2007	78.07	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-13	6/19/2007	73.40	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-14	6/21/2007	78.16	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-15	6/21/2007	78.27	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-16	6/20/2007	78.21	20 - 40	SVE; TFE	OFF	OFF
	MW-SF-17	--	--	--	SVE	OFF	--
	MW-18 (MID)	6/10/1991	75.67	50 - 60	SVE	OFF	--
	GMW-9	7/8/1991	77.16	20 - 50	SVE; TFE	OFF	OFF
	GMW-10	7/8/1991	N/A	25 - 50	SVE; TFE	OFF	OFF
	GMW-22	8/2/1991	77.24	25 - 60	SVE; TFE	OFF	OFF
	GMW-24	8/5/1991	77.48	25 - 60	SVE; TFE	OFF	OFF
	GMW-25	1/10/1992	78.14	20 - 50	SVE; TFE	OFF	OFF
	GWR-3	1/10/1992	77.60	20 - 50	SVE; TFE	OFF	OFF
	VEW-1	09/19/90	--	5 - 25	SVE	OFF	--
VEW-2	09/19/90	--	5 - 25	SVE	OFF	--	
BS-01	08/27/14	75.06	--	BIOSPARGE	OFF	--	
South-Central Offsite	MW-O-1	1/22/1991	75.48	25 - 40	SVE	OFF	--
	MW-O-2	1/23/1991	71.90	25 - 40	SVE; TFE	OFF	OFF
	GMW-O-11	5/20/1992	74.17	20 - 50	SVE; TFE	OFF	OFF
	GMW-O-12	5/21/1992	73.49	20 - 50	SVE	OFF	--
	GMW-O-20	6/15/1995	73.32	--	SVE; TFE	OFF	OFF
	GMW-O-21	10/11/1997	71.43	26 - 46	TFE	--	OFF
	GMW-O-23	6/25/2007	73.63	20 - 40	SVE; TFE	OFF	OFF
	HSVE-01	12/17/2019	--	--	SVE	ON	--
	BS-03	12/13/2019	--	--	BIOSPARGE	ON	--
	HW-1	9/6/1992	--	--	SVE	Abandoned 2019	
	HW-2	9/6/1992	--	--	SVE	Abandoned 2019	

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	Well Screen Interval	Remediation Well Function	Well Operation Status During Fourth Quarter 2021	
			(feet msl)	(feet bgs)		SVE/BS	TFE/GWE
Southeastern	GMW-O-15	4/19/1994	74.23	20 - 50	SVE; TFE	OFF	OFF
	GMW-O-16	4/19/1994	74.10	20 - 50	SVE	ON	--
	GMW-O-18	7/25/1994	74.36	21 - 40	SVE; TFE	ON	OFF
	GMW-O-19	7/29/1994	74.46	20 - 40	SVE	ON	--
	GMW-36	4/11/1994	76.66	20 - 50	SVE; TFE	ON	OFF
	GMW-SF-9	4/1/2003	73.05	37 - 46	TFE	--	OFF
	GMW-SF-10	4/2/2003	75.77	37 - 46	TFE	--	OFF
	MW-8	8/24/1990	76.06	18 - 48	SVE	ON	--
	VEW-3	3/7/2019	--	23 - 32.5	SVE	ON	--
	VEW-4	3/8/2019	--	23 - 32.5	SVE	ON	--
	VEW-5	3/8/2019	--	23 - 32.5	SVE	ON	--
	BS-02	11/21/17	--	--	BIOSPARGE	ON	--
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

bgs = below ground surface

BS = biosparge

GWE = groundwater extraction

HSVE = horizontal soil vapor extraction

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

SVE = soil vapor extraction

TFE = total fluids extraction

Table 2. Extracted Vapor Analytical Results
 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
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

Table 2. Extracted Vapor Analytical Results
 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)
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
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

Table 2. Extracted Vapor Analytical Results
 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)
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
January-20	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d
2/14/2020	0.0360	1.1	21	--	17	--	63	7.7	12	480	<5.0
3/1/2020	0.0039	0.68	21	--	23	--	75	19	33	263	<2.8
April-20	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d	-- ^d
5/21/2020	0.017	0.020	21	--	420	--	2,800	190	4,800	1,720	<40
6/2/2020	0.011	0.93	21	--	260	--	2,500	180	3,100	1,480	<40
7/2/2020	0.0088	1.4	21	--	180	--	1,200	130	1,200	1,470	930
8/1/2020	0.0058	0.90	21	--	250	--	1,300	1,000	4,500	9,100	770
9/1/2020	0.011	0.87	21	--	150	--	490	270	2,300	3,310	650
10/1/2020	0.015	0.82	21	--	93	--	320	200	1,700	2,790	470
11/1/2020	0.0084	1.1	21	--	130	--	560	340	2,300	3,440	540
12/4/2020	<0.0024	0.20	22	--	1.6	--	22	2.9	26	35	5.9
1/12/2021	<0.0024	0.60	21	--	54	--	280	120	510	1,720	220
2/2/2021	<0.0024	0.52	22	--	42	--	260	140	850	1,800	190
3/1/2021	<0.0027	0.80	21	--	58	--	470	100	970	2,280	170
4/1/2021	<0.0040	0.44	21	--	30	--	240	65	640	590	130
5/1/2021	<0.0025	1.2	21	--	160	--	520	560	2,100	3,410	<25
6/1/2021	<0.0024	1.2	21	--	320	--	1,400	970	2,900	3,540	<30
7/1/2021	<0.0024	0.73	21	--	110	--	800	520	1,400	1,900	<12
8/3/2021	<0.0025	1.0	21	--	100	--	850	380	1,700	2,390	<17
9/2/2021	<0.0025	0.94	21	--	74	--	490	300	940	2,210	<8
10/1/2021	<0.0024	0.95	21	--	49	--	230	270	810	2,600	31
11/9/2021	0.15	1.5	20	--	81	--	390	470	620	1,300	<24
12/2/2021	<0.0019	0.25	22	--	27	--	49	190	330	1,500	<3.9

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 A.

^c Influent vapor samples were collected after dilution before entering the SVE combustion chamber.

^d System was off for entire month.

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

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

EPA = U.S. Environmental Protection Agency

ASTM = ASTM International

%v = percent by volume

-- = not applicable

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 3. 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 (%)	BS-02 Run Meter (hours)	BS-02 Incremental Hours of Operation (hours)	BS-02 Incremental Uptime (%)	BS-03 Run Meter (hours)	BS-03 Incremental Hours of Operation (hours)	BS-03 Incremental Uptime (%)	System Flow ^a BS-02 as of 1/5/21 (scfm)	BS-02 Sparge Leg Pressure (psi)	BS-03 System Flow (scfm)	BS-03 Sparge Leg Pressure (psi)
Fourth Quarter 2016 Totals	5,302	527	62.7	--	--	--	--	--	--	--	--	--	--
Fourth Quarter 2017 Totals	8,396	1,141	52.2	--	--	--	--	--	--	--	--	--	--
Fourth Quarter 2018 Totals	14,216	649	27.9	--	--	--	--	--	--	--	--	--	--
Fourth Quarter 2019 Totals	20,332	1,489	63.3	--	--	--	--	--	--	--	--	--	--
Fourth Quarter 2020 Totals	25,120	1,914	87.6	--	--	--	--	--	--	--	--	--	--
1/5/2021	25,291	171	100	--	--	--	--	--	--	171	2	--	--
1/12/2021	25,458	167	99	--	--	--	--	--	--	194	2	--	--
1/19/2021	25,627	169	100	--	--	--	--	--	--	180	2	--	--
1/26/2021	25,794	167	99	--	--	--	--	--	--	183	2	--	--
2/2/2021	25,961	167	99	--	--	--	--	--	--	178	2	--	--
2/9/2021	26,129	168	100	--	--	--	--	--	--	181	2	--	--
2/16/2021	26,297	168	100	--	--	--	--	--	--	180	2	--	--
2/23/2021	26,373	76	45	--	--	--	--	--	--	80	2	--	--
3/2/2021	26,494	121	72	--	--	--	--	--	--	192	2	--	--
3/9/2021	26,660	166	99	--	--	--	--	--	--	182	2	--	--
3/16/2021	26,825	165	98	--	--	--	--	--	--	193	3	--	--
3/23/2021	26,995	170	100	--	--	--	--	--	--	170	2	--	--
3/30/2021	27,162	167	99	--	--	--	--	--	--	186	2	--	--
First Quarter 2021 Totals	27,162	2,042	93.5	--	--	--	--	--	--	--	--	--	--
4/6/2021	27,331	169	100	--	--	--	--	--	--	189	2	--	--
4/13/2021	27,512	181	100	--	--	--	--	--	--	86	2	--	--
4/20/2021	27,634	122	73	--	--	--	--	--	--	176	2	--	--
4/29/2021	27,852	218	100	--	--	--	--	--	--	170	2	--	--
5/4/2021	27,973	121	100	--	--	--	--	--	--	185	2	--	--
5/11/2021	28,138	165	98	--	--	--	--	--	--	193	5	50	2
5/18/2021	--	--	--	--	--	--	--	--	--	--	--	--	--
5/25/2021	28,450	312	93	--	--	--	--	--	--	164	2	121	2
6/1/2021	28,617	167	99	--	--	--	--	--	--	189	2	125	2
6/8/2021	28,785	168	100	--	--	--	--	--	--	100	2	100	2
6/15/2021	28,954	169	100	--	--	--	--	--	--	180	2	94	2
6/22/2021	29,120	166	99	--	--	--	--	--	--	190	2	203	2
6/29/2021	29,289	169	100	--	--	--	--	--	--	189	2	265	4
Second Quarter 2021 Totals	29,289	2,127	97.4	--	--	--	--	--	--	--	--	--	--

Table 3. 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 (%)	BS-02 Run Meter (hours)	BS-02 Incremental Hours of Operation (hours)	BS-02 Incremental Uptime (%)	BS-03 Run Meter (hours)	BS-03 Incremental Hours of Operation (hours)	BS-03 Incremental Uptime (%)	System Flow ^a BS-02 as of 1/5/21 (scfm)	BS-02 Sparge Leg Pressure (psi)	BS-03 System Flow (scfm)	BS-03 Sparge Leg Pressure (psi)
7/6/2021	29,453	164	98	--	--	--	--	--	--	90	2	113	2
7/13/2021	29,620	167	99	--	--	--	--	--	--	183	2	249	2
7/21/2021	29,712	92	48	--	--	--	--	--	--	--	--	--	--
7/27/2021	29,853	141	98	--	--	--	--	--	--	185	6	216	6
8/3/2021	30,021	168	100	--	--	--	--	--	--	186	4	219	4
8/12/2021	30,138	117	54	--	--	--	--	--	--	172	6	250	6
8/24/2021	30,218	80	28	--	--	--	--	--	--	--	--	208	5
8/31/2021	30,381	163	97	--	--	--	--	--	--	121	4	238	4
9/7/2021	30,445	64	38	--	--	--	--	--	--	0	0	0	0
9/14/2021	30,613	168	100	--	--	--	--	--	--	197	6	257	21
9/21/2021	30,781	168	100	--	--	--	--	--	--	188	4	199	4
9/30/2021	31,000	219	100	10,910	--	--	9,892	--	--	184	4	194	4
Third Quarter 2021 Totals	31,000	1,711	76.7	--	--	--	--	--	--	--	--	--	--
10/5/2021	31,117	117	98	11,027	117	98	10,009	117	98	188	4	261	4
10/12/2021	31,285	168	100	11,194	167	100	10,176	167	100	183	4	260	4
10/19/2021	31,451	166	99	11,359	165	98	10,341	165	98	191	4	214	4
10/26/2021	31,614	163	97	11,521	162	97	10,503	162	97	188	4	215	4
11/9/2021	31,708	94	28	11,593	72	21	10,596	93	28	--	--	119	6
11/16/2021	31,877	169	95	11,593	0	0	10,764	167	94	--	--	198	4
11/23/2021	32,048	171	99	11,718	125	72	10,934	171	99	91	4	199	4
11/30/2021	32,209	161	100	11,878	160	100	11,094	160	100	90	4	209	4
12/2/2021	32,257	48	97	--	--	--	--	--	--	160	4	200	4
12/7/2021	32,374	117	100	12,042	164	100	11,258	164	100	165	4	200	4
12/14/2021	32,535	161	91	12,206	163	92	11,422	163	92	165	4	288	4
12/21/2021	32,669	134	78	12,371	166	97	11,588	166	97	161	4	237	4
12/28/2021	32,834	165	100	12,536	165	100	11,752	165	100	167	4	243	4
Fourth Quarter 2021 Totals	32,834	1,834	--	12,536	1,626	76	11,752	1,861	87	--	--	--	--
Cumulative Totals	32,834	--	62.7	--	--	--	--	--	--	--	--	--	--

Notes:

^a Estimated system flow based on header flowmeter

-- = not applicable or not available

scfm = standard cubic feet per minute

psi = pounds per square inch

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-9 Continued	10/20/2015	77.16	34.61	34.37	0.24	42.74	Kinder Morgan
	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
	5/4/2020	77.16	35.37	---	---	41.79	Blaine Tech
11/2/2020	77.16	35.90	---	---	41.26	Blaine Tech	
5/3/2021	77.16	36.50	---	---	40.66	Blaine Tech	
11/1/2021	77.16	37.62	---	---	39.54	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-10 Continued	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
	5/4/2020	73.35	31.44	---	---	41.91	Blaine Tech
	11/2/2020	73.35	32.00	--	--	41.35	Blaine Tech
	2/24/2021	73.35	32.75	--	--	40.60	Blaine Tech
	5/3/2021	73.35	32.54	--	--	40.81	Blaine Tech
8/31/2021	73.35	32.75	--	--	40.60	Blaine Tech	
11/1/2021	73.35	33.35	--	--	40.00	Blaine Tech	
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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-22 Continued	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
	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
5/4/2020	77.24	35.64	---	---	41.60	Blaine Tech	
11/2/2020	77.24	36.08	---	---	41.16	Blaine Tech	
5/3/2021	77.24	36.66	---	---	40.58	Blaine Tech	
11/1/2021	77.24	37.70	---	---	40.58	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-24 Continued	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
	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	
5/4/2020	77.48	36.24	---	---	41.24	Blaine Tech	
11/2/2020	77.48	36.58	---	---	40.90	Blaine Tech	
5/3/2021	77.48	37.18	---	---	40.30	Blaine Tech	
11/1/2021	77.48	38.48	---	---	40.30	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-25 Continued	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
	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	
5/4/2020	78.14	36.49	---	---	41.65	Blaine Tech	
11/2/2020	78.14	36.98	---	---	41.16	Blaine Tech	
5/3/2021	78.14	37.42	---	---	40.72	Blaine Tech	
11/1/2021	78.14	38.38	---	---	39.76	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-36 Continued	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By	
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)		
GMW-36 Continued	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	
	5/4/2020	76.66	31.03	---	---	45.63	Blaine Tech	
	11/2/2020	76.66	Sludge in well, unable to gauge					Blaine Tech
	2/24/2021	76.66	35.18	---	---	48.82	Blaine Tech	
5/3/2021	76.66	30.69	---	---	45.97	Blaine Tech		
8/31/2021	76.66	30.47	---	---	46.19	Blaine Tech		
11/1/2021	76.66	37.95	---	---	46.19	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	
	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		

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-11 Continued	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
	5/4/2020	74.17	30.94	---	---	43.23	Blaine Tech
	8/20/2020	74.17	30.89	---	---	43.28	Blaine Tech
11/2/2020	74.17	30.30	---	---	43.87	Blaine Tech	
2/24/2021	74.17	32.18	---	---	47.87	Blaine Tech	
5/3/2021	74.17	31.89	---	---	42.28	Blaine Tech	
8/31/2021	74.17	31.50	---	---	42.67	Blaine Tech	
11/1/2021	74.17	34.76	---	---	42.67	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-12 Continued	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
	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	
5/4/2020	73.49	30.35	30.04	0.31	43.39	Blaine Tech	
8/20/2020	73.49	31.98	31.75	0.23	41.69	Blaine Tech	
11/2/2020	73.49	31.65	30.27	1.38	42.94	Blaine Tech	
2/24/2021	73.49	31.97	31.45	0.52	41.94	Blaine Tech	
5/3/2021	73.49	31.66	31.05	0.61	41.83	Blaine Tech	
8/31/2021	73.49	25.89	25.89	0.00	47.60	Blaine Tech	
11/1/2021	73.49	34.89	33.18	1.71	47.60	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

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SFPP Norwalk Pump Station, Norwalk, California

Well ID	Date Gauged	Top of Well Casing Elevation	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-15 Continued	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	
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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-15 Continued	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	
5/4/2020	74.86	31.13	---	---	43.73	Blaine Tech	
11/2/2020	74.86	26.89	---	---	47.97	Blaine Tech	
5/3/2021	74.86	28.62	---	---	46.24	Blaine Tech	
11/1/2021	Inaccessable, pump stuck in well						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	
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-18 Continued	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	
5/4/2020	74.32	31.68	---	---	42.64	Blaine Tech	
11/2/2020	74.32	27.25	---	---	47.07	Blaine Tech	
5/3/2021	74.32	29.77	---	---	44.55	Blaine Tech	
11/1/2021	74.32	36.39	---	---	37.93	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	
7/11/2011	73.32	NM	---	---	NC	Blaine Tech	
10/10/2011	73.32	24.05	---	---	49.27	Blaine Tech	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-20 Continued	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	
5/4/2020	73.32	30.70	---	---	42.62	Blaine Tech	
8/20/2020	73.32	31.58	---	---	41.74	Blaine Tech	
11/2/2020	73.32	30.97	---	---	42.35	Blaine Tech	
2/24/2021	73.32	31.99	---	---	37.16	Blaine Tech	
5/3/2021	73.32	32.67	---	---	40.65	Blaine Tech	
8/31/2021	73.32	31.06	---	---	42.26	Blaine Tech	
11/1/2021	73.32	34.90	---	---	42.26	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-21 Continued	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
	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
	5/4/2020	71.43	31.24	---	---	40.19	Blaine Tech
	8/20/2020	71.43	31.93	---	---	39.50	Blaine Tech
11/2/2020	71.43	30.30	---	---	41.13	Blaine Tech	
2/24/2021	71.43	32.57	---	---	42.70	Blaine Tech	
5/3/2021	71.43	32.17	---	---	39.26	Blaine Tech	
8/31/2021	71.43	31.39	---	---	40.04	Blaine Tech	
11/1/2021	71.43	32.96	---	---	40.04	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-O-23 Continued	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
	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	
5/4/2020	73.63	31.92	---	---	41.71	Blaine Tech	
8/20/2020	73.63	32.05	---	---	41.58	Blaine Tech	
11/2/2020	73.63	32.24	---	---	41.39	Blaine Tech	
2/24/2021	73.63	33.19	---	---	38.21	Blaine Tech	
5/3/2021	73.63	32.91	---	---	40.72	Blaine Tech	
8/31/2021	73.63	32.50	---	---	41.13	Blaine Tech	
11/1/2021	73.63	33.75	---	---	41.13	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GMW-SF-9 Continued	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
	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

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
GWR-3 Continued	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
	5/4/2020	77.60	36.02	---	---	41.58	Blaine Tech
11/2/2020	77.60	35.51	---	---	42.09	Blaine Tech	
5/3/2021	77.60	36.18	---	---	41.42	Blaine Tech	
11/1/2021	77.60	38.07	---	---	39.53	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
	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	
5/4/2020	75.67	37.96	---	---	37.71	Blaine Tech	
11/2/2020	75.67	34.83	---	---	40.84	Blaine Tech	
5/3/2021	75.67	38.57	---	---	37.10	Blaine Tech	
11/1/2021	75.67	40.02	---	---	35.65	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-O-1 Continued	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
5/4/2020	75.48	31.98	---	---	43.50	Blaine Tech	
8/20/2020	75.48	32.86	---	---	42.62	Blaine Tech	
11/2/2020	75.48	DRY	---	---	NC	Blaine Tech	
2/24/2021	75.48	33.02	---	---	34.37	Blaine Tech	
5/3/2021	75.48	DRY	---	---	NC	Blaine Tech	
8/31/2021	75.48	DRY	---	---	NC	Blaine Tech	
11/1/2021	75.48	DRY	---	---	NC	Blaine Tech	
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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-O-2 Continued	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
	5/4/2020	71.90	31.87	---	---	40.03	Blaine Tech
	8/20/2020	71.90	32.08	---	---	39.82	Blaine Tech
	11/2/2020	71.90	30.60	---	---	41.30	Blaine Tech
	2/24/2021	71.90	33.16	---	---	38.74	Blaine Tech
5/3/2021	71.90	32.94	---	---	38.96	Blaine Tech	
8/31/2021	71.90	32.60	---	---	39.30	Blaine Tech	
11/1/2021	71.90	33.61	---	---	38.29	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-1 Continued	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	
5/4/2020	78.93	36.65	---	---	42.28	Blaine Tech	
11/2/2020	78.93	37.39	---	---	41.54	Blaine Tech	
5/3/2021	78.93	38.03	---	---	40.90	Blaine Tech	
11/1/2021	78.93	39.29	---	---	39.64	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-2 Continued	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
	5/4/2020	78.53	36.66	---	---	41.87	Blaine Tech
	11/2/2020	78.53	37.14	---	---	41.39	Blaine Tech
	5/3/2021	78.53	37.82	---	---	40.71	Blaine Tech
	11/1/2021	78.53	39.30	---	---	39.23	Blaine Tech

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
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	
5/4/2020	78.12	36.19	---	---	41.93	Blaine Tech	
11/2/2020	78.12	36.55	---	---	41.57	Blaine Tech	
5/3/2021	78.12	37.51	---	---	40.61	Blaine Tech	
11/1/2021	78.12	38.59	---	---	39.53	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

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-4 Continued	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-4 Continued	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
	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	
5/4/2020	79.38	37.13	---	---	42.25	Blaine Tech	
11/2/2020	79.38	37.46	---	---	41.92	Blaine Tech	
5/3/2021	79.38	38.30	---	---	41.08	Blaine Tech	
11/1/2021	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-5 Continued	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
	5/4/2020	79.74	37.86	---	---	41.88	Blaine Tech
	11/2/2020	79.74	DRY	---	---	NC	Blaine Tech
5/3/2021	79.74	DRY	---	---	NC	Blaine Tech	
11/1/2021	79.74	DRY	---	---	NC	Blaine Tech	
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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-6 Continued	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
	5/4/2020	76.8	34.90	---	---	41.90	Blaine Tech
	11/2/2020	76.8	35.35	---	---	41.45	Blaine Tech
5/3/2021	76.8	35.86	---	---	40.94	Blaine Tech	
11/1/2021	76.8	37.50	---	---	39.30	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-9 Continued	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
	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
5/4/2020	74.10	DRY	---	---	NC	Blaine Tech	
11/2/2020	74.10	DRY	---	---	NC	Blaine Tech	
5/3/2021	74.10	DRY	---	---	NC	Blaine Tech	
11/1/2021	74.10	DRY	---	---	NC	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-10 Continued	5/4/2020	76.53	DRY	---	---	NC	Blaine Tech
	11/2/2020	76.53	DRY	---	---	NC	Blaine Tech
	5/3/2021	76.53	DRY	---	---	NC	Blaine Tech
	11/1/2021	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-11 Continued	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
	5/4/2020	78.56	36.95	---	---	41.61	Blaine Tech
	11/2/2020	78.56	37.18	---	---	41.38	Blaine Tech
5/3/2021	78.56	37.38	---	---	41.18	Blaine Tech	
11/1/2021	78.56	38.97	---	---	39.59	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-12 Continued	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
	5/4/2020	78.07	36.36	---	---	41.71	Blaine Tech
11/2/2020	78.07	36.53	---	---	41.54	Blaine Tech	
5/3/2021	78.07	36.19	---	---	41.88	Blaine Tech	
11/1/2021	78.07	38.69	---	---	39.38	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-13 Continued	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	
5/4/2020	73.40	31.52	---	---	41.88	Blaine Tech	
11/2/2020	73.40	32.05	---	---	41.35	Blaine Tech	
5/3/2021	73.40	32.48	---	---	40.92	Blaine Tech	
11/1/2021	73.40	33.82	---	---	39.58	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
	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-14 Continued	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	
10/28/2019	78.16	DRY	---	---	NC	Blaine Tech	
5/4/2020	78.16	DRY	---	---	NC	Blaine Tech	
11/2/2020	78.16	DRY	---	---	NC	Blaine Tech	
5/3/2021	78.16	DRY	---	---	NC	Blaine Tech	
11/1/2021	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
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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-15 Continued	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	
5/4/2020	78.27	36.37	---	---	41.90	Blaine Tech	
11/2/2020	78.27	36.72	---	---	41.55	Blaine Tech	
5/3/2021	78.27	37.53	---	---	40.74	Blaine Tech	
11/1/2021	78.27	38.82	---	---	39.45	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	

Table 4. 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	Measured Depth to Groundwater	Measured Depth to Product	Apparent Product Thickness	Corrected Groundwater Elevation	Gauged By
		(feet msl)	(feet btoc)	(feet btoc)	(feet)	(feet msl)	
MW-SF-16 continued	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
	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
	5/4/2020	78.21	DRY	---	---	NC	Blaine Tech
	11/2/2020	78.21	DRY	---	---	NC	Blaine Tech
5/3/2021	78.21	DRY	---	---	NC	Blaine Tech	
11/1/2021	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

Table 5. 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 ₂ O)	Mass Removed (pounds) ^a
1995 Totals	1,240		--	--	--	281,065
1996 Totals	7,208	5,968	--	--	--	516,717
1997 Totals	12,865	5,657	--	--	--	435,631
1998 Totals	17,877	5,012	--	--	--	276,950
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	--	--	--	1,502
2011 Totals	77,489	5,120	--	--	--	14,664
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
2019 Totals	122,413	7,067	--	--	--	19,583
2020 Totals	127,703	1,675	--	--	--	32,070
1/1/2021	127,773	70	--	--	--	--
1/5/2021	127,872	99	252	1,411	50	425
1/12/2021	128,040	168	196	1,513	50	601
1/19/2021	128,210	170	146	1,559	50	467
1/26/2021	128,376	166	96	1,458	50	280
2/2/2021	128,543	167	116	1,508	50	352
2/9/2021	128,711	168	108	1,464	50	320
2/16/2021	128,878	167	146	1,435	50	422
2/23/2021	129,023	145	138	1,391	50	336
3/2/2021	129,164	141	134	1,319	50	301
3/9/2021	129,334	170	126	1,491	50	385
3/16/2021	129,501	167	108	1,354	50	295
3/23/2021	129,668	167	126	1,481	50	376
3/30/2021	129,835	167	108	1,604	50	349
First Quarter 2021 Total	129,835	2,132	--	--	--	4,908
4/6/2021	130,004	169	184	1,609	50	447
4/13/2021	130,141	137	268	1,561	50	528
4/20/2021	130,306	165	402	1,483	56	703
4/29/2021	130,526	220	288	1,960	55	911
5/4/2021	130,647	121	448	1,602	56	1,047

Table 5. 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 ₂ O)	Mass Removed (pounds) ^a
5/11/2021	130,812	165	394	1,626	56	1,275
5/18/2021	130,978	166	318	1,835	55	1,168
5/25/2021	131,147	169	914	1,760	55	3,279
6/1/2021	131,314	167	1,314	1,479	55	3,914
6/8/2021	131,485	171	1,040	1,445	55	3,099
6/15/2021	131,651	166	498	1,799	55	1,046
6/22/2021	131,820	169	398	1,806	55	761
6/29/2021	131,987	167	210	1,797	55	367
Second Quarter 2021 Total	131,987	2,152	--	--	--	18,546
7/6/2021	132,152	165	336	1,644	55	671
7/13/2021	132,319	167	330	1,524	55	727
7/21/2021	132,511	192	284	1,688	55	797
7/27/2021	132,657	146	279	1,747	55	443
8/3/2021	132,824	167	214	1,700	55	318
8/12/2021	132,943	119	104	1,838	55	161
8/24/2021	133,023	80	62	1,794	55	63
8/31/2021	133,187	164	180	1,663	55	361
9/7/2021	133,354	167	68	1,671	55	141
9/14/2021	133,523	169	138	1,620	55	280
9/21/2021	133,693	170	246	1,603	55	497
9/30/2021	133,909	216	172	1,579	55	435
Third Quarter 2021 Total	133,909	1,922	--	--	--	4,894
10/5/2021	134,027	118	214	1,740	55	326
10/12/2021	134,195	168	204	1,774	55	451
10/19/2021	134,361	166	226	1,756	55	488
10/26/2021	134,524	163	218	1,681	55	443
11/9/2021	134,620	96	184	1,627	55	176
11/16/2021	134,786	166	209	1,603	55	328
11/23/2021	134,957	171	222	1,740	55	389
11/30/2021	135,118	161	112	1,669	55	170
12/2/2021	135,166	48	225	1,668	56	97
12/7/2021	135,282	116	120	1,676	55	131
12/14/2021	135,446	164	116	1,668	55	181
12/21/2021	135,613	167	146	1,754	55	308
12/28/2021	135,778	165	104	1,548	55	143
Fourth Quarter 2021 Total	135,778	1,869	--	--	--	3,630
Cumulative Totals	135,778	--	--	--	--	3,641,507

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. H₂O = 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 to C₁₂)

Table 6. Field Measurements and Laboratory Soil Vapor Analytical Results – November 2021
 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 11/03/21 SVM-1 5-5.5	SVM-1-15 11/03/21 SVM-1 15-15.5	SVM-2-5 11/03/21 SVM-2 5-5.5	SVM-3-5 11/04/21 SVM-3 5-5.5	SVM-3-15 11/04/21 SVM-3 15-15.5	SVM-5-5 11/04/21 SVM-5 5-5.5	SVM-5-15 11/04/21 SVM-5 15-15.5	SVM-6-7 11/03/21 SVM-6 7-7.5	SVM-6-13 11/03/21 SVM-6 13-13.5	SVM-7-7 11/03/21 SVM-7 7-7.5	SVM-7-13 11/03/21 SVM-7 13-13.5	SVM-8-5 11/04/21 SVM-8 5-5.5	SVM-8-15 11/04/21 SVM-8 15-15.5
Field Measurements	Pressure	inches H ₂ O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs ^c	1,2,4-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	1,2-Dichloroethane	µg/L	0.11 ^{1A}	--	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	1,3,5-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Benzene	µg/L	0.097 ^{2A} /0.36 ^{1A}	3.1 ^{2A}	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	Ethylbenzene	µg/L	1.1 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	42 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	m,p-Xylenes	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Naphthalene	µg/L	--	--	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	n-Butylbenzene	µg/L	210 ^{2B}	880 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	100 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	o-Xylene	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	sec-Butylbenzene	µg/L	420 ^{2B}	1800 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	tert-Butanol (TBA)	µg/L	2.2 ^{1A}	--	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U
	Toluene	µg/L	310 ^{2B} /520 ^{1B}	1300 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
Other Detected Compounds	Acetone	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Bromodichloromethane	µg/L	0.003	0.011	<0.0025 U	<0.0025 U	<0.0025 U	0.0076	0.013	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U
	Chloroform	µg/L	0.004	0.018	<0.0040 U	<0.0040 U	<0.0040 U	0.013	0.036	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	Ethanol	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.015	0.067	<0.010 U	<0.010 U	0.016	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	0.044	<0.010 U	<0.010 U
	Trichloroethylene (TCE)	µg/L	--	--	<0.020 U	<0.020 U	0.029	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
TPH-G (C4-C12)	µg/L	21	86.7	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	
Fixed Gases	Methane	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.10 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Oxygen	% v/v	--	--	21	18	20	22	21	22	23	22	11	20	19	22	23
	Carbon Dioxide	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.10 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U

Notes:
^a Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs)*. November. 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.
^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.
^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.
^{1A} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (carcinogenic screening level) November 2020
^{1B} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (noncarcinogenic screening level)
^{2A} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (carcinogenic screening level)
^{2B} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (noncarcinogenic screening level)
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf

SVM-1-5 Light blue highlighting indicates offsite soil vapor probe locations.
 Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.
 11/1/2021 - 11/4/2021 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
 --- = not available
 µg/L = micrograms per liter
 % v/v = percent volume by volume
 <0.02 = not detected at the laboratory minimum reporting limit
 U = not detected above listed laboratory reporting limit
 UJ = estimated nondetect due to quality control exceedances
 COPC = contaminant of potential concern
 TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 6. Field Measurements and Laboratory Soil Vapor Analytical Results – November 2021
 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-9-5 11/03/21 SVM-9 5-5.5	SVM-9-14.5 11/03/21 SVM-9 14.5-15	SVM-9-14.5 DUP 11/03/21 SVM-9 14.5-15	SVM-10-15 11/03/21 SVM-10 15-15.5	SVM-11-7 11/01/21 SVM-11 7-7.5	SVM-11-15 11/01/21 SVM-11 15-15.5	SVM-11-22 11/01/21 SVM-11 22-22.5	SVM-12-7 11/01/21 SVM-12 7-7.5	SVM-12-15 11/01/21 SVM-12 15-15.5	SVM-12-22 11/01/21 SVM-12 22-22.5	SVM-13-7 11/01/21 SVM-13 7-7.5	SVM-13-15 11/01/21 SVM-13 15-15.5	SVM-13-22 11/01/21 SVM-13 22-22.5
Field Measurements	Pressure	inches H ₂ O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs ^c	1,2,4-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	1,2-Dichloroethane	µg/L	0.11 ^{1A}	--	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	1,3,5-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Benzene	µg/L	0.097 ^{2A} /0.36 ^{1A}	3.1 ^{2A}	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	Ethylbenzene	µg/L	1.1 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	42 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	m,p-Xylenes	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Naphthalene	µg/L	--	--	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	n-Butylbenzene	µg/L	210 ^{2B}	880 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	100 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	o-Xylene	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	sec-Butylbenzene	µg/L	420 ^{2B}	1800 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	tert-Butanol (TBA)	µg/L	2.2 ^{1A}	--	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Toluene	µg/L	310 ^{2B} /520 ^{1B}	1300 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	
Other Detected Compounds	Acetone	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Bromodichloromethane	µg/L	0.003	0.011	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U
	Chloroform	µg/L	0.004	0.018	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	Ethanol	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.015	0.067	0.055	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	0.023	<0.010 U	<0.010 U	0.022	<0.010 U	<0.010 U	<0.010 U
	Trichloroethylene (TCE)	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	TPH-G (C4-C12)	µg/L	21	86.7	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Fixed Gases	Methane	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Oxygen	% v/v	--	--	17	22	22	22	22	21	14	21	18	5.4	21	21	16
	Carbon Dioxide	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	14	<0.20 U	<0.20 U	<0.20 U

Notes:
^a Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November. DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels for use in the human health risk assessment process at hazardous waste sites and permitted facilities.
^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.
^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.
^{1A} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (carcinogenic screening level) November 2020
^{1B} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (noncarcinogenic screening level)
^{2A} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (carcinogenic screening level)
^{2B} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (noncarcinogenic screening level)
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf

SVM-1-5 Light blue highlighting indicates offsite soil vapor probe locations.
 Yellow highlighting indicates concentration exceeds human health screening level under residential scenario
 11/1/2021 - 11/4/2021 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
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 µg/L = micrograms per liter
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 <0.02 = not detected at the laboratory minimum reporting limit
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 COPC = contaminant of potential concern
 TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 6. Field Measurements and Laboratory Soil Vapor Analytical Results – November 2021
 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-14R-8 11/01/21 SVM-14R 8-8.5	SVM-14R-16 11/01/21 SVM-14R 16-16.5	SVM-14R-22 11/01/21 SVM-14R 22-22.5	SVM-15-7 11/03/21 SVM-15 7-7.5	SVM-15-15 11/03/21 SVM-15 15-15.5	SVM-15-22 11/03/21 SVM-15 22-22.5	SVM-16-7 11/04/21 SVM-16 7-7.5	SVM-16-7-DUP 11/04/21 SVM-16 7-7.5	SVM-16-16 11/04/21 SVM-16 16-16.5	SVM-16-22 11/04/21 SVM-16 22-22.5	SVM-17-5 11/02/21 SVM-17 5-5.5	SVM-17-14.5 11/02/21 SVM-17 14.5-15	SVM-18-5 11/01/21 SVM-18 5-5.5
Field Measurements	Pressure	inches H ₂ O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs ^c	1,2,4-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	1,2-Dichloroethane	µg/L	0.11 ^{1A}	--	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	1,3,5-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Benzene	µg/L	0.097 ^{2A} /0.36 ^{1A}	3.1 ^{2A}	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	Ethylbenzene	µg/L	1.1 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	42 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	m,p-Xylenes	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Naphthalene	µg/L	--	--	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	n-Butylbenzene	µg/L	210 ^{2B}	880 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	100 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	o-Xylene	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	sec-Butylbenzene	µg/L	420 ^{2B}	1800 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	tert-Butanol (TBA)	µg/L	2.2 ^{1A}	--	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Toluene	µg/L	310 ^{2B} /520 ^{1B}	1300 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	
Other Detected Compounds	Acetone	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Bromodichloromethane	µg/L	0.003	0.011	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U
	Chloroform	µg/L	0.004	0.018	<0.0040 U	0.042	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	Ethanol	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.015	0.067	<0.010 U	<0.010 U	<0.010 U	<0.010 U	0.016	0.010	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U
	Trichloroethylene (TCE)	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
TPH-G (C4-C12)	µg/L	21	86.7	<0.50 U	<0.50 U	0.60	<0.50 U	<0.50 U	<0.50 U	<0.50 U	0.70	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	
Fixed Gases	Methane	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.10 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Oxygen	% v/v	--	--	22	21	5.4	22	20	19	22	22	22	13	23	23	21
	Carbon Dioxide	% v/v	--	--	<0.20 U	<0.20 U	11	<0.10 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U

Notes:
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^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.
^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.
^{1A} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (carcinogenic screening level) November 2020
^{1B} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (noncarcinogenic screening level)
^{2A} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (carcinogenic screening level)
^{2B} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (noncarcinogenic screening level)
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf

SVM-1-5 Light blue highlighting indicates offsite soil vapor probe locations.
 Yellow highlighting indicates concentration exceeds human health screening level under residential scenario
 11/1/2021 - 11/4/2021 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
 --- = not available
 µg/L = micrograms per liter
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 TPH-g = total petroleum hydrocarbons quantified as gasoline

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Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level ^{a, b}	Current Commercial Soil Gas Screening Level ^{a, b}	SVM-18-14.5	SVM-18-14.5 DUP	SVM-19-5	SVM-20-5	SVM-20-14.5	SVM-21-5	SVM-21-14.5	SVM-22-5	SVM-22-14.5	SVM-23-5	SVM-23-14.5	SVM-24-5	SVM-24-10
					11/01/21 SVM-18 14.5-15	11/01/21 SVM-18 14.5-15	11/01/21 SVM-19 5-5.5	11/01/21 SVM-20 5-5.5	11/01/21 SVM-20 14.5-15	11/02/21 SVM-21 5-5.5	11/02/21 SVM-21 14.5-15	11/02/21 SVM-22 5-5.5	11/02/21 SVM-22 14.5-15	11/02/21 SVM-23 5-5.5	11/02/21 SVM-23 14.5-15	11/02/21 SVM-24 5-5.5	11/02/21 SVM-24 10-10.5
Field Measurements	Pressure	inches H ₂ O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs ^c	1,2,4-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	1,2-Dichloroethane	µg/L	0.11 ^{1A}	--	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	1,3,5-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ
	Benzene	µg/L	0.097 ^{2A} /0.36 ^{1A}	3.1 ^{2A}	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	Ethylbenzene	µg/L	1.1 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	42 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	m,p-Xylenes	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Naphthalene	µg/L	--	--	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	n-Butylbenzene	µg/L	210 ^{2B}	880 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	100 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	o-Xylene	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	sec-Butylbenzene	µg/L	420 ^{2B}	1800 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	tert-Butanol (TBA)	µg/L	2.2 ^{1A}	--	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Toluene	µg/L	310 ^{2B} /520 ^{1B}	1300 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	
Other Detected Compounds	Acetone	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Bromodichloromethane	µg/L	0.003	0.011	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	0.0054	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U
	Chloroform	µg/L	0.004	0.018	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	0.016	0.18	<0.0040 U	<0.0040 U	0.026	0.0049
	Ethanol	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.015	0.067	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U
	Trichloroethylene (TCE)	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	TPH-G (C4-C12)	µg/L	21	86.7	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Fixed Gases	Methane	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.10 U	<0.20 U	<0.20 U	<0.20 U	0.27	<0.20 U	<0.20 U	<0.20 U
	Oxygen	% v/v	--	--	22	22	22	22 J	23	21	22	23	22	22	22	22	23
	Carbon Dioxide	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.10 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U

Notes:
^a Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs)*. November. DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels for use in the human health risk assessment process at hazardous waste sites and permitted facilities.
^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.
^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.
^{1A} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (carcinogenic screening level) November 2020
^{1B} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (noncarcinogenic screening level)
^{2A} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (carcinogenic screening level)
^{2B} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (noncarcinogenic screening level)
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf

SVM-1-5 Light blue highlighting indicates offsite soil vapor probe locations.
 Yellow highlighting indicates concentration exceeds human health screening level under residential scena
 11/1/2021 - 11/4/2021 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
 --- = not available
 µg/L = micrograms per liter
 % v/v = percent volume by volume
 <0.02 = not detected at the laboratory minimum reporting limit
 U = not detected above listed laboratory reporting limit
 UJ = estimated nondetect due to quality control exceedances
 COPC = contaminant of potential concern
 TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 6. Field Measurements and Laboratory Soil Vapor Analytical Results – November 2021
 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-25-5 11/02/21 SVM-25 5-5.5	SVM-25-10 11/02/21 SVM-25 10-10.5	SVM-26-5 11/02/21 SVM-26 5-5.5	SVM-26-10 11/02/21 SVM-26 10-10.5	SVM-27-5 11/02/21 SVM-27 5-5.5	SVM-27-10 11/02/21 SVM-27 10-10.5	AMBIENT AIR 11/01/21	AMBIENT AIR 11/02/21	AMBIENT AIR 11/03/21	AMBIENT AIR 11/04/21
Field Measurements	Pressure	inches H ₂ O	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--
COPCs ^c	1,2,4-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	1,2-Dichloroethane	µg/L	0.11 ^{1A}	--	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U	0.0045	<0.0040 U	0.0044	<0.0040 U	<0.0040 U	<0.0040 U
	1,3,5-Trimethylbenzene	µg/L	6.3 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 UJ	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Benzene	µg/L	0.097 ^{2A} /0.36 ^{1A}	3.1 ^{2A}	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	Ethylbenzene	µg/L	1.1 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	42 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	m,p-Xylenes	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11 ^{1A}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	Naphthalene	µg/L	--	--	0.0082	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U	0.0039	<0.0030 U	<0.0030 U	<0.0030 U	<0.0030 U
	n-Butylbenzene	µg/L	210 ^{2B}	880 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	100 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	o-Xylene	µg/L	10 ^{1B}	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	sec-Butylbenzene	µg/L	420 ^{2B}	1800 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	tert-Butanol (TBA)	µg/L	2.2 ^{1A}	--	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U	<2.0 U
Toluene	µg/L	310 ^{2B} /520 ^{1B}	1300 ^{2B}	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	
Other Detected Compounds	Acetone	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	0.026	<0.020 U	<0.020 U	<0.020 U
	Bromodichloromethane	µg/L	0.003	0.011	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U	<0.0025 U
	Chloroform	µg/L	0.004	0.018	0.016	0.017	<0.0040 U	<0.0040 U	0.0057	0.050	<0.0040 U	<0.0040 U	<0.0040 U	<0.0040 U
	Ethanol	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	0.030	<0.020 U	<0.020 U	<0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.015	0.067	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U	<0.010 U
	Trichloroethylene (TCE)	µg/L	--	--	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U	<0.020 U
	TPH-G (C4-C12)	µg/L	21	86.7	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U	<0.50 U
Fixed Gases	Methane	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	0.34	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U
	Oxygen	% v/v	--	--	26	21	22	23	22	22	21	21	21	22
	Carbon Dioxide	% v/v	--	--	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U	<0.20 U

Notes:
^a Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs)*. November. DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels for use in the human health risk assessment process at hazardous waste sites and permitted facilities.
^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.
^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.
^{1A} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (carcinogenic screening level) November 2020
^{1B} <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (noncarcinogenic screening level)
^{2A} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (carcinogenic screening level)
^{2B} <https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf> (noncarcinogenic screening level)
http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf

SVM-1-5 Light blue highlighting indicates offsite soil vapor probe locations.
 Yellow highlighting indicates concentration exceeds human health screening level under residential scenario
 11/1/2021 - 11/4/2021 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
 --- = not available
 µg/L = micrograms per liter
 % v/v = percent volume by volume
 <0.02 = not detected at the laboratory minimum reporting limit
 U = not detected above listed laboratory reporting limit
 UJ = estimated nondetect due to quality control exceedances
 COPC = contaminant of potential concern
 TPH-g = total petroleum hydrocarbons quantified as gasoline

Figures

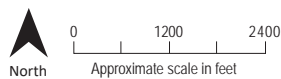
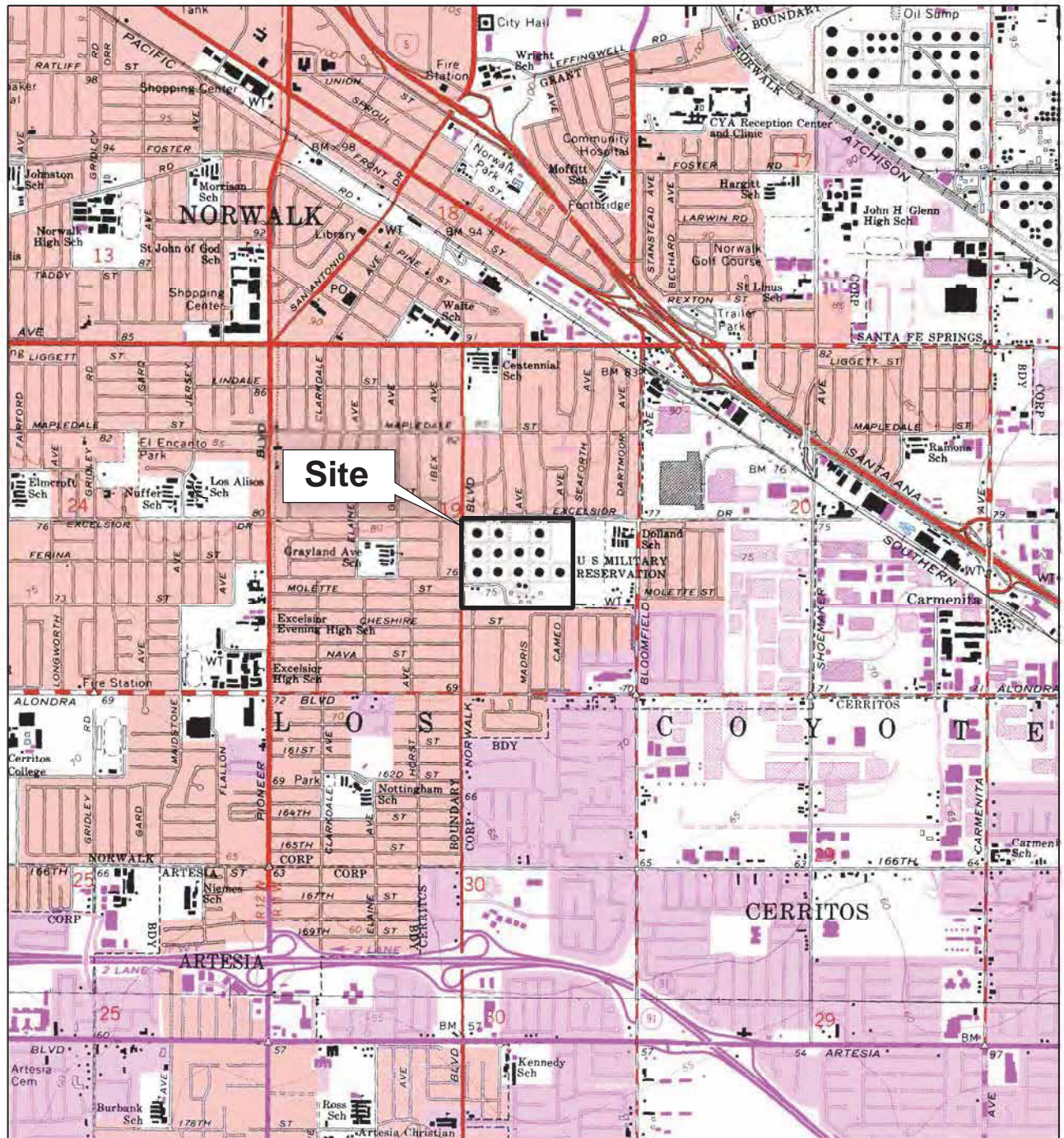
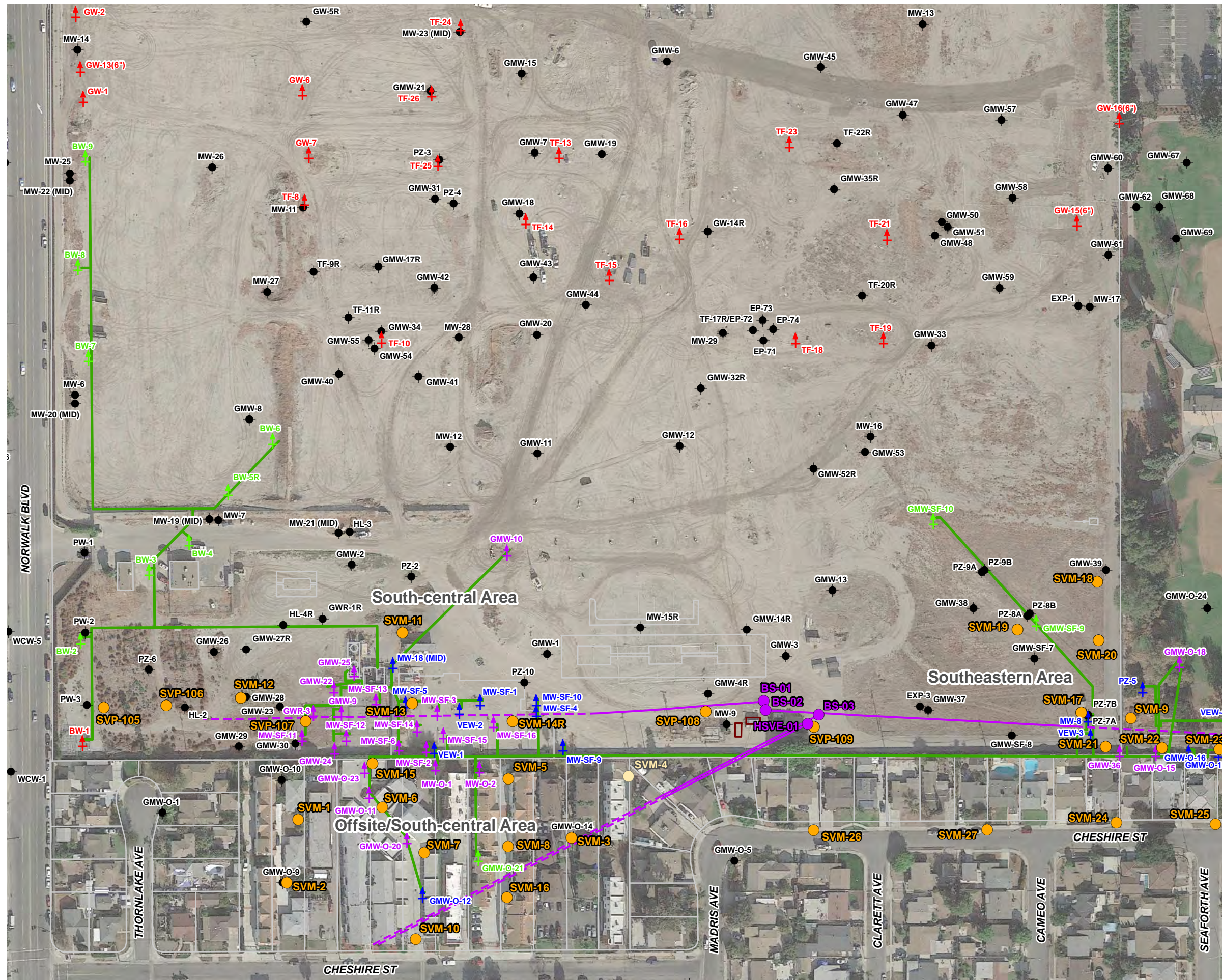


Figure 1. Site Location Map
SFPP Norwalk Pump Station
Norwalk, California

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.



- LEGEND**
- Soil Vapor Probe/Soil Vapor Monitoring Probe
 - Destroyed 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.

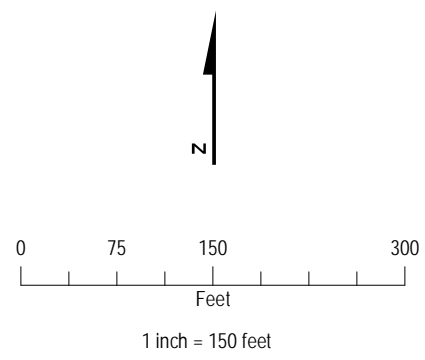
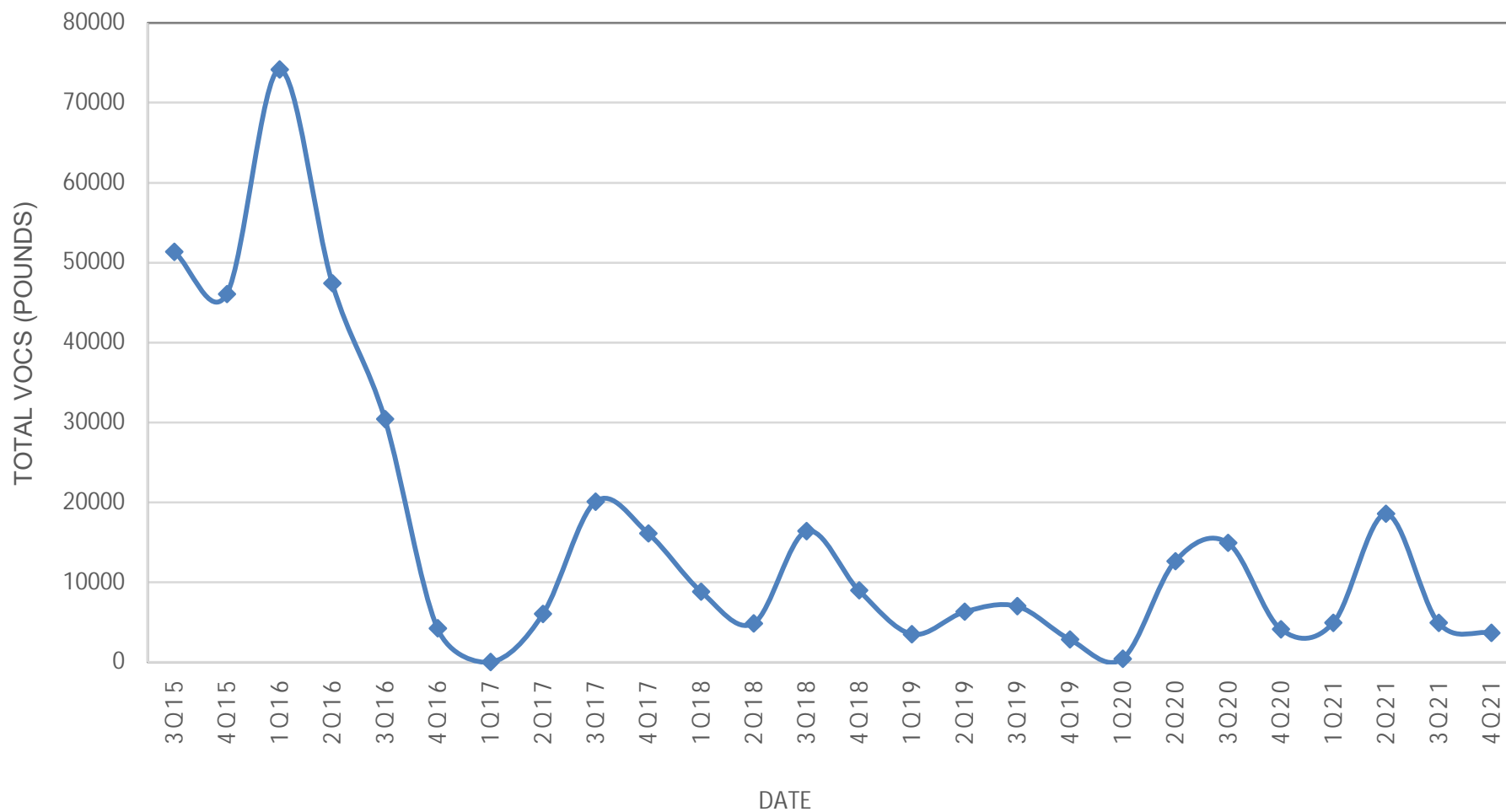
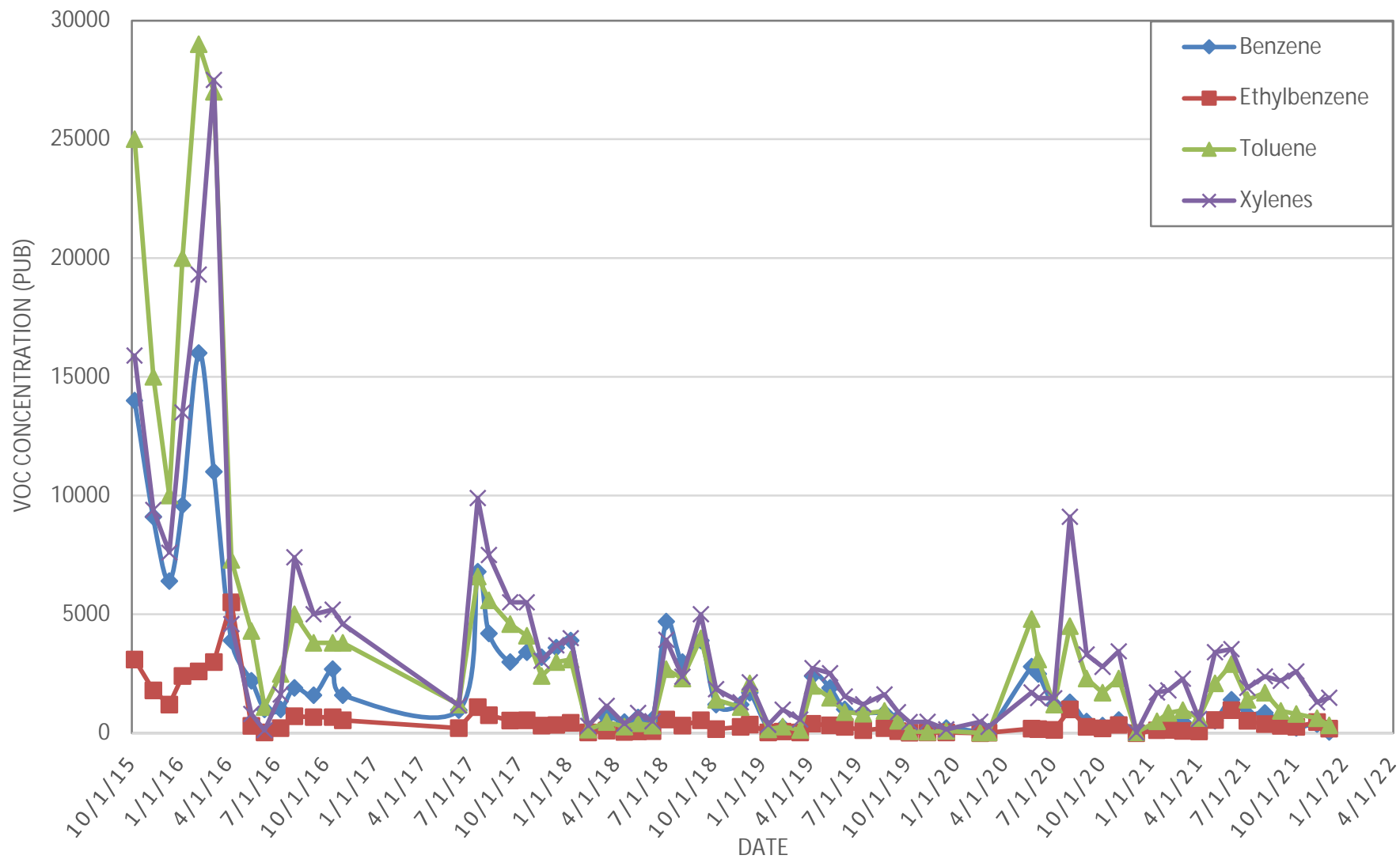


Figure 2. Remediation System Layout
SFPP Norwalk Pump Station
Norwalk, California



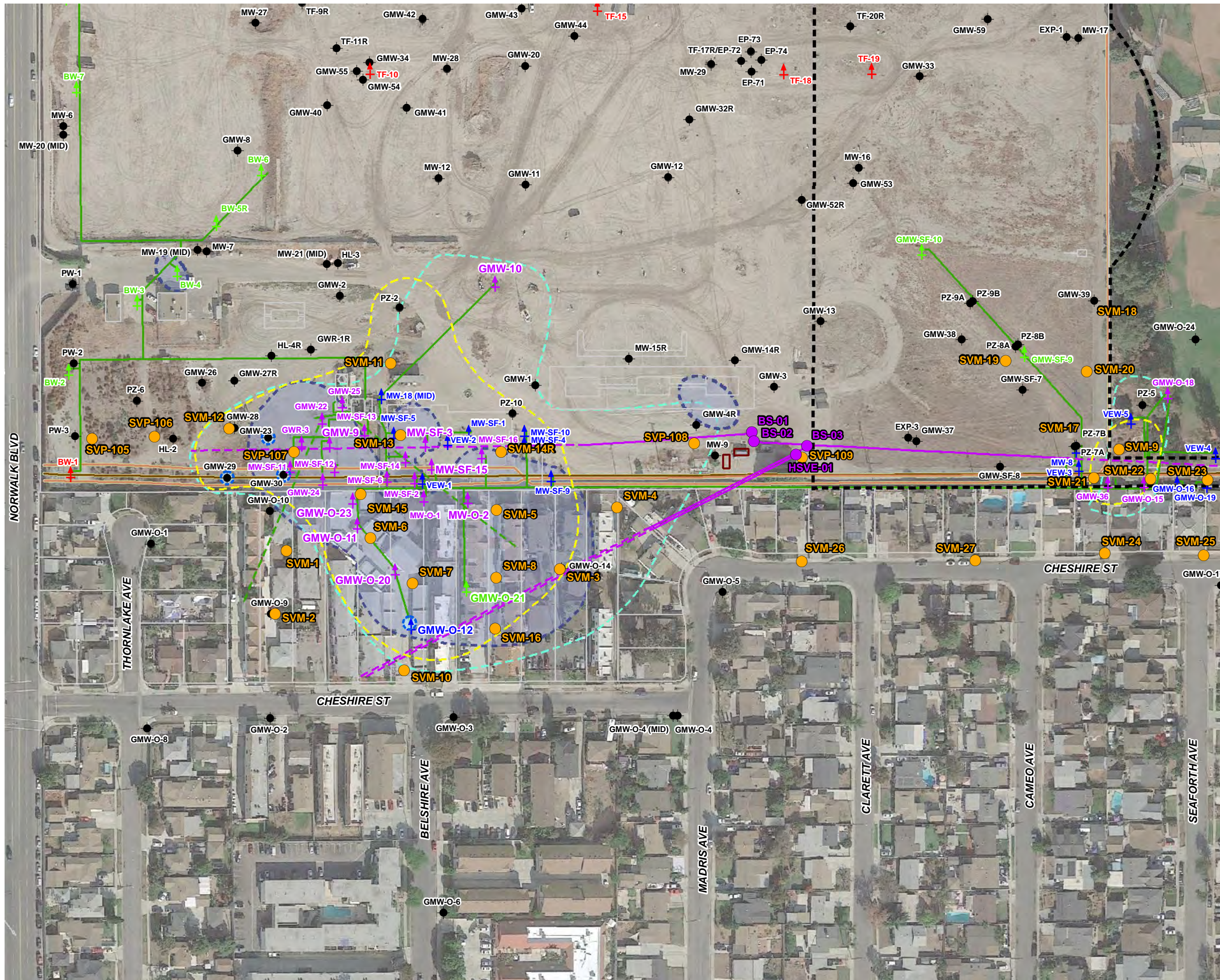
Note:
 VOC = volatile organic compound

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



Note:
VOC = volatile organic compound

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



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 Vapor Extraction Well Piping
- Horizontal Biosparge Well (Dashed Line Depicts Approximate Lateral Extent of Well Screen)
- - - Inferred Historical Extent of LNAPL Zone (Smear Zone) from LNAPL Characterization Work Plan (AMEC Geomatrix, 2010)
- Air Compressor System
- 16" Pipeline (approximate)
- 24" Pipeline (approximate)
- Eastern 15-Acre Property Boundary
- Intermittent NAPL (2021)
- Estimated Extent of Dissolved Benzene > 5 µg/L (2013)
- Estimated Extent of Dissolved Benzene > 5 µg/L (2021)

Imagery Source:
Google Earth December 3, 2017.

Note:
Trap locations will be selected based on the preliminary LI-COR results at ~10 locations.

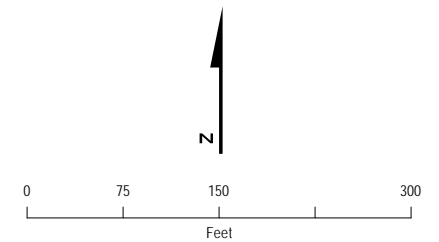


Figure 5. Current and Historical Extent of Dissolved Phase and LNAPL
SFPP Norwalk Pump Station
Norwalk, California

Appendix A
Laboratory Analytical Reports



October 22, 2021

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



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

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: M100403-01/04

Enclosed are results for sample(s) received 10/04/21 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 10/21/21.

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,

A handwritten signature in blue ink, appearing to read "Mark Johnson".

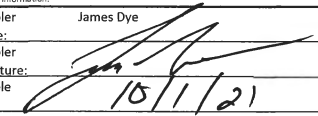
Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

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

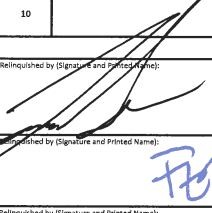

Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

M100403-01/04

CHAIN OF CUSTODY RECORD
DATE: 10/1/21
PAGE: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Section D Sampler Information:	
Company: Jacobs		Report To: Eric Davis		Attention: Eric Davis		Sampler Name: James Dye	
Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017		Copy To: Court Reece		Company Name: Jacobs		Sampler Signature: 	
Email To: eric.davis@jacobs.com		Purchase Order No.:		Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017		Sample Date: 10/1/21	
Phone: 404-323-1600	Fax:	Project Name: SFPP Norwalk		Project Manager: Joann De La Ossa			

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAV C=COMP)	CONTAINER TYPE		TOTAL # OF CONTAINERS	Analysis Test			Comments
					# OF CONTAINERS	PRESERVATIVE		SAMPLING			
					VOLUME (mL)	DATE		TIME	To-3 (Total VOCs as Hexane)	To-15 (VOCs, Target Analytes)	
1	VEFF- 100121	Effluent (stack)	Vapor	G			1	X	X		Individually Certified 6-Liter SUMMA
2	VEFF- 100121 D	Effluent (stack) (duplicate)	Vapor	G			1	X	X		Individually Certified 6-Liter SUMMA
3	VPOST- 100121	Influent (post-dilution)	Vapor	G			1	X	X		Individually Certified 1-Liter SUMMA
4	VINF- 100121	Influent (pre-dilution)	Vapor	G			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: 10/1/21 1430	Relinquished by (Signature and Printed Name): FEDEx Date / Time: 10/1/21 1430	Turn Around Time (TAT): <input type="checkbox"/> A = Same Day <input type="checkbox"/> B = 24 Hours <input type="checkbox"/> C = 48 Hours <input type="checkbox"/> D = 72 Hours <input type="checkbox"/> E = 5 Workdays <input checked="" type="checkbox"/> E = 10 Workdays TAT Starts at 8 AM the following day if samples received after 3:00 PM.	Special Instruction:
Relinquished by (Signature and Printed Name): FEDEx Date / Time: 10/4/21	Relinquished by (Signature and Printed Name):  Date / Time: 10/4/21 1217		
Relinquished by (Signature and Printed Name):	Relinquished by (Signature and Printed Name):		

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

Client: Jacobs
 Attn: Eric Davis
 Project Name: SFPP Norwalk
 Project No.: NA
 Date Received: 10/04/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	M100403-01			M100403-02			M100403-03			M100403-04		
Client Sample I.D.:	VEFF-100121			VEFF-100121-D			VPOST-100121			VINP-100121		
Date/Time Sampled:	10/1/21 10:30			10/1/21 10:30			10/1/21 10:40			10/1/21 10:50		
Date/Time Analyzed:	10/13/21 14:52			10/13/21 15:28			10/13/21 16:03			10/13/21 16:38		
QC Batch No.:	211013MS2A1			211013MS2A1			211013MS2A1			211013MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			4.9			7.2		
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	0.0023 J	0.0025	0.00045	0.0020 J	0.0025	0.00045	0.15	0.0049	0.00088	0.23	0.0072	0.0013
Chloroform	ND	0.0025	0.00010	ND	0.0025	0.00010	ND	0.0049	0.00020	0.0025 J	0.0072	0.00029
Carbon Tetrachloride	ND	0.0025	0.00013	ND	0.0025	0.00013	ND	0.0049	0.00025	ND	0.0072	0.00037
1,4-Dioxane	ND	0.013	0.00026	ND	0.013	0.00026	ND	0.025	0.00051	ND	0.036	0.00075
1,4-Dichlorobenzene	ND	0.0025	0.00027	ND	0.0025	0.00027	ND	0.0049	0.00053	ND	0.0072	0.00077
1,1-Dichloroethane	ND	0.0025	0.00024	ND	0.0025	0.00024	ND	0.0049	0.00046	ND	0.0072	0.00067
Ethylbenzene	0.015	0.0025	0.000094	0.0096	0.0025	0.000094	0.17	0.0049	0.00018	0.27	0.0072	0.00027
1,2-Dichloroethane	ND	0.0025	0.00025	ND	0.0025	0.00025	0.0013 J	0.0049	0.00048	0.0038 J	0.0072	0.00071
Methylene Chloride	ND	0.0025	0.00035	ND	0.0025	0.00035	ND	0.0049	0.00068	ND	0.0072	0.00100
t-Butyl Methyl Ether (MTBE)	0.0034	0.0025	0.00044	0.0012 J	0.0025	0.00044	0.020	0.0049	0.00086	0.031	0.0072	0.0013
Tetrachloroethene	ND	0.0025	0.000084	ND	0.0025	0.000084	0.034	0.0049	0.00016	0.012	0.0072	0.00024
1,1,2-Trichloroethane	ND	0.0025	0.00034	ND	0.0025	0.00034	ND	0.0049	0.00066	ND	0.0072	0.00096
Trichloroethene	ND	0.0025	0.00014	ND	0.0025	0.00014	0.011	0.0049	0.00027	0.022	0.0072	0.00040
Vinyl Chloride	ND	0.0025	0.00043	ND	0.0025	0.00043	ND	0.0049	0.00084	ND	0.0072	0.0012
Naphthalene	ND	0.013	0.0017	ND	0.013	0.0017	ND	0.025	0.0032	ND	0.036	0.0047
c-1,2-Dichloroethene	ND	0.0025	0.00036	ND	0.0025	0.00036	ND	0.0049	0.00070	ND	0.0072	0.0010
2-Butanone	0.013	0.0025	0.000082	0.013	0.0025	0.000082	0.0040 J	0.0049	0.00016	0.0060 J	0.0072	0.00023
Dichlorodifluoromethane (12)	ND	0.0025	0.000098	ND	0.0025	0.000098	0.00066 J	0.0049	0.00019	0.00072 J	0.0072	0.00028
Chloromethane	ND	0.0051	0.00074	ND	0.0051	0.00074	ND	0.0099	0.0014	ND	0.014	0.0021
1,1,1-Trichloroethane	ND	0.0025	0.00011	ND	0.0025	0.00011	ND	0.0049	0.00021	ND	0.0072	0.00030
1,2-CI-1,1,2,2-F ethane (114)	ND	0.0025	0.00012	ND	0.0025	0.00012	ND	0.0049	0.00024	ND	0.0072	0.00036
Bromomethane	ND	0.0025	0.00057	ND	0.0025	0.00057	ND	0.0049	0.0011	ND	0.0072	0.0016
Chloroethane	ND	0.0025	0.00049	ND	0.0025	0.00049	ND	0.0049	0.00096	ND	0.0072	0.0014
Trichlorofluoromethane (11)	ND	0.0025	0.00033	ND	0.0025	0.00033	ND	0.0049	0.00063	ND	0.0072	0.00093
1,2-Dichloropropane	ND	0.0025	0.00024	ND	0.0025	0.00024	ND	0.0049	0.00046	ND	0.0072	0.00068
Bromodichloromethane	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.0049	0.00029	ND	0.0072	0.00043
c-1,3-Dichloropropene	ND	0.0025	0.00011	ND	0.0025	0.00011	ND	0.0049	0.00022	ND	0.0072	0.00032
4-Methyl-2-Pentanone	ND	0.0025	0.00045	ND	0.0025	0.00045	ND	0.0049	0.00088	ND	0.0072	0.0013
Toluene	0.0099	0.0025	0.00011	0.0067	0.0025	0.00011	0.50	0.0049	0.00022	0.81	0.0072	0.00032
t-1,3-Dichloropropene	ND	0.0025	0.000064	ND	0.0025	0.000064	ND	0.0049	0.00013	ND	0.0072	0.00018
1,1-Dichloroethene	ND	0.0025	0.00019	ND	0.0025	0.00019	ND	0.0049	0.00037	ND	0.0072	0.00054
1,3-Dichloropropane	ND	0.0025	0.00019	ND	0.0025	0.00019	ND	0.0049	0.00037	ND	0.0072	0.00054
Carbon Disulfide	0.18	0.013	0.00020	0.060	0.013	0.00020	0.0057 J	0.025	0.00038	0.015 J	0.036	0.00056
2-Hexanone	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.0049	0.00030	ND	0.0072	0.00044
Dibromochloromethane	ND	0.0025	0.00038	ND	0.0025	0.00038	ND	0.0049	0.00074	ND	0.0072	0.0011
1,2-Dibromoethane	ND	0.0025	0.00024	ND	0.0025	0.00024	ND	0.0049	0.00046	ND	0.0072	0.00068
Chlorobenzene	ND	0.0025	0.00013	ND	0.0025	0.00013	0.0051	0.0049	0.00026	0.0080	0.0072	0.00038
1,1,2-CI 1,2,2-F ethane (113)	ND	0.0025	0.00038	ND	0.0025	0.00038	ND	0.0049	0.00074	ND	0.0072	0.0011
p,&m-Xylene	0.095	0.0025	0.00016	0.064	0.0025	0.00016	1.0	0.0049	0.00032	1.6	0.0072	0.00047



Client: Jacobs
 Attn: Eric Davis
 Project Name: SFPP Norwalk
 Project No.: NA
 Date Received: 10/04/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	M100403-01			M100403-02			M100403-03			M100403-04		
Client Sample I.D.:	VEFF-100121			VEFF-100121-D			VPOST-100121			VINP-100121		
Date/Time Sampled:	10/1/21 10:30			10/1/21 10:30			10/1/21 10:40			10/1/21 10:50		
Date/Time Analyzed:	10/13/21 14:52			10/13/21 15:28			10/13/21 16:03			10/13/21 16:38		
QC Batch No.:	211013MS2A1			211013MS2A1			211013MS2A1			211013MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.5			2.5			4.9			7.2		
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
o-Xylene	0.033	0.0025	0.00012	0.021	0.0025	0.00012	0.67	0.0049	0.00024	1.0	0.0072	0.00035
Styrene	0.0015 J	0.0025	0.00018	0.0013 J	0.0025	0.00018	0.019	0.0049	0.00036	0.030	0.0072	0.00052
Bromoform	ND	0.0025	0.00025	ND	0.0025	0.00025	ND	0.0049	0.00049	ND	0.0072	0.00072
Isopropyl benzene	0.00055 J	0.0025	0.00027	0.00039 J	0.0025	0.00027	0.019	0.0049	0.00053	0.029	0.0072	0.00078
1,1,2,2-Tetrachloroethane	ND	0.0051	0.00025	ND	0.0051	0.00025	ND	0.0099	0.00050	ND	0.014	0.00073
Benzyl Chloride	ND	0.0025	0.00024	ND	0.0025	0.00024	0.0014 J	0.0049	0.00047	0.0016 J	0.0072	0.00069
1,2,3-Trichloropropane	ND	0.0025	0.00027	ND	0.0025	0.00027	ND	0.0049	0.00053	ND	0.0072	0.00078
n-Propyl Benzene	0.0012 J	0.0025	0.00043	0.00085 J	0.0025	0.00043	0.028	0.0049	0.00085	0.039	0.0072	0.0012
4-Ethyl Toluene	0.0070	0.0025	0.00012	0.0045	0.0025	0.00012	0.25	0.0049	0.00024	0.36	0.0072	0.00035
1,3,5-Trimethylbenzene	0.0052	0.0051	0.00016	0.0033 J	0.0051	0.00016	0.27	0.0099	0.00032	0.37	0.014	0.00046
4-Chlorotoluene	ND	0.0025	0.00034	ND	0.0025	0.00034	ND	0.0049	0.00066	ND	0.0072	0.00097
tert-Butylbenzene	ND	0.0025	0.00015	ND	0.0025	0.00015	ND	0.0049	0.00029	ND	0.0072	0.00042
1,2,4-Trimethylbenzene	0.0065	0.0051	0.00014	0.0039 J	0.0051	0.00014	0.21	0.0099	0.00028	0.28	0.014	0.00041
sec-Butylbenzene	0.00020 J	0.0025	0.000098	ND	0.0025	0.000098	0.0081	0.0049	0.00019	0.011	0.0072	0.00028
p-Isopropyltoluene	0.0021 J	0.0025	0.00014	0.0026	0.0025	0.00014	0.0053	0.0049	0.00028	0.0069 J	0.0072	0.00041
1,3-Dichlorobenzene	ND	0.0025	0.00029	ND	0.0025	0.00029	ND	0.0049	0.00056	ND	0.0072	0.00082
Acetone	0.21	0.013	0.0014	0.24	0.013	0.0014	0.40	0.025	0.0027	0.49	0.036	0.0040
n-Butylbenzene	ND	0.0025	0.00018	ND	0.0025	0.00018	ND	0.0049	0.00036	ND	0.0072	0.00052
1,2-Dichlorobenzene	ND	0.0025	0.00016	ND	0.0025	0.00016	ND	0.0049	0.00030	ND	0.0072	0.00045
1,2,4-Trichlorobenzene	ND	0.0051	0.00025	ND	0.0051	0.00025	ND	0.0099	0.00049	ND	0.014	0.00071
Hexachlorobutadiene	ND	0.0025	0.00023	ND	0.0025	0.00023	ND	0.0049	0.00044	ND	0.0072	0.00064
t-Butanol	ND	0.013	0.00039	ND	0.013	0.00039	ND	0.025	0.00075	ND	0.036	0.0011
n-Hexane	0.0032 J	0.013	0.00024	0.0024 J	0.013	0.00024	0.60	0.025	0.00046	0.97	0.036	0.00068
Isopropyl ether	ND	0.013	0.00037	ND	0.013	0.00037	ND	0.025	0.00073	ND	0.036	0.0011
t-Butyl ethyl ether	ND	0.013	0.00036	ND	0.013	0.00036	ND	0.025	0.00070	ND	0.036	0.0010
2,2-Dichloropropane	ND	0.013	0.00046	ND	0.013	0.00046	ND	0.025	0.00090	ND	0.036	0.0013
t-Amyl methyl ether	ND	0.013	0.00046	ND	0.013	0.00046	ND	0.025	0.00089	ND	0.036	0.0013
t-1,2-Dichloroethene	ND	0.0025	0.00026	ND	0.0025	0.00026	ND	0.0049	0.00052	ND	0.0072	0.00076
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: Mark Johnson
 Operations Manager

Date 10/20/21

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: 10/04/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK																	
Client Sample I.D.:	--																	
Date/Time Sampled:	--																	
Date/Time Analyzed:	10/13/21 7:14																	
QC Batch No.:	211013MS2A1																	
Analyst Initials:	DT																	
Dilution Factor:	0.20																	
ANALYTE	Result ppmv	RL ppmv	MDL ppmv															
Benzene	0.000060 J	0.00020	0.000036															
Chloroform	ND	0.00020	0.0000081															
Carbon Tetrachloride	ND	0.00020	0.000010															
1,4-Dioxane	ND	0.0010	0.000021															
1,4-Dichlorobenzene	ND	0.00020	0.000021															
1,1-Dichloroethane	ND	0.00020	0.000019															
Ethylbenzene	ND	0.00020	0.0000075															
1,2-Dichloroethane	ND	0.00020	0.000020															
Methylene Chloride	ND	0.00020	0.000028															
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000035															
Tetrachloroethene	ND	0.00020	0.0000066															
1,1,2-Trichloroethane	ND	0.00020	0.000027															
Trichloroethene	ND	0.00020	0.000011															
Vinyl Chloride	ND	0.00020	0.000034															
Naphthalene	ND	0.0010	0.00013															
c-1,2-Dichloroethene	ND	0.00020	0.000028															
2-Butanone	ND	0.00020	0.0000065															
Dichlorodifluoromethane (12)	ND	0.00020	0.0000077															
Chloromethane	ND	0.00040	0.000058															
1,1,1-Trichloroethane	ND	0.00020	0.0000084															
1,2-CI-1,1,2,2-F ethane (114)	ND	0.00020	0.0000099															
Bromomethane	ND	0.00020	0.000045															
Chloroethane	ND	0.00020	0.000039															
Trichlorofluoromethane (11)	ND	0.00020	0.000026															
1,2-Dichloropropane	ND	0.00020	0.000019															
Bromodichloromethane	ND	0.00020	0.000012															
c-1,3-Dichloropropene	ND	0.00020	0.0000090															
4-Methyl-2-Pentanone	ND	0.00020	0.000036															
Toluene	0.000013 J	0.00020	0.0000088															
t-1,3-Dichloropropene	ND	0.00020	0.0000051															
1,1-Dichloroethene	ND	0.00020	0.000015															
1,3-Dichloropropane	ND	0.00020	0.000015															
Carbon Disulfide	ND	0.0010	0.000016															
2-Hexanone	ND	0.00020	0.000012															
Dibromochloromethane	ND	0.00020	0.000030															
1,2-Dibromoethane	ND	0.00020	0.000019															
Chlorobenzene	ND	0.00020	0.000010															
1,1,2-CI 1,2,2-F ethane (113)	ND	0.00020	0.000030															
p,&m-Xylene	ND	0.00020	0.000013															



Client: Jacobs
 Attn: Eric Davis
 Project Name: SFPP Norwalk
 Project No.: NA
 Date Received: 10/04/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK																	
Client Sample I.D.:	--																	
Date/Time Sampled:	--																	
Date/Time Analyzed:	10/13/21 7:14																	
QC Batch No.:	211013MS2A1																	
Analyst Initials:	DT																	
Dilution Factor:	0.20																	
ANALYTE	Result ppmv	RL ppmv	MDL ppmv															
o-Xylene	ND	0.00020	0.0000096															
Styrene	ND	0.00020	0.000015															
Bromoform	ND	0.00020	0.000020															
Isopropyl benzene	ND	0.00020	0.000021															
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000020															
Benzyl Chloride	ND	0.00020	0.000019															
1,2,3-Trichloropropane	ND	0.00020	0.000022															
n-Propyl Benzene	ND	0.00020	0.000034															
4-Ethyl Toluene	ND	0.00020	0.0000097															
1,3,5-Trimethylbenzene	ND	0.00040	0.000013															
4-Chlorotoluene	ND	0.00020	0.000027															
tert-Butylbenzene	ND	0.00020	0.000012															
1,2,4-Trimethylbenzene	ND	0.00040	0.000011															
sec-Butylbenzene	ND	0.00020	0.0000077															
p-Isopropyltoluene	ND	0.00020	0.000011															
1,3-Dichlorobenzene	ND	0.00020	0.000023															
Acetone	0.00039 J	0.0010	0.00011															
n-Butylbenzene	ND	0.00020	0.000014															
1,2-Dichlorobenzene	ND	0.00020	0.000012															
1,2,4-Trichlorobenzene	ND	0.00040	0.000020															
Hexachlorobutadiene	ND	0.00020	0.000018															
t-Butanol	ND	0.0010	0.000031															
n-Hexane	ND	0.0010	0.000019															
Isopropyl ether	ND	0.0010	0.000029															
t-Butyl ethyl ether	ND	0.0010	0.000029															
2,2-Dichloropropane	ND	0.0010	0.000036															
t-Amyl methyl ether	ND	0.0010	0.000036															
t-1,2-Dichloroethene	ND	0.00020	0.000021															
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: Mark Johnson
 Operations Manager

Date 10/20/21

The cover letter is an integral part of this analytical report



LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 211013MS2A1

Matrix: Air

Reporting Units: ppmv

**EPA Method TO15
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:		METHOD BLANK		LCS		LCSD					
Date/Time Analyzed:		10/13/21 7:14		10/13/21 5:55		10/13/21 6:32					
Analyst Initials:		DT		DT		DT					
Dilution Factor:		0.20		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD	Low %Rec	High %Rec	Max. RPD
1,1-Dichloroethene	ND	0.00020	0.010	0.0102	102	0.0102	102	0.0	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.0101	101	0.0104	104	2.6	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.0101	101	0.0105	105	3.4	70	130	30.0
Toluene	ND	0.00020	0.010	0.00901	90.1	0.00922	92.2	2.2	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00931	93.1	0.00893	89.3	4.2	70	130	30.0

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: Mark Johnson *Mall* 1
 Mark Johnson
 Operations Manager

Date: 10/20/21

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: 10/04/21
 Matrix: Air
 Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	M100403-01	M100403-02	M100403-03	M100403-04				
Client Sample I.D.:	VEFF-100121	VEFF-100121-D	VPOST-100121	VINF-100121				
Date/Time Sampled:	10/1/21 10:30	10/1/21 10:30	10/1/21 10:40	10/1/21 10:50				
Date/Time Analyzed:	10/7/21 15:26	10/7/21 15:49	10/7/21 16:12	10/7/21 16:34				
QC Batch No.:	211007GC11A1	211007GC11A1	211007GC11A1	211007GC11A1				
Analyst Initials:	CM	CM	CM	CM				
Dilution Factor:	2.5	2.5	2.5	2.4				
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	40	2.5	49	2.4

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

Reviewed/Approved By: Mark Johnson
 Mark Johnson
 Operations Manager

Date: 10/20/21

The cover letter is an integral part of this analytical report



QC Batch No: 211007GC11A1

Matrix: Air

Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS	LCS	
Date Analyzed:	10/7/21 14:54		10/7/21 14:08	10/7/21 14:31	
Analyst Initials:	CM		CM	CM	
Dilution Factor:	1.0		1.0	1.0	

ANALYTE	Result ppmv	RL ppmv	SPIKE AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	5.0	4.69	94	4.80	96	2.3	70	130	25

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: _____

Mark Johnson
Operations Manager

Date _____

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: 10/04/21
Matrix: Air
Reporting Units: % v/v

ASTM D1946

Lab No.:	M100403-04				
Client Sample I.D.:	VINF-100121				
Date/Time Sampled:	10/1/21 10:50				
Date/Time Analyzed:	10/12/21 14:06				
QC Batch No.:	211012GC8A1				
Analyst Initials:	CM				
Dilution Factor:	2.4				
ANALYTE	Result % v/v	RL % v/v			
Carbon Dioxide	0.95	0.024			
Oxygen/Argon	21	1.2			
Nitrogen	78	2.4			
Methane	ND	0.0024			

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: Mark Johnson
Mark Johnson
Operations Manager

Date 10/20/21

The cover letter is an integral part of this analytical report



QC Batch No: 211012GC8A1
 Matrix: Air
 Reporting Units: % v/v

ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:		METHOD BLANK		LCS		LCSD					
Date Analyzed:		10/12/21 11:47		10/12/21 10:43		10/12/21 10:57					
Analyst Initials:		CM		CM		CM					
Dilution Factor:		1.0		1.0		1.0					
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	9.61	96	9.57	95	0.4	70	130	30
Oxygen/Argon	ND	0.50	15	15.6	105	15.5	105	0.7	70	130	30
Nitrogen	ND	1.0	70	69.5	99	69.1	99	0.6	70	130	30
Methane	ND	0.0010	0.10	0.102	102	0.102	102	0.7	70	130	30

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: _____

Mark Johnson
 Mark Johnson
 Operations Manager

Date _____

10/20/21

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



December 6, 2021

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



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

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: M111007-01/04

Enclosed are results for sample(s) received 11/07/21 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 12/03/21.

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,

A handwritten signature in blue ink, appearing to read "Mark Johnson".

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

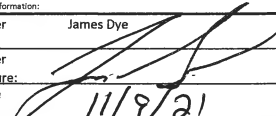
Note: The cover letter is an integral part of this analytical report.

M 111007-0/84

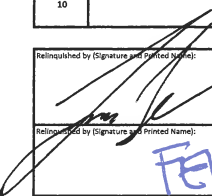
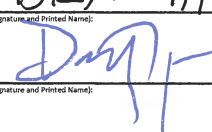
Air Technology Laboratories, Inc.
18501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4032
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

CHAIN OF CUSTODY RECORD

DATE: 11/9/21
PAGE: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Section D Sampler Information:	
Company: Jacobs Attention: Eric Davis		Report To: Eric Davis		Attention: Eric Davis		Sampler Name: James Dye	
Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017		Copy To: Court Reece		Company Name: Jacobs		Sampler Signature: 	
Email To: eric.davis@jacobs.com		Purchase Order No.:		Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017		Sample Date: 11/9/21	
Phone: 404-323-1600	Fax:	Project Name: SFPP Norwalk		Project Manager: Joann De La Ossa			

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	SAMPLING		TOTAL # OF CONTAINERS	Analysis Test	TOS (Total VOCs as Heptane)	TD-15 (VOCs, Target Analytes)	ASTM-D 1946 (O2/Ngsm, CO2, CH4, H2)	Comments
					DATE	TIME						
1	VEFF-110921	Effluent (stack)	Vapor	G	11/9/21	1200	1	X	X			Individually Certified 6-Liter SUMMA
2	VEFF-110921 D	Effluent (stack) (duplicate)	Vapor	G	11/9/21	1200	1	X	X			Individually Certified 6-Liter SUMMA
3	VPOST-110921	Influent (post-dilution)	Vapor	G	11/9/21	1215	1	X	X			Individually Certified 1-Liter SUMMA
4	VINF-110921	Influent (pre-dilution)	Vapor	G	11/9/21	1225	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: 11/9/21 1430	Relinquished by (Signature and Printed Name): FED EX Date / Time: 11/9/21 1430	Turn Around Time (TAT): <input type="checkbox"/> A = Same Day <input type="checkbox"/> B = 24 Hours <input type="checkbox"/> C = 48 Hours <input type="checkbox"/> D = 72 Hours <input type="checkbox"/> E = 5 Workdays <input checked="" type="checkbox"/> E = 10 Workdays TAT Starts at 8 AM the following day if samples received after 3:00 PM.	Special Instruction:
Relinquished by (Signature and Printed Name): FED EX Date / Time: 11/10/21	Relinquished by (Signature and Printed Name):  Date / Time: 11/10/21 1135		
Relinquished by (Signature and Printed Name):	Relinquished by (Signature and Printed Name):		

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: 11/10/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	M111007-01			M111007-02			M111007-03			M111007-04		
Client Sample I.D.:	VEFF-110921			VEFF-110921-D			VPOST-110921			VINP-110921		
Date/Time Sampled:	11/9/21 12:00			11/9/21 12:00			11/9/21 12:15			11/9/21 12:25		
Date/Time Analyzed:	11/22/21 21:39			11/22/21 22:16			11/23/21 13:35			11/22/21 18:34		
QC Batch No.:	211122MS2A1			211122MS2A1			211123MS2A1			211122MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.4			2.4			9.6			24		
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	0.0016 J	0.0024	0.00023	0.0015 J	0.0024	0.00023	0.14	0.0096	0.00092	0.39	0.024	0.0023
Chloroform	ND	0.0024	0.00034	ND	0.0024	0.00034	ND	0.0096	0.0013	ND	0.024	0.0034
Carbon Tetrachloride	ND	0.0024	0.00042	ND	0.0024	0.00042	ND	0.0096	0.0017	ND	0.024	0.0042
1,4-Dioxane	ND	0.012	0.00042	ND	0.012	0.00042	ND	0.048	0.0017	ND	0.12	0.0042
1,4-Dichlorobenzene	ND	0.0024	0.00035	ND	0.0024	0.00035	ND	0.0096	0.0014	ND	0.024	0.0035
1,1-Dichloroethane	ND	0.0024	0.00033	ND	0.0024	0.00033	ND	0.0096	0.0013	ND	0.024	0.0033
Ethylbenzene	0.0066	0.0024	0.00014	0.0068	0.0024	0.00014	0.16	0.0096	0.00055	0.47	0.024	0.0014
1,2-Dichloroethane	ND	0.0024	0.00018	ND	0.0024	0.00018	ND	0.0096	0.00072	ND	0.024	0.0018
Methylene Chloride	ND	0.0024	0.00069	ND	0.0024	0.00069	ND	0.0096	0.0027	ND	0.024	0.0069
t-Butyl Methyl Ether (MTBE)	0.00062 J	0.0024	0.00054	0.00065 J	0.0024	0.00054	ND	0.0096	0.0022	ND	0.024	0.0054
Tetrachloroethene	ND	0.0024	0.00029	ND	0.0024	0.00029	0.039	0.0096	0.0012	ND	0.024	0.0029
1,1,2-Trichloroethane	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0096	0.0016	ND	0.024	0.0039
Trichloroethene	ND	0.0024	0.00034	ND	0.0024	0.00034	0.0021 J	0.0096	0.0014	ND	0.024	0.0034
Vinyl Chloride	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0096	0.0016	ND	0.024	0.0039
Naphthalene	ND	0.012	0.00092	ND	0.012	0.00092	ND	0.048	0.0037	ND	0.12	0.0092
c-1,2-Dichloroethene	ND	0.0024	0.00046	ND	0.0024	0.00046	ND	0.0096	0.0019	ND	0.024	0.0046
2-Butanone	0.0063	0.0024	0.0015	0.011	0.0024	0.0015	0.013	0.0096	0.0059	0.023 J	0.024	0.015
Dichlorodifluoromethane (12)	ND	0.0024	0.00037	ND	0.0024	0.00037	ND	0.0096	0.0015	ND	0.024	0.0037
Chloromethane	ND	0.0048	0.00053	ND	0.0048	0.00053	ND	0.019	0.0021	ND	0.048	0.0053
1,1,1-Trichloroethane	ND	0.0024	0.00024	ND	0.0024	0.00024	ND	0.0096	0.00097	ND	0.024	0.0024
1,2-CI-1,1,2,2-F ethane (114)	ND	0.0024	0.00048	ND	0.0024	0.00048	ND	0.0096	0.0019	ND	0.024	0.0048
Bromomethane	ND	0.0024	0.00071	ND	0.0024	0.00071	ND	0.0096	0.0028	ND	0.024	0.0071
Chloroethane	ND	0.0024	0.0020	ND	0.0024	0.0020	ND	0.0096	0.0081	ND	0.024	0.020
Trichlorofluoromethane (11)	ND	0.0024	0.00052	ND	0.0024	0.00052	ND	0.0096	0.0021	ND	0.024	0.0052
1,2-Dichloropropane	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0096	0.0017	ND	0.024	0.0044
Bromodichloromethane	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0096	0.00058	ND	0.024	0.0014
c-1,3-Dichloropropene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0096	0.0012	ND	0.024	0.0029
4-Methyl-2-Pentanone	ND	0.0024	0.00016	ND	0.0024	0.00016	ND	0.0096	0.00065	ND	0.024	0.0016
Toluene	0.0064	0.0024	0.00019	0.0063	0.0024	0.00019	0.23	0.0096	0.00077	0.62	0.024	0.0019
t-1,3-Dichloropropene	ND	0.0024	0.00025	ND	0.0024	0.00025	ND	0.0096	0.00099	ND	0.024	0.0025
1,1-Dichloroethene	ND	0.0024	0.00055	ND	0.0024	0.00055	ND	0.0096	0.0022	ND	0.024	0.0055
1,3-Dichloropropane	ND	0.0024	0.00012	ND	0.0024	0.00012	ND	0.0096	0.00048	ND	0.024	0.0012
Carbon Disulfide	0.033	0.012	0.00058	0.0096 J	0.012	0.00058	0.013 J	0.048	0.0023	ND	0.12	0.0058
2-Hexanone	ND	0.0024	0.00050	ND	0.0024	0.00050	ND	0.0096	0.0020	ND	0.024	0.0050
Dibromochloromethane	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0096	0.0018	ND	0.024	0.0044
1,2-Dibromoethane	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0096	0.00088	ND	0.024	0.0022
Chlorobenzene	ND	0.0024	0.00019	ND	0.0024	0.00019	0.0050 J	0.0096	0.00075	ND	0.024	0.0019
1,1,2-CI 1,2,2-F ethane (113)	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0096	0.0026	ND	0.024	0.0065
p,&m-Xylene	0.038	0.0024	0.00027	0.039	0.0024	0.00027	0.31	0.0096	0.0011	0.89	0.024	0.0027



Client: Jacobs
 Attn: Eric Davis
 Project Name: SFPP Norwalk
 Project No.: NA
 Date Received: 11/10/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	M111007-01			M111007-02			M111007-03			M111007-04		
Client Sample I.D.:	VEFF-110921			VEFF-110921-D			VPOST-110921			VINP-110921		
Date/Time Sampled:	11/9/21 12:00			11/9/21 12:00			11/9/21 12:15			11/9/21 12:25		
Date/Time Analyzed:	11/22/21 21:39			11/22/21 22:16			11/23/21 13:35			11/22/21 18:34		
QC Batch No.:	211122MS2A1			211122MS2A1			211123MS2A1			211122MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.4			2.4			9.6			24		
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
o-Xylene	0.017	0.0024	0.00029	0.017	0.0024	0.00029	0.065	0.0096	0.0012	0.41	0.024	0.0029
Styrene	0.00082 J	0.0024	0.00031	0.00067 J	0.0024	0.00031	0.0020 J	0.0096	0.0012	0.013 J	0.024	0.0031
Bromoform	ND	0.0024	0.00013	ND	0.0024	0.00013	ND	0.0096	0.00054	ND	0.024	0.0013
Isopropyl benzene	0.00040 J	0.0024	0.00025	0.00038 J	0.0024	0.00025	0.0035 J	0.0096	0.0010	0.041	0.024	0.0025
1,1,2,2-Tetrachloroethane	ND	0.0048	0.00015	ND	0.0048	0.00015	ND	0.019	0.00059	ND	0.048	0.0015
Benzyl Chloride	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0096	0.0018	ND	0.024	0.0044
1,2,3-Trichloropropane	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0096	0.0026	ND	0.024	0.0065
n-Propyl Benzene	0.00087 J	0.0024	0.00014	0.00084 J	0.0024	0.00014	0.013	0.0096	0.00056	0.087	0.024	0.0014
4-Ethyl Toluene	0.0054	0.0024	0.00015	0.0053	0.0024	0.00015	0.11	0.0096	0.00061	0.61	0.024	0.0015
1,3,5-Trimethylbenzene	0.0031 J	0.0048	0.00042	0.0030 J	0.0048	0.00042	0.061	0.019	0.0017	0.25	0.048	0.0042
4-Chlorotoluene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0096	0.0011	ND	0.024	0.0029
tert-Butylbenzene	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0096	0.00087	ND	0.024	0.0022
1,2,4-Trimethylbenzene	0.0044 J	0.0048	0.00027	0.0041 J	0.0048	0.00027	0.024	0.019	0.0011	0.12	0.048	0.0027
sec-Butylbenzene	ND	0.0024	0.00023	ND	0.0024	0.00023	ND	0.0096	0.00093	0.0048 J	0.024	0.0023
p-Isopropyltoluene	0.00076 J	0.0024	0.00031	0.00046 J	0.0024	0.00031	ND	0.0096	0.0013	0.0099 J	0.024	0.0031
1,3-Dichlorobenzene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0096	0.0012	ND	0.024	0.0029
Acetone	0.036	0.012	0.00069	0.044	0.012	0.00069	0.18	0.048	0.0028	0.32	0.12	0.0069
n-Butylbenzene	0.00041 J	0.0024	0.00018	0.00053 J	0.0024	0.00018	ND	0.0096	0.00070	ND	0.024	0.0018
1,2-Dichlorobenzene	ND	0.0024	0.00030	ND	0.0024	0.00030	ND	0.0096	0.0012	ND	0.024	0.0030
1,2,4-Trichlorobenzene	ND	0.0048	0.00040	ND	0.0048	0.00040	ND	0.019	0.0016	0.0053 J	0.048	0.0040
Hexachlorobutadiene	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0096	0.00057	ND	0.024	0.0014
t-Butanol	0.0013 J	0.012	0.00046	0.0011 J	0.012	0.00046	0.0066 J	0.048	0.0018	0.027 J	0.12	0.0046
n-Hexane	0.0030 J	0.012	0.00032	0.0029 J	0.012	0.00032	0.66	0.048	0.0013	1.7	0.12	0.0032
Isopropyl ether	ND	0.012	0.00027	ND	0.012	0.00027	ND	0.048	0.0011	ND	0.12	0.0027
t-Butyl ethyl ether	ND	0.012	0.00048	ND	0.012	0.00048	ND	0.048	0.0019	ND	0.12	0.0048
2,2-Dichloropropane	ND	0.012	0.00023	ND	0.012	0.00023	ND	0.048	0.00092	ND	0.12	0.0023
t-Amyl methyl ether	ND	0.012	0.00017	ND	0.012	0.00017	ND	0.048	0.00068	ND	0.12	0.0017
t-1,2-Dichloroethene	ND	0.0024	0.00072	ND	0.0024	0.00072	ND	0.0096	0.0029	ND	0.024	0.0072
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: Mark Johnson Date 12/2/21
 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: 11/10/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK			METHOD BLANK									
Client Sample I.D.:	--			--									
Date/Time Sampled:	--			--									
Date/Time Analyzed:	11/22/21 13:22			11/24/21 0:04									
QC Batch No.:	211122MS2A1			211123MS2A1									
Analyst Initials:	DT			DT									
Dilution Factor:	0.20			0.20									
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv							
Benzene	ND	0.00020	0.000019	ND	0.00020	0.000019							
Chloroform	ND	0.00020	0.000028	ND	0.00020	0.000028							
Carbon Tetrachloride	ND	0.00020	0.000035	ND	0.00020	0.000035							
1,4-Dioxane	ND	0.0010	0.000035	ND	0.0010	0.000035							
1,4-Dichlorobenzene	ND	0.00020	0.000029	ND	0.00020	0.000029							
1,1-Dichloroethane	ND	0.00020	0.000027	ND	0.00020	0.000027							
Ethylbenzene	ND	0.00020	0.000011	ND	0.00020	0.000011							
1,2-Dichloroethane	ND	0.00020	0.000015	ND	0.00020	0.000015							
Methylene Chloride	ND	0.00020	0.000057	ND	0.00020	0.000057							
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045	ND	0.00020	0.000045							
Tetrachloroethene	ND	0.00020	0.000024	ND	0.00020	0.000024							
1,1,2-Trichloroethane	ND	0.00020	0.000032	ND	0.00020	0.000032							
Trichloroethene	ND	0.00020	0.000028	ND	0.00020	0.000028							
Vinyl Chloride	ND	0.00020	0.000032	ND	0.00020	0.000032							
Naphthalene	ND	0.0010	0.000077	ND	0.0010	0.000077							
c-1,2-Dichloroethene	ND	0.00020	0.000039	ND	0.00020	0.000039							
2-Butanone	ND	0.00020	0.00012	ND	0.00020	0.00012							
Dichlorodifluoromethane (12)	ND	0.00020	0.000031	ND	0.00020	0.000031							
Chloromethane	ND	0.00040	0.000044	ND	0.00040	0.000044							
1,1,1-Trichloroethane	ND	0.00020	0.000020	ND	0.00020	0.000020							
1,2-CI-1,1,2,2-F ethane (114)	ND	0.00020	0.000040	ND	0.00020	0.000040							
Bromomethane	ND	0.00020	0.000059	ND	0.00020	0.000059							
Chloroethane	ND	0.00020	0.00017	ND	0.00020	0.00017							
Trichlorofluoromethane (11)	ND	0.00020	0.000043	ND	0.00020	0.000043							
1,2-Dichloropropane	ND	0.00020	0.000036	ND	0.00020	0.000036							
Bromodichloromethane	ND	0.00020	0.000012	ND	0.00020	0.000012							
c-1,3-Dichloropropene	ND	0.00020	0.000024	ND	0.00020	0.000024							
4-Methyl-2-Pentanone	ND	0.00020	0.000013	ND	0.00020	0.000013							
Toluene	ND	0.00020	0.000016	ND	0.00020	0.000016							
t-1,3-Dichloropropene	ND	0.00020	0.000021	ND	0.00020	0.000021							
1,1-Dichloroethene	ND	0.00020	0.000045	ND	0.00020	0.000045							
1,3-Dichloropropane	ND	0.00020	0.000099	ND	0.00020	0.000099							
Carbon Disulfide	0.00011 J	0.0010	0.000048	0.00013 J	0.0010	0.000048							
2-Hexanone	ND	0.00020	0.000041	ND	0.00020	0.000041							
Dibromochloromethane	ND	0.00020	0.000036	ND	0.00020	0.000036							
1,2-Dibromoethane	ND	0.00020	0.000018	ND	0.00020	0.000018							
Chlorobenzene	ND	0.00020	0.000016	ND	0.00020	0.000016							
1,1,2-CI 1,2,2-F ethane (113)	ND	0.00020	0.000054	ND	0.00020	0.000054							
p,&m-Xylene	ND	0.00020	0.000023	ND	0.00020	0.000023							



Client: Jacobs
 Attn: Eric Davis
 Project Name: SFPP Norwalk
 Project No.: NA
 Date Received: 11/10/21
 Matrix: Air
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK			METHOD BLANK									
Client Sample I.D.:	--			--									
Date/Time Sampled:	--			--									
Date/Time Analyzed:	11/22/21 13:22			11/24/21 0:04									
QC Batch No.:	211122MS2A1			211123MS2A1									
Analyst Initials:	DT			DT									
Dilution Factor:	0.20			0.20									
ANALYTE	Result ppmv	RL ppmv	MDL ppmv	Result ppmv	RL ppmv	MDL ppmv							
o-Xylene	ND	0.00020	0.000024	ND	0.00020	0.000024							
Styrene	ND	0.00020	0.000026	ND	0.00020	0.000026							
Bromoform	ND	0.00020	0.000011	ND	0.00020	0.000011							
Isopropyl benzene	ND	0.00020	0.000021	ND	0.00020	0.000021							
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012	ND	0.00040	0.000012							
Benzyl Chloride	ND	0.00020	0.000037	ND	0.00020	0.000037							
1,2,3-Trichloropropane	ND	0.00020	0.000054	ND	0.00020	0.000054							
n-Propyl Benzene	ND	0.00020	0.000012	ND	0.00020	0.000012							
4-Ethyl Toluene	ND	0.00020	0.000013	ND	0.00020	0.000013							
1,3,5-Trimethylbenzene	ND	0.00040	0.000035	ND	0.00040	0.000035							
4-Chlorotoluene	ND	0.00020	0.000024	ND	0.00020	0.000024							
tert-Butylbenzene	ND	0.00020	0.000018	ND	0.00020	0.000018							
1,2,4-Trimethylbenzene	ND	0.00040	0.000023	ND	0.00040	0.000023							
sec-Butylbenzene	ND	0.00020	0.000019	ND	0.00020	0.000019							
p-Isopropyltoluene	0.000036 J	0.00020	0.000026	0.000035 J	0.00020	0.000026							
1,3-Dichlorobenzene	ND	0.00020	0.000024	ND	0.00020	0.000024							
Acetone	ND	0.0010	0.000058	ND	0.0010	0.000058							
n-Butylbenzene	ND	0.00020	0.000015	ND	0.00020	0.000015							
1,2-Dichlorobenzene	ND	0.00020	0.000025	ND	0.00020	0.000025							
1,2,4-Trichlorobenzene	ND	0.00040	0.000033	ND	0.00040	0.000033							
Hexachlorobutadiene	ND	0.00020	0.000012	ND	0.00020	0.000012							
t-Butanol	ND	0.0010	0.000038	ND	0.0010	0.000038							
n-Hexane	ND	0.0010	0.000027	ND	0.0010	0.000027							
Isopropyl ether	ND	0.0010	0.000022	ND	0.0010	0.000022							
t-Butyl ethyl ether	ND	0.0010	0.000040	ND	0.0010	0.000040							
2,2-Dichloropropane	ND	0.0010	0.000019	ND	0.0010	0.000019							
t-Amyl methyl ether	ND	0.0010	0.000014	ND	0.0010	0.000014							
t-1,2-Dichloroethene	ND	0.00020	0.000060	ND	0.00020	0.000060							
1,2,3-Trichlorobenzene (TIC)	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: Mark Johnson Date 12/2/21
 Mark Johnson
 Operations Manager

The cover letter is an integral part of this analytical report



LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 211122MS2A1

Matrix: Air

Reporting Units: ppmv

**EPA Method TO15
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:		METHOD BLANK		LCS		LCSD					
Date/Time Analyzed:		11/22/21 13:22		11/22/21 12:07		11/22/21 12:43					
Analyst Initials:		AS		AS		AS					
Dilution Factor:		0.20		1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD	Low %Rec	High %Rec	Max. RPD
1,1-Dichloroethene	ND	0.00020	0.010	0.00809	80.9	0.00814	81.4	0.6	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.00868	86.8	0.00893	89.3	2.9	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.00791	79.1	0.00782	78.2	1.2	70	130	30.0
Toluene	ND	0.00020	0.010	0.00772	77.2	0.00768	76.8	0.4	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00809	80.9	0.00804	80.4	0.5	70	130	30.0

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: _____

Mark Johnson
Operations Manager

Date: _____

12/2/21

The cover letter is an integral part of this analytical report



LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 211123MS2A1

Matrix: Air

Reporting Units: ppmv

EPA Method TO15 LABORATORY CONTROL SAMPLE SUMMARY											
------------------------------------------------------	--	--	--	--	--	--	--	--	--	--	--

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	11/24/21 0:04			11/24/21 4:58		11/24/21 5:36					
Analyst Initials:	VM			VM		VM					
Dilution Factor:	0.20			1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD	Low %Rec	High %Rec	Max. RPD
I,1-Dichloroethene	ND	0.00020	0.010	0.0102	102	0.0100	100	1.0	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.0109	109	0.0108	108	0.8	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.00957	95.7	0.00957	95.7	0.0	70	130	30.0
Toluene	ND	0.00020	0.010	0.00904	90.4	0.00905	90.5	0.2	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00962	96.2	0.00965	96.5	0.3	70	130	30.0

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: _____

Mark Johnson
Operations Manager



Date: _____

12/2/21

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: 11/10/21
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3

Lab No.:	M111007-01	M111007-02	M111007-03	M111007-04				
Client Sample I.D.:	VEFF-110921	VEFF-110921-D	VPOST-110921	VINF-110921				
Date/Time Sampled:	11/9/21 12:00	11/9/21 12:00	11/9/21 12:15	11/9/21 12:25				
Date/Time Analyzed:	11/15/21 12:21	11/15/21 12:43	11/15/21 13:06	11/15/21 13:28				
QC Batch No.:	211115GC11A1	211115GC11A1	211115GC11A1	211115GC11A1				
Analyst Initials:	CM	CM	CM	CM				
Dilution Factor:	2.4	2.4	2.4	2.4				
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	ND	2.4	ND	2.4	47	2.4	81	2.4

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: _____

Mark Johnson
Mark Johnson
Operations Manager

Date 11/12/21

The cover letter is an integral part of this analytical report



QC Batch No: 21115GC11A1

Matrix: Air

Reporting Units: ppmv

**EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	11/15/21 11:58			11/15/21 10:37		11/15/21 11:04					
Analyst Initials:	CM			CM		CM					
Dilution Factor:	1.0			1.0		1.0					
ANALYTE	Result ppmv	RL ppmv	SPIKE AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	5.0	4.35	87	4.41	88	1.4	70	130	25

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: _____

Mark Johnson
Mark Johnson
Operations Manager

Date _____

12/2/21

The cover letter is an integral part of this analytical report





December 21, 2021

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



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

LABORATORY TEST RESULTS

Project Reference: SFPP Norwalk
Lab Number: M120206-01/04

Enclosed are results for sample(s) received 12/02/21 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:

- Due to instrumentation problems, the TO15 analyses was subcontracted to Enthalpy Analytical on 12/16/21 with client consent. Their report is included in its entirety.
- 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 for TO3 and D1946 were emailed on 12/15/21 to Nils Orliczky, Danny Hill, and Eric Davis.

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,

A handwritten signature in blue ink, appearing to read "Mark Johnson".

Mark Johnson
Operations Manager
MJohnson@AirTechLabs.com

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

CHAIN OF CUSTODY RECORD
DATE: 12-2-21
PAGE: 1 of 1

M120206-01/04

Air Technology Laboratories, Inc.
16501 Gale Ave. #130
City of Industry, CA 91748
Tel: 626-964-4092
Joann De La Ossa (JDeLaOssa@airtechlabs.com)

Section A Required Client Information:		Section B Required Project Information:		Section C Invoicing Information:		Section D Sampler Information:	
Company: Jacobs		Report To: Eric Davis		Attention: Eric Davis		Sampler Name: NLS Ossa	
Address: 1000 Wilshire Blvd, Suite 2100		Copy To: Court Reece		Company: Jacobs		Sampler Name: NLS Ossa	
Email To: gdc.davis@airtechlabs.com		Purchase Order No.:		Address: 1000 Wilshire Blvd, Suite 2100		Signature: [Signature]	
Phones: 404-323-1600		Project Name: SPPP Norwalk		Project: Joann De La Ossa		Date: 12-2-21	
Fax:				Manager:			

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G-GRAB C-COMP)	CONTAINER TYPE	# OF CONTAINERS	PRESERVATIVE	VOLUME (ml)	DATE	TIME	TOTAL # OF CONTAINERS	Analysis Test		Comments
												T-15 (VOCs, Target Analytes)	ASTM D 1946 (O2/Argon, CO2, CH4, N2)	
1	VEFF-120221	Effluent (stack)	Vapor	G		1			12/2/21	1338	1	X	X	Individually Certified 5-Liter SUMMA CAN # 5472, FCF 3263
2	VEFF-120221-D	Effluent (stack) (duplicate)	Vapor	G		1			12/2/21	1338	1	X	X	Individually Certified 5-Liter SUMMA CAN# N4805, FCF 3117
3	VPOST-120221	Influent (post-dilution)	Vapor	G		1			12/2/21	1350	1	X	X	Individually Certified 1-Liter SUMMA CAN# N6534, FCF 3190A
4	VINF-120221	Influent (pre-dilution)	Vapor	G		1			12/2/21	1400	1	X	X	Batch Certified 1-Liter Summa CAN# N6554, FCF 3190A
5														Target analytes includes: Historical VOCs and remaining ATU list per subcontract
6														
7														
8														
9														
10														

Reanalyzed by (Signature and Printed Name): Date / Time: 12/2/21 1545 Reanalyzed by (Signature and Printed Name): Date / Time: 12/2/21 1545	Reanalyzed by (Signature and Printed Name): Date / Time: [Signature] Reanalyzed by (Signature and Printed Name): Date / Time: [Signature]	Turn Around Time (TAT): <input type="checkbox"/> A = Same Day <input type="checkbox"/> B = 24 Hours <input type="checkbox"/> C = 48 Hours <input type="checkbox"/> D = 72 Hours <input checked="" type="checkbox"/> E = 5 Workdays <input type="checkbox"/> F = 10 Workdays TAT Starts at 8 AM the following day if samples received after 3:00 PM.	Special Instruction: 5 Day TAT
Match: W = Water O = Oil Others/Specify:	Preserve/Store: H = HCl N = HNO3 O = NaOH S = Soil Z = Zn/ACZ	Container Type: T = Tube V = VOA B = Tedlar G = Glass M = Metal P = Plastic C = Can A = Amber	

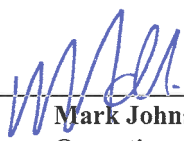
Client: **Jacobs**
 Attn: **Eric Davis**
 Project Name: **SFPP Norwalk**
 Project No.: **NA**
 Date Received: **12/02/21**
 Matrix: **Air**
 Reporting Units: **ppmv**

EPA METHOD TO3

Lab No.:	M120206-01	M120206-02	M120206-03	M120206-04				
Client Sample I.D.:	VEFF-120221	VEFF-120221-D	VPOST-120221	VINF-120221				
Date/Time Sampled:	12/2/21 13:38	12/2/21 13:38	12/2/21 13:50	12/2/21 14:00				
Date/Time Analyzed:	12/7/21 15:24	12/7/21 16:09	12/7/21 16:32	12/7/21 16:54				
QC Batch No.:	211207GC11A1	211207GC11A1	211207GC11A1	211207GC11A1				
Analyst Initials:	CM	CM	CM	CM				
Dilution Factor:	1.9	1.9	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	1.9	ND	1.9	66	1.9	27	1.9

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

Reviewed/Approved By: _____


 Mark Johnson
 Operations Manager

Date _____

12/13/21

The cover letter is an integral part of this analytical report



QC Batch No: 211207GC11A1
Matrix: Air
Reporting Units: ppmv

EPA METHOD TO3
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:	METHOD BLANK		LCS	LCSD							
Date Analyzed:	12/7/21 11:53		12/7/21 9:42	12/7/21 9:58							
Analyst Initials:	CM		CM	CM							
Dilution Factor:	1.0		1.0	1.0							
ANALYTE	Result ppmv	RL ppmv	SPIKE AMT. ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	5.0	4.20	84	4.35	87	3.5	70	130	25

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

Reviewed/Approved By: Mark Johnson Date 12/13/21
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: 12/02/21
 Matrix: Air
 Reporting Units: % v/v

ASTM D1946

Lab No.:	M120206-04						
Client Sample I.D.:	VINF-120221						
Date/Time Sampled:	12/2/21 14:00						
Date/Time Analyzed:	12/7/21 18:05						
QC Batch No.:	211207GC8A1						
Analyst Initials:	CM						
Dilution Factor:	1.9						
ANALYTE	Result % v/v	RL % v/v					
Carbon Dioxide	0.25	0.019					
Oxygen/Argon	22	0.97					
Nitrogen	78	1.9					
Methane	ND	0.0019					

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: Mark Johnson
 Mark Johnson
 Operations Manager

Date 12/13/21

The cover letter is an integral part of this analytical report

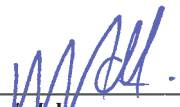


QC Batch No: 211207GC8A1
Matrix: Air
Reporting Units: % v/v

**ASTM D1946
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK			LCS	LCSD						
Date Analyzed:	12/7/21 13:52			12/7/21 17:14	12/7/21 17:32						
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	9.67	97	9.87	99	2.1	70	130	30
Oxygen/Argon	ND	0.50	15	15.8	107	15.6	105	1.3	70	130	30
Nitrogen	ND	1.0	70	70.1	100	69.4	99	0.9	70	130	30
Methane	ND	0.0010	0.10	0.110	110	0.109	109	0.4	70	130	30

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

Reviewed/Approved By: 
Mark Johnson
Operations Manager

Date 12/13/21

The cover letter is an integral part of this analytical report





Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

Lab Job Number: 455427
Report Level: II
Report Date: 12/21/2021

Analytical Report *prepared for:*

Val Mallari
AirTechnology Laboratories Inc.
18501 E. Gale Ave, Ste 130
City of Industry, CA 91748

Location: M120206, SFPP Norwalk

Authorized for release by:

A handwritten signature in black ink, appearing to read 'Patty Mata', is written over a horizontal line.

Patty Mata, Project Manager
patty.mata@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# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105



Sample Summary

Val Mallari	Lab Job #:	455427
AirTechnology Laboratories Inc.	Location:	M120206, SFPP Norwalk
18501 E. Gale Ave, Ste 130	Date Received:	12/16/21
City of Industry, CA 91748		

Sample ID	Lab ID	Collected	Matrix
M120206-01/VEFF-120221	455427-001	12/02/21 13:38	Air
M120206-02/VEFF-120221-D	455427-002	12/02/21 13:38	Air
M120206-03/VPOST-120221	455427-003	12/02/21 13:50	Air
M120206-04/VINF-120221	455427-004	12/02/21 14:00	Air

Case Narrative

AirTechnology Laboratories Inc.
18501 E. Gale Ave, Ste 130
City of Industry, CA 91748
Val Mallari

Lab Job Number: 455427

Location: M120206, SFPP Norwalk


Date Received: 12/16/21

This data package contains sample and QC results for four air samples, requested for the above referenced project on 12/16/21. The samples were received intact.

Volatile Organics in Air by MS (EPA TO-15):

High responses were observed for naphthalene and 1,2,4-trichlorobenzene in the ICV analyzed 12/12/21 02:13; affected data was qualified with "b". No other analytical problems were encountered.

455427

		18501 E. Gale Ave., Suite 130 City of Industry, CA 91748 Ph: 626-964-4032 Fax: 626-964-5832		CHAIN OF CUSTODY RECORD PAGE: _____ OF _____	
		Project No.: M120206 Project Name: SFPP Norwalk Report To: Val Mallari		DELIVERABLES EDD <input type="checkbox"/> EDF <input type="checkbox"/> Level 3 <input type="checkbox"/> Level 4 <input type="checkbox"/>	
Company: Air Technology Laboratories, Inc. Street: 18501 Gale Ave., #130 City/State/Zip: City of Industry, CA 91748 Phone & Fax: 626-964-4032 e-mail: vmallari@airtechlabs.com		BILLING P-O No.: 6593 Bill to: Same		Condition upon receipt: Sealed Yes <input type="checkbox"/> No <input type="checkbox"/> Intact Yes <input type="checkbox"/> No <input type="checkbox"/> Chilled _____ deg C	
ANALYSIS REQUEST P-O No.: _____ Bill to: _____		ANALYSIS REQUEST _____		pressurization dilution factor	
SAMPLE IDENTIFICATION		TO15*			
LAB USE ONLY		PRESERVATION			
SAMPLE DATE	SAMPLE TIME	CONTAINER QTY/TYPER	MATRIX	PRESERVATION	
12/2/2021	13:38	C A	N	X	1,944
12/2/2021	13:38	C A	N	X	1,872
12/2/2021	13:50	C A	N	X	1,944
12/2/2021	14:00	C A	N	X	1,944
COMMENTS * See attached analyte list and detection limits					
AUTHORIZATION TO PERFORM WORK SAMPLED BY: _____ RELINQUISHED BY: _____ RELINQUISHED BY: _____ RELINQUISHED BY: _____		COMPANY: _____ COMPANY: _____ RECEIVED BY: _____ DATE/TIME: 12/16/21 11:46 RECEIVED BY: _____ DATE/TIME: 12/16/21 13:00 RECEIVED BY: _____ DATE/TIME: _____			
METHOD OF TRANSPORT (circle one): Walk-In FedEx UPS Courier ATLI Other _____ DISTRIBUTION: White & Yellow - Lab Copies / Pink - Customer Copy					

Preservation: H=HCl N=None / Container: B=Bag C=Can V=VOA O=Other Rev. 03 - 5/7/09
 QA Manager: 2/22/10

Client:
Attn:
Project Name: SFPP Norwalk
Project No.:
Date Received:
Matrix: Air
Reporting Units: ppmv

EPA Method TO15		
Lab No.:		
Client Sample I.D.:		
Date/Time Sampled:		
Date/Time Analyzed:		
QC Batch No.:		
Analyst Initials:		
Dilution Factor:		1.0
ANALYTE	RL ppmv	MDL ppmv
Dichlorodifluoromethane (12)	0.0010	0.00015
Chloromethane	0.0020	0.00022
1,2-CI-1,1,2,2-F ethane (114)	0.0010	0.00020
Vinyl Chloride	0.0010	0.00016
Bromomethane	0.0010	0.00029
Chloroethane	0.0010	0.00084
Trichlorofluoromethane (11)	0.0010	0.00022
1,1-Dichloroethene	0.0010	0.00023
Carbon Disulfide	0.0050	0.00024
1,1,2-CI 1,2,2-F ethane (113)	0.0010	0.00027
Acetone	0.0050	0.00029
Methylene Chloride	0.0010	0.00029
t-1,2-Dichloroethene	0.0010	0.00030
1,1-Dichloroethane	0.0010	0.00014
c-1,2-Dichloroethene	0.0010	0.00019
2-Butanone	0.0010	0.00062
t-Butyl Methyl Ether (MTBE)	0.0010	0.00022
Chloroform	0.0010	0.00014
1,1,1-Trichloroethane	0.0010	0.00010
Carbon Tetrachloride	0.0010	0.00017
Benzene	0.0010	0.000096
1,2-Dichloroethane	0.0010	0.000074
Trichloroethene	0.0010	0.00014
1,2-Dichloropropane	0.0010	0.00018
Bromodichloromethane	0.0010	0.000060
c-1,3-Dichloropropene	0.0010	0.00012
4-Methyl-2-Pentanone	0.0010	0.000067
Toluene	0.0010	0.000079
t-1,3-Dichloropropene	0.0010	0.00010
1,1,2-Trichloroethane	0.0010	0.00016
1,3-Dichloropropane	0.0010	0.000050
Tetrachloroethene	0.0010	0.00012
2-Hexanone	0.0010	0.00021
Dibromochloromethane	0.0010	0.00018
1,2-Dibromoethane	0.0010	0.000091
Chlorobenzene	0.0010	0.000078
Ethylbenzene	0.0010	0.000057
p,&m-Xylene	0.0010	0.00011

Client:
Attn:
Project Name: SFPP Norwalk
Project No.:
Date Received:
Matrix: Air
Reporting Units: ppmv

EPA Method TO15		
Lab No.:		
Client Sample I.D.:		
Date/Time Sampled:		
Date/Time Analyzed:		
QC Batch No.:		
Analyst Initials:		
Dilution Factor:		1.0
ANALYTE	RL ppmv	MDL ppmv
o-Xylene	0.0010	0.00012
Styrene	0.0010	0.00013
Bromoform	0.0010	0.000056
Isopropyl benzene	0.0010	0.00010
1,1,2,2-Tetrachloroethane	0.0020	0.000061
Benzyl Chloride	0.0010	0.00018
1,2,3-Trichloropropane	0.0010	0.00027
n-Propyl Benzene	0.0010	0.000058
4-Ethyl Toluene	0.0010	0.000063
1,3,5-Trimethylbenzene	0.0020	0.00017
4-Chlorotoluene	0.0010	0.00012
tert-Butylbenzene	0.0010	0.000091
1,2,4-Trimethylbenzene	0.0020	0.00011
sec-Butylbenzene	0.0010	0.000097
p-Isopropyltoluene	0.0010	0.00013
1,3-Dichlorobenzene	0.0010	0.00012
1,4-Dichlorobenzene	0.0010	0.00015
n-Butylbenzene	0.0010	0.000073
1,2-Dichlorobenzene	0.0010	0.00012
1,2,4-Trichlorobenzene	0.0020	0.00017
Hexachlorobutadiene	0.0010	0.000059
t-Butanol	0.0050	0.00019
n-Hexane	0.0050	0.00013
Isopropyl ether	0.0050	0.00011
t-Butyl ethyl ether	0.0050	0.00020
2,2-Dichloropropane	0.0050	0.000095
t-Amyl methyl ether	0.0050	0.000071
1,4-Dioxane	0.0050	0.00017
Naphthalene	0.0050	0.00038
1,2,3-Trichlorobenzene (TIC)	--	--

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

Reviewed/Approved By: _____
Mark Johnson
Operations Manager



SAMPLE ACCEPTANCE CHECKLIST

Section 1
 Client: Air Technology Laboratories Project: M120206, SFPP Norwalk
 Date Received: 12/16/21 Sampler's Name Present: Yes No

Section 2
 Sample(s) received in a cooler? Yes, How many? _____ No (skip section 2) Sample Temp (°C) (No Cooler): Amb.
 Sample Temp (°C), One from each cooler: #1: _____ #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: 14.5 #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
 Canisters Ambient.

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: *Deana Sylvester* Date: 12/16/21

Analysis Results for 455427

Val Mallari
AirTechnology Laboratories Inc.
18501 E. Gale Ave, Ste 130
City of Industry, CA 91748

Lab Job #: 455427
Location: M120206, SFPP Norwalk
Date Received: 12/16/21

Sample ID: M120206-01/VEFF-120221	Lab ID: 455427-001 Matrix: Air	Collected: 12/02/21 13:38
---------------------------------------------	-------------------------------------------------	----------------------------------

455427-001 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15									
Prep Method: METHOD									
Isopropylbenzene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Isopropylbenzene	ND		ug/m3	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Naphthalene	ND		ppbv	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Naphthalene	ND		ug/m3	10	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Propylbenzene	0.42		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Propylbenzene	2.1		ug/m3	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
tert-Butyl Alcohol (TBA)	0.46		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
tert-Butyl Alcohol (TBA)	1.4		ug/m3	1.2	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,4-Dioxane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,4-Dioxane	ND		ug/m3	1.4	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Freon 12	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Freon 12	ND		ug/m3	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Freon 114	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Freon 114	ND		ug/m3	2.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chloromethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chloromethane	ND		ug/m3	0.80	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Vinyl Chloride	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Vinyl Chloride	ND		ug/m3	0.99	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Bromomethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Bromomethane	ND		ug/m3	1.5	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chloroethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chloroethane	ND		ug/m3	1.0	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Trichlorofluoromethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Trichlorofluoromethane	ND		ug/m3	2.2	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1-Dichloroethene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1-Dichloroethene	ND		ug/m3	1.5	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Freon 113	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Freon 113	ND		ug/m3	3.0	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Acetone	12		ppbv	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Acetone	29		ug/m3	4.6	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Carbon Disulfide	14		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Carbon Disulfide	42		ug/m3	1.2	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Isopropanol (IPA)	ND		ppbv	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Isopropanol (IPA)	ND		ug/m3	4.8	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Methylene Chloride	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG

Analysis Results for 455427

455427-001 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Methylene Chloride	ND		ug/m3	1.4	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
trans-1,2-Dichloroethene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
trans-1,2-Dichloroethene	ND		ug/m3	1.5	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
MTBE	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
MTBE	ND		ug/m3	1.4	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
n-Hexane	2.0		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
n-Hexane	7.1		ug/m3	1.4	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1-Dichloroethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1-Dichloroethane	ND		ug/m3	1.6	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Vinyl Acetate	ND		ppbv	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Vinyl Acetate	ND		ug/m3	6.8	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
cis-1,2-Dichloroethene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
cis-1,2-Dichloroethene	ND		ug/m3	1.5	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
2-Butanone	2.7		ppbv	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
2-Butanone	8.1		ug/m3	5.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chloroform	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chloroform	ND		ug/m3	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,1-Trichloroethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,1-Trichloroethane	ND		ug/m3	2.1	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Carbon Tetrachloride	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Carbon Tetrachloride	ND		ug/m3	2.4	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Benzene	0.98		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Benzene	3.1		ug/m3	1.2	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dichloroethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dichloroethane	ND		ug/m3	1.6	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Trichloroethene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Trichloroethene	ND		ug/m3	2.1	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dichloropropane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dichloropropane	ND		ug/m3	1.8	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Bromodichloromethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Bromodichloromethane	ND		ug/m3	2.6	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
cis-1,3-Dichloropropene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
cis-1,3-Dichloropropene	ND		ug/m3	1.8	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
4-Methyl-2-Pentanone	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
4-Methyl-2-Pentanone	ND		ug/m3	1.6	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Toluene	5.3		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Toluene	20		ug/m3	1.5	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
trans-1,3-Dichloropropene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
trans-1,3-Dichloropropene	ND		ug/m3	1.8	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,2-Trichloroethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,2-Trichloroethane	ND		ug/m3	2.1	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Tetrachloroethene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Tetrachloroethene	ND		ug/m3	2.6	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
2-Hexanone	ND		ppbv	0.97	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
2-Hexanone	ND		ug/m3	4.0	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Dibromochloromethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG

Analysis Results for 455427

455427-001 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Dibromochloromethane	ND		ug/m3	3.3	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dibromoethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dibromoethane	ND		ug/m3	3.0	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chlorobenzene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Chlorobenzene	ND		ug/m3	1.8	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Ethylbenzene	2.3		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Ethylbenzene	10		ug/m3	1.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
m,p-Xylenes	12		ppbv	0.78	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
m,p-Xylenes	51		ug/m3	3.4	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
o-Xylene	5.7		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
o-Xylene	25		ug/m3	1.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Styrene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Styrene	ND		ug/m3	1.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Bromoform	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Bromoform	ND		ug/m3	4.0	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,2,2-Tetrachloroethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,2,2-Tetrachloroethane	ND		ug/m3	2.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,1,2-Tetrachloroethane	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,1,1,2-Tetrachloroethane	ND		ug/m3	2.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
4-Ethyltoluene	1.2		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
4-Ethyltoluene	6.1		ug/m3	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,3,5-Trimethylbenzene	3.4		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,3,5-Trimethylbenzene	17		ug/m3	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2,4-Trimethylbenzene	3.3		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2,4-Trimethylbenzene	16		ug/m3	1.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,3-Dichlorobenzene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,3-Dichlorobenzene	ND		ug/m3	2.3	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,4-Dichlorobenzene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,4-Dichlorobenzene	ND		ug/m3	2.3	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Benzyl chloride	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Benzyl chloride	ND		ug/m3	2.0	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dichlorobenzene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2-Dichlorobenzene	ND		ug/m3	2.3	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2,4-Trichlorobenzene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
1,2,4-Trichlorobenzene	ND		ug/m3	2.9	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Hexachlorobutadiene	ND		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Hexachlorobutadiene	ND		ug/m3	4.1	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Xylene (total)	17		ppbv	0.39	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Xylene (total)	76		ug/m3	1.7	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, (1-methylpropyl)-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, (1-methylpropyl)-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, n-butyl-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG

Analysis Results for 455427

455427-001 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
TIC:Benzene, n-butyl-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, tert-butyl-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Benzene, tert-butyl-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Diisopropyl ether	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Diisopropyl ether	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Propane, 2,2-dichloro-	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Propane, 2,2-dichloro-	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:p-Cymene	3.6	J	ppbv		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
TIC:p-Cymene	20	J	ug/m3		1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG
Surrogates									
				Limits					
Bromofluorobenzene	103%		%REC	60-140	1.9	280209	12/19/21 10:44	12/19/21 10:44	GSG

Analysis Results for 455427

Sample ID: M120206-02/VEFF-120221-D	Lab ID: 455427-002 Matrix: Air	Collected: 12/02/21 13:38
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455427-002 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15									
Prep Method: METHOD									
Isopropylbenzene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Isopropylbenzene	ND		ug/m3	1.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Naphthalene	ND		ppbv	1.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Naphthalene	ND		ug/m3	9.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Propylbenzene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Propylbenzene	ND		ug/m3	1.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
tert-Butyl Alcohol (TBA)	0.42		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
tert-Butyl Alcohol (TBA)	1.3		ug/m3	1.1	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,4-Dioxane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,4-Dioxane	ND		ug/m3	1.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Freon 12	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Freon 12	ND		ug/m3	1.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Freon 114	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Freon 114	ND		ug/m3	2.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chloromethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chloromethane	ND		ug/m3	0.77	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Vinyl Chloride	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Vinyl Chloride	ND		ug/m3	0.96	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Bromomethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Bromomethane	ND		ug/m3	1.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chloroethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chloroethane	ND		ug/m3	0.99	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Trichlorofluoromethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Trichlorofluoromethane	ND		ug/m3	2.1	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1-Dichloroethene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1-Dichloroethene	ND		ug/m3	1.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Freon 113	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Freon 113	ND		ug/m3	2.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Acetone	12		ppbv	1.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Acetone	30		ug/m3	4.4	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Carbon Disulfide	2.2		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Carbon Disulfide	7.0		ug/m3	1.2	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Isopropanol (IPA)	ND		ppbv	1.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Isopropanol (IPA)	ND		ug/m3	4.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Methylene Chloride	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Methylene Chloride	ND		ug/m3	1.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
trans-1,2-Dichloroethene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
trans-1,2-Dichloroethene	ND		ug/m3	1.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
MTBE	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
MTBE	ND		ug/m3	1.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG

Analysis Results for 455427

455427-002 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
n-Hexane	1.7		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
n-Hexane	6.1		ug/m3	1.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1-Dichloroethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1-Dichloroethane	ND		ug/m3	1.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Vinyl Acetate	ND		ppbv	1.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Vinyl Acetate	ND		ug/m3	6.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
cis-1,2-Dichloroethene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
cis-1,2-Dichloroethene	ND		ug/m3	1.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
2-Butanone	ND		ppbv	1.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
2-Butanone	ND		ug/m3	5.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chloroform	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chloroform	ND		ug/m3	1.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,1-Trichloroethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,1-Trichloroethane	ND		ug/m3	2.0	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Carbon Tetrachloride	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Carbon Tetrachloride	ND		ug/m3	2.4	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Benzene	0.80		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Benzene	2.5		ug/m3	1.2	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dichloroethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dichloroethane	ND		ug/m3	1.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Trichloroethene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Trichloroethene	ND		ug/m3	2.0	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dichloropropane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dichloropropane	ND		ug/m3	1.7	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Bromodichloromethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Bromodichloromethane	ND		ug/m3	2.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
cis-1,3-Dichloropropene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
cis-1,3-Dichloropropene	ND		ug/m3	1.7	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
4-Methyl-2-Pentanone	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
4-Methyl-2-Pentanone	ND		ug/m3	1.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Toluene	4.0		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Toluene	15		ug/m3	1.4	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
trans-1,3-Dichloropropene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
trans-1,3-Dichloropropene	ND		ug/m3	1.7	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,2-Trichloroethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,2-Trichloroethane	ND		ug/m3	2.0	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Tetrachloroethene	0.38		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Tetrachloroethene	2.6		ug/m3	2.5	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
2-Hexanone	ND		ppbv	0.94	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
2-Hexanone	ND		ug/m3	3.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Dibromochloromethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Dibromochloromethane	ND		ug/m3	3.2	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dibromoethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dibromoethane	ND		ug/m3	2.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chlorobenzene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Chlorobenzene	ND		ug/m3	1.7	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG

Analysis Results for 455427

455427-002 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Ethylbenzene	2.0		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Ethylbenzene	8.7		ug/m3	1.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
m,p-Xylenes	11		ppbv	0.75	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
m,p-Xylenes	46		ug/m3	3.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
o-Xylene	5.2		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
o-Xylene	22		ug/m3	1.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Styrene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Styrene	ND		ug/m3	1.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Bromoform	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Bromoform	ND		ug/m3	3.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,2,2-Tetrachloroethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,2,2-Tetrachloroethane	ND		ug/m3	2.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,1,2-Tetrachloroethane	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,1,1,2-Tetrachloroethane	ND		ug/m3	2.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
4-Ethyltoluene	1.1		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
4-Ethyltoluene	5.4		ug/m3	1.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,3,5-Trimethylbenzene	3.2		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,3,5-Trimethylbenzene	16		ug/m3	1.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2,4-Trimethylbenzene	3.0		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2,4-Trimethylbenzene	15		ug/m3	1.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,3-Dichlorobenzene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,3-Dichlorobenzene	ND		ug/m3	2.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,4-Dichlorobenzene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,4-Dichlorobenzene	ND		ug/m3	2.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Benzyl chloride	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Benzyl chloride	ND		ug/m3	1.9	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dichlorobenzene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2-Dichlorobenzene	ND		ug/m3	2.3	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2,4-Trichlorobenzene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
1,2,4-Trichlorobenzene	ND		ug/m3	2.8	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Hexachlorobutadiene	ND		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Hexachlorobutadiene	ND		ug/m3	4.0	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Xylene (total)	16		ppbv	0.37	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
Xylene (total)	68		ug/m3	1.6	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, (1-methylpropyl)-	ND		ppbv		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, (1-methylpropyl)-	ND		ug/m3		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ppbv		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ug/m3		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ppbv		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ug/m3		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, n-butyl-	ND		ppbv		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, n-butyl-	ND		ug/m3		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, tert-butyl-	ND		ppbv		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Benzene, tert-butyl-	ND		ug/m3		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ppbv		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ug/m3		1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG

Analysis Results for 455427

455427-002 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
TIC:Diisopropyl ether	ND		ppbv	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Diisopropyl ether	ND		ug/m3	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ppbv	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ug/m3	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Propane, 2,2-dichloro-	ND		ppbv	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Propane, 2,2-dichloro-	ND		ug/m3	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ppbv	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ug/m3	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:p-Cymene	ND		ppbv	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
TIC:p-Cymene	ND		ug/m3	1.9	280209	12/19/21 11:34	12/19/21 11:34	12/19/21 11:34	GSG
Surrogates	Limits								
Bromofluorobenzene	103%		%REC	60-140	1.9	280209	12/19/21 11:34	12/19/21 11:34	GSG

Analysis Results for 455427

Sample ID: M120206-03/VPOST-120221	Lab ID: 455427-003 Matrix: Air	Collected: 12/02/21 13:50
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455427-003 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15									
Prep Method: METHOD									
Isopropylbenzene	42		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Isopropylbenzene	210		ug/m3	48	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Naphthalene	ND		ppbv	49	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Naphthalene	ND		ug/m3	250	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Propylbenzene	79		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Propylbenzene	390		ug/m3	48	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
tert-Butyl Alcohol (TBA)	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
tert-Butyl Alcohol (TBA)	ND		ug/m3	29	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,4-Dioxane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,4-Dioxane	ND		ug/m3	35	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Freon 12	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Freon 12	ND		ug/m3	48	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Freon 114	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Freon 114	ND		ug/m3	68	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chloromethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chloromethane	ND		ug/m3	20	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Vinyl Chloride	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Vinyl Chloride	ND		ug/m3	25	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Bromomethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Bromomethane	ND		ug/m3	38	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chloroethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chloroethane	ND		ug/m3	26	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Trichlorofluoromethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Trichlorofluoromethane	ND		ug/m3	55	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1-Dichloroethene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1-Dichloroethene	ND		ug/m3	39	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Freon 113	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Freon 113	ND		ug/m3	74	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Acetone	ND		ppbv	49	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Acetone	ND		ug/m3	120	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Carbon Disulfide	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Carbon Disulfide	ND		ug/m3	30	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Isopropanol (IPA)	ND		ppbv	49	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Isopropanol (IPA)	ND		ug/m3	120	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Methylene Chloride	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Methylene Chloride	ND		ug/m3	34	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
trans-1,2-Dichloroethene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
trans-1,2-Dichloroethene	ND		ug/m3	39	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
MTBE	11		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
MTBE	38		ug/m3	35	49	280209	12/18/21 17:23	12/18/21 17:23	GSG

Analysis Results for 455427

455427-003 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
n-Hexane	510		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
n-Hexane	1,800		ug/m3	34	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1-Dichloroethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1-Dichloroethane	ND		ug/m3	39	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Vinyl Acetate	ND		ppbv	49	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Vinyl Acetate	ND		ug/m3	170	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
cis-1,2-Dichloroethene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
cis-1,2-Dichloroethene	ND		ug/m3	39	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
2-Butanone	ND		ppbv	49	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
2-Butanone	ND		ug/m3	140	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chloroform	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chloroform	ND		ug/m3	47	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,1-Trichloroethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,1-Trichloroethane	ND		ug/m3	53	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Carbon Tetrachloride	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Carbon Tetrachloride	ND		ug/m3	61	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Benzene	140		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Benzene	450		ug/m3	31	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dichloroethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dichloroethane	ND		ug/m3	39	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Trichloroethene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Trichloroethene	ND		ug/m3	52	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dichloropropane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dichloropropane	ND		ug/m3	45	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Bromodichloromethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Bromodichloromethane	ND		ug/m3	65	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
cis-1,3-Dichloropropene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
cis-1,3-Dichloropropene	ND		ug/m3	44	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
4-Methyl-2-Pentanone	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
4-Methyl-2-Pentanone	ND		ug/m3	40	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Toluene	890		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Toluene	3,400		ug/m3	37	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
trans-1,3-Dichloropropene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
trans-1,3-Dichloropropene	ND		ug/m3	44	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,2-Trichloroethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,2-Trichloroethane	ND		ug/m3	53	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Tetrachloroethene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Tetrachloroethene	ND		ug/m3	66	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
2-Hexanone	ND		ppbv	24	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
2-Hexanone	ND		ug/m3	100	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Dibromochloromethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Dibromochloromethane	ND		ug/m3	83	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dibromoethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dibromoethane	ND		ug/m3	75	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chlorobenzene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Chlorobenzene	ND		ug/m3	45	49	280209	12/18/21 17:23	12/18/21 17:23	GSG

Analysis Results for 455427

455427-003 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Ethylbenzene	460		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Ethylbenzene	2,000		ug/m3	42	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
m,p-Xylenes	2,300		ppbv	19	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
m,p-Xylenes	9,900		ug/m3	84	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
o-Xylene	1,100		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
o-Xylene	4,800		ug/m3	42	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Styrene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Styrene	ND		ug/m3	41	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Bromoform	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Bromoform	ND		ug/m3	100	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,2,2-Tetrachloroethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,2,2-Tetrachloroethane	ND		ug/m3	67	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,1,2-Tetrachloroethane	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,1,1,2-Tetrachloroethane	ND		ug/m3	67	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
4-Ethyltoluene	220		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
4-Ethyltoluene	1,100		ug/m3	48	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,3,5-Trimethylbenzene	640		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,3,5-Trimethylbenzene	3,100		ug/m3	48	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2,4-Trimethylbenzene	540		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2,4-Trimethylbenzene	2,700		ug/m3	48	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,3-Dichlorobenzene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,3-Dichlorobenzene	ND		ug/m3	58	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,4-Dichlorobenzene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,4-Dichlorobenzene	ND		ug/m3	58	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Benzyl chloride	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Benzyl chloride	ND		ug/m3	50	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dichlorobenzene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2-Dichlorobenzene	ND		ug/m3	58	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2,4-Trichlorobenzene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
1,2,4-Trichlorobenzene	ND		ug/m3	72	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Hexachlorobutadiene	ND		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Hexachlorobutadiene	ND		ug/m3	100	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Xylene (total)	3,400		ppbv	9.7	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
Xylene (total)	15,000		ug/m3	42	49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, (1-methylpropyl)-	ND		ppbv		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, (1-methylpropyl)-	ND		ug/m3		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ppbv		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ug/m3		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ppbv		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ug/m3		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, n-butyl-	ND		ppbv		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, n-butyl-	ND		ug/m3		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, tert-butyl-	110	J	ppbv		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Benzene, tert-butyl-	610	J	ug/m3		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ppbv		49	280209	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ug/m3		49	280209	12/18/21 17:23	12/18/21 17:23	GSG

Analysis Results for 455427

455427-003 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
TIC:Diisopropyl ether	ND		ppbv	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Diisopropyl ether	ND		ug/m3	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ppbv	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ug/m3	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Propane, 2,2-dichloro-	ND		ppbv	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Propane, 2,2-dichloro-	ND		ug/m3	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ppbv	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ug/m3	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:p-Cymene	260	J	ppbv	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
TIC:p-Cymene	1,400	J	ug/m3	49	280209	12/18/21 17:23	12/18/21 17:23	12/18/21 17:23	GSG
Surrogates									
				Limits					
Bromofluorobenzene	109%		%REC	60-140	49	280209	12/18/21 17:23	12/18/21 17:23	GSG

Analysis Results for 455427

Sample ID: M120206-04/VINF-120221	Lab ID: 455427-004 Matrix: Air	Collected: 12/02/21 14:00
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455427-004 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA TO-15									
Prep Method: METHOD									
Isopropylbenzene	20		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Isopropylbenzene	97		ug/m3	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Naphthalene	ND		ppbv	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Naphthalene	ND		ug/m3	100	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Propylbenzene	41		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Propylbenzene	200		ug/m3	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
tert-Butyl Alcohol (TBA)	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
tert-Butyl Alcohol (TBA)	ND		ug/m3	12	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,4-Dioxane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,4-Dioxane	ND		ug/m3	14	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Freon 12	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Freon 12	ND		ug/m3	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Freon 114	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Freon 114	ND		ug/m3	27	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chloromethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chloromethane	ND		ug/m3	8.0	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Vinyl Chloride	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Vinyl Chloride	ND		ug/m3	9.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Bromomethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Bromomethane	ND		ug/m3	15	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chloroethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chloroethane	ND		ug/m3	10	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Trichlorofluoromethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Trichlorofluoromethane	ND		ug/m3	22	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1-Dichloroethene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1-Dichloroethene	ND		ug/m3	15	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Freon 113	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Freon 113	ND		ug/m3	30	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Acetone	26		ppbv	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Acetone	63		ug/m3	46	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Carbon Disulfide	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Carbon Disulfide	ND		ug/m3	12	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Isopropanol (IPA)	510		ppbv	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Isopropanol (IPA)	1,300		ug/m3	48	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Methylene Chloride	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Methylene Chloride	ND		ug/m3	14	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
trans-1,2-Dichloroethene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
trans-1,2-Dichloroethene	ND		ug/m3	15	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
MTBE	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
MTBE	ND		ug/m3	14	19	280209	12/19/21 12:18	12/19/21 12:18	GSG

Analysis Results for 455427

455427-004 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
n-Hexane	170		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
n-Hexane	590		ug/m3	14	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1-Dichloroethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1-Dichloroethane	ND		ug/m3	16	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Vinyl Acetate	ND		ppbv	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Vinyl Acetate	ND		ug/m3	68	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
cis-1,2-Dichloroethene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
cis-1,2-Dichloroethene	ND		ug/m3	15	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
2-Butanone	ND		ppbv	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
2-Butanone	ND		ug/m3	57	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chloroform	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chloroform	ND		ug/m3	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,1-Trichloroethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,1-Trichloroethane	ND		ug/m3	21	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Carbon Tetrachloride	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Carbon Tetrachloride	ND		ug/m3	24	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Benzene	49		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Benzene	160		ug/m3	12	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dichloroethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dichloroethane	ND		ug/m3	16	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Trichloroethene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Trichloroethene	ND		ug/m3	21	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dichloropropane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dichloropropane	ND		ug/m3	18	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Bromodichloromethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Bromodichloromethane	ND		ug/m3	26	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
cis-1,3-Dichloropropene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
cis-1,3-Dichloropropene	ND		ug/m3	18	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
4-Methyl-2-Pentanone	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
4-Methyl-2-Pentanone	ND		ug/m3	16	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Toluene	330		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Toluene	1,200		ug/m3	15	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
trans-1,3-Dichloropropene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
trans-1,3-Dichloropropene	ND		ug/m3	18	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,2-Trichloroethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,2-Trichloroethane	ND		ug/m3	21	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Tetrachloroethene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Tetrachloroethene	ND		ug/m3	26	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
2-Hexanone	ND		ppbv	9.7	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
2-Hexanone	ND		ug/m3	40	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Dibromochloromethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Dibromochloromethane	ND		ug/m3	33	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dibromoethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dibromoethane	ND		ug/m3	30	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chlorobenzene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Chlorobenzene	ND		ug/m3	18	19	280209	12/19/21 12:18	12/19/21 12:18	GSG

Analysis Results for 455427

455427-004 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Ethylbenzene	190		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Ethylbenzene	840		ug/m3	17	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
m,p-Xylenes	1,000		ppbv	7.8	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
m,p-Xylenes	4,300		ug/m3	34	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
o-Xylene	500		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
o-Xylene	2,200		ug/m3	17	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Styrene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Styrene	ND		ug/m3	17	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Bromoform	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Bromoform	ND		ug/m3	40	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,2,2-Tetrachloroethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,2,2-Tetrachloroethane	ND		ug/m3	27	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,1,2-Tetrachloroethane	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,1,1,2-Tetrachloroethane	ND		ug/m3	27	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
4-Ethyltoluene	120		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
4-Ethyltoluene	600		ug/m3	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,3,5-Trimethylbenzene	350		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,3,5-Trimethylbenzene	1,700		ug/m3	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2,4-Trimethylbenzene	340		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2,4-Trimethylbenzene	1,700		ug/m3	19	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,3-Dichlorobenzene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,3-Dichlorobenzene	ND		ug/m3	23	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,4-Dichlorobenzene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,4-Dichlorobenzene	ND		ug/m3	23	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Benzyl chloride	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Benzyl chloride	ND		ug/m3	20	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dichlorobenzene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2-Dichlorobenzene	ND		ug/m3	23	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2,4-Trichlorobenzene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
1,2,4-Trichlorobenzene	ND		ug/m3	29	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Hexachlorobutadiene	ND		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Hexachlorobutadiene	ND		ug/m3	41	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Xylene (total)	1,500		ppbv	3.9	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Xylene (total)	6,500		ug/m3	17	19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, (1-methylpropyl)-	150	J	ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, (1-methylpropyl)-	830	J	ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, 1,2,3-trichloro-	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, 1-chloro-4-methyl-	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, n-butyl-	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, n-butyl-	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, tert-butyl-	64	J	ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Benzene, tert-butyl-	350	J	ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Butane, 2-methoxy-2-methyl-	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG

Analysis Results for 455427

455427-004 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
TIC:Diisopropyl ether	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Diisopropyl ether	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Propane, 1,2,3-trichloro-	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Propane, 2,2-dichloro-	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Propane, 2,2-dichloro-	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:Propane, 2-ethoxy-2-methyl	ND		ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:p-Cymene	170	J	ppbv		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
TIC:p-Cymene	930	J	ug/m3		19	280209	12/19/21 12:18	12/19/21 12:18	GSG
Surrogates									
				Limits					
Bromofluorobenzene	110%		%REC	60-140	19	280209	12/19/21 12:18	12/19/21 12:18	GSG

J Estimated value
ND Not Detected

Batch QC

Type: Lab Control Sample	Lab ID: QC961807	Batch: 280209
Matrix: Air	Method: EPA TO-15	Prep Method: METHOD

QC961807 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Isopropylbenzene	9.480	10.00	ppbv	95%		70-130
Naphthalene	10.51	10.00	ppbv	105%	b	70-130
Propylbenzene	9.856	10.00	ppbv	99%		70-130
tert-Butyl Alcohol (TBA)	8.471	10.00	ppbv	85%		70-130
1,4-Dioxane	9.508	10.00	ppbv	95%		70-130
Freon 12	7.950	10.00	ppbv	79%		70-130
Freon 114	8.589	10.00	ppbv	86%		70-130
Chloromethane	8.279	10.00	ppbv	83%		70-130
Vinyl Chloride	8.901	10.00	ppbv	89%		70-130
Bromomethane	8.909	10.00	ppbv	89%		70-130
Chloroethane	8.827	10.00	ppbv	88%		70-130
Trichlorofluoromethane	7.549	10.00	ppbv	75%		70-130
1,1-Dichloroethene	8.289	10.00	ppbv	83%		70-130
Freon 113	8.771	10.00	ppbv	88%		70-130
Acetone	8.397	10.00	ppbv	84%		70-130
Carbon Disulfide	9.434	10.00	ppbv	94%		70-130
Isopropanol (IPA)	7.940	10.00	ppbv	79%		70-130
Methylene Chloride	8.753	10.00	ppbv	88%		70-130
trans-1,2-Dichloroethene	8.606	10.00	ppbv	86%		70-130
MTBE	8.667	10.00	ppbv	87%		70-130
n-Hexane	8.974	10.00	ppbv	90%		70-130
1,1-Dichloroethane	8.650	10.00	ppbv	87%		70-130
Vinyl Acetate	7.782	10.00	ppbv	78%		70-130
cis-1,2-Dichloroethene	8.575	10.00	ppbv	86%		70-130
2-Butanone	8.303	10.00	ppbv	83%		70-130
Chloroform	8.239	10.00	ppbv	82%		70-130
1,1,1-Trichloroethane	7.836	10.00	ppbv	78%		70-130
Carbon Tetrachloride	7.709	10.00	ppbv	77%		70-130
Benzene	9.586	10.00	ppbv	96%		70-130
1,2-Dichloroethane	7.264	10.00	ppbv	73%		70-130
Trichloroethene	9.224	10.00	ppbv	92%		70-130
1,2-Dichloropropane	9.279	10.00	ppbv	93%		70-130
Bromodichloromethane	8.217	10.00	ppbv	82%		70-130
cis-1,3-Dichloropropene	9.919	10.00	ppbv	99%		70-130
4-Methyl-2-Pentanone	9.296	10.00	ppbv	93%		70-130
Toluene	9.651	10.00	ppbv	97%		70-130
trans-1,3-Dichloropropene	9.646	10.00	ppbv	96%		70-130
1,1,2-Trichloroethane	9.363	10.00	ppbv	94%		70-130
Tetrachloroethene	8.949	10.00	ppbv	89%		70-130
2-Hexanone	9.627	10.00	ppbv	96%		70-130
Dibromochloromethane	8.762	10.00	ppbv	88%		70-130
1,2-Dibromoethane	9.213	10.00	ppbv	92%		70-130

Batch QC

QC961807 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Chlorobenzene	9.602	10.00	ppbv	96%		70-130
Ethylbenzene	10.06	10.00	ppbv	101%		70-130
m,p-Xylenes	19.21	20.00	ppbv	96%		70-130
o-Xylene	9.467	10.00	ppbv	95%		70-130
Styrene	10.35	10.00	ppbv	103%		70-130
Bromoform	9.085	10.00	ppbv	91%		70-130
1,1,2,2-Tetrachloroethane	9.900	10.00	ppbv	99%		70-130
1,1,1,2-Tetrachloroethane	9.102	10.00	ppbv	91%		70-130
4-Ethyltoluene	9.817	10.00	ppbv	98%		70-130
1,3,5-Trimethylbenzene	9.478	10.00	ppbv	95%		70-130
1,2,4-Trimethylbenzene	9.921	10.00	ppbv	99%		70-130
1,3-Dichlorobenzene	9.191	10.00	ppbv	92%		70-130
1,4-Dichlorobenzene	9.234	10.00	ppbv	92%		70-130
Benzyl chloride	9.478	10.00	ppbv	95%		70-130
1,2-Dichlorobenzene	9.450	10.00	ppbv	95%		70-130
1,2,4-Trichlorobenzene	9.970	10.00	ppbv	100%	b	70-130
Hexachlorobutadiene	8.432	10.00	ppbv	84%		70-130
Surrogates						
Bromofluorobenzene	9.956	10.00	ppbv	100%		60-140

Batch QC

Type: Lab Control Sample Duplicate	Lab ID: QC961808	Batch: 280209
Matrix: Air	Method: EPA TO-15	Prep Method: METHOD

QC961808 Analyte	Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim
Isopropylbenzene	10.13	10.00	ppbv	101%		70-130	7	30
Naphthalene	11.45	10.00	ppbv	114%	b	70-130	9	30
Propylbenzene	10.57	10.00	ppbv	106%		70-130	7	30
tert-Butyl Alcohol (TBA)	9.128	10.00	ppbv	91%		70-130	7	30
1,4-Dioxane	10.35	10.00	ppbv	104%		70-130	8	30
Freon 12	8.336	10.00	ppbv	83%		70-130	5	30
Freon 114	9.163	10.00	ppbv	92%		70-130	6	30
Chloromethane	8.782	10.00	ppbv	88%		70-130	6	30
Vinyl Chloride	9.490	10.00	ppbv	95%		70-130	6	30
Bromomethane	9.556	10.00	ppbv	96%		70-130	7	30
Chloroethane	9.491	10.00	ppbv	95%		70-130	7	30
Trichlorofluoromethane	8.106	10.00	ppbv	81%		70-130	7	30
1,1-Dichloroethene	8.931	10.00	ppbv	89%		70-130	7	30
Freon 113	9.411	10.00	ppbv	94%		70-130	7	30
Acetone	9.000	10.00	ppbv	90%		70-130	7	30
Carbon Disulfide	10.12	10.00	ppbv	101%		70-130	7	30
Isopropanol (IPA)	8.576	10.00	ppbv	86%		70-130	8	30
Methylene Chloride	9.341	10.00	ppbv	93%		70-130	6	30
trans-1,2-Dichloroethene	9.310	10.00	ppbv	93%		70-130	8	30
MTBE	9.336	10.00	ppbv	93%		70-130	7	30
n-Hexane	9.708	10.00	ppbv	97%		70-130	8	30
1,1-Dichloroethane	9.260	10.00	ppbv	93%		70-130	7	30
Vinyl Acetate	8.358	10.00	ppbv	84%		70-130	7	30
cis-1,2-Dichloroethene	9.203	10.00	ppbv	92%		70-130	7	30
2-Butanone	8.973	10.00	ppbv	90%		70-130	8	30
Chloroform	8.864	10.00	ppbv	89%		70-130	7	30
1,1,1-Trichloroethane	8.473	10.00	ppbv	85%		70-130	8	30
Carbon Tetrachloride	8.320	10.00	ppbv	83%		70-130	8	30
Benzene	10.38	10.00	ppbv	104%		70-130	8	30
1,2-Dichloroethane	7.828	10.00	ppbv	78%		70-130	7	30
Trichloroethene	9.916	10.00	ppbv	99%		70-130	7	30
1,2-Dichloropropane	9.944	10.00	ppbv	99%		70-130	7	30
Bromodichloromethane	8.816	10.00	ppbv	88%		70-130	7	30
cis-1,3-Dichloropropene	10.59	10.00	ppbv	106%		70-130	7	30
4-Methyl-2-Pentanone	9.895	10.00	ppbv	99%		70-130	6	30
Toluene	10.31	10.00	ppbv	103%		70-130	7	30
trans-1,3-Dichloropropene	10.31	10.00	ppbv	103%		70-130	7	30
1,1,2-Trichloroethane	9.999	10.00	ppbv	100%		70-130	7	30
Tetrachloroethene	9.551	10.00	ppbv	96%		70-130	7	30
2-Hexanone	10.31	10.00	ppbv	103%		70-130	7	30
Dibromochloromethane	9.419	10.00	ppbv	94%		70-130	7	30

Batch QC

QC961808 Analyte	Result	Spiked	Units	Recovery	Qual	Limits	RPD	
							RPD	Lim
1,2-Dibromoethane	9.789	10.00	ppbv	98%		70-130	6	30
Chlorobenzene	10.24	10.00	ppbv	102%		70-130	6	30
Ethylbenzene	10.71	10.00	ppbv	107%		70-130	6	30
m,p-Xylenes	20.48	20.00	ppbv	102%		70-130	6	30
o-Xylene	10.16	10.00	ppbv	102%		70-130	7	30
Styrene	11.03	10.00	ppbv	110%		70-130	6	30
Bromoform	9.723	10.00	ppbv	97%		70-130	7	30
1,1,2,2-Tetrachloroethane	10.57	10.00	ppbv	106%		70-130	7	30
1,1,1,2-Tetrachloroethane	9.732	10.00	ppbv	97%		70-130	7	30
4-Ethyltoluene	10.50	10.00	ppbv	105%		70-130	7	30
1,3,5-Trimethylbenzene	10.09	10.00	ppbv	101%		70-130	6	30
1,2,4-Trimethylbenzene	10.64	10.00	ppbv	106%		70-130	7	30
1,3-Dichlorobenzene	9.853	10.00	ppbv	99%		70-130	7	30
1,4-Dichlorobenzene	9.841	10.00	ppbv	98%		70-130	6	30
Benzyl chloride	10.26	10.00	ppbv	103%		70-130	8	30
1,2-Dichlorobenzene	10.17	10.00	ppbv	102%		70-130	7	30
1,2,4-Trichlorobenzene	10.78	10.00	ppbv	108%	b	70-130	8	30
Hexachlorobutadiene	9.042	10.00	ppbv	90%		70-130	7	30
Surrogates								
Bromofluorobenzene	9.961	10.00	ppbv	100%		60-140		

Batch QC

Type: Blank	Lab ID: QC961809	Batch: 280209
Matrix: Air	Method: EPA TO-15	Prep Method: METHOD

QC961809 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
Isopropylbenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Naphthalene	ND		ppbv	1.0	12/18/21 16:09	12/18/21 16:09
Propylbenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
tert-Butyl Alcohol (TBA)	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,4-Dioxane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Freon 12	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Freon 114	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Chloromethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Vinyl Chloride	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Bromomethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Chloroethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Trichlorofluoromethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,1-Dichloroethene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Freon 113	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Acetone	ND		ppbv	1.0	12/18/21 16:09	12/18/21 16:09
Carbon Disulfide	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Isopropanol (IPA)	ND		ppbv	1.0	12/18/21 16:09	12/18/21 16:09
Methylene Chloride	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
trans-1,2-Dichloroethene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
MTBE	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
n-Hexane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,1-Dichloroethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Vinyl Acetate	ND		ppbv	1.0	12/18/21 16:09	12/18/21 16:09
cis-1,2-Dichloroethene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
2-Butanone	ND		ppbv	1.0	12/18/21 16:09	12/18/21 16:09
Chloroform	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,1,1-Trichloroethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Carbon Tetrachloride	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Benzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,2-Dichloroethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Trichloroethene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,2-Dichloropropane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Bromodichloromethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
cis-1,3-Dichloropropene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
4-Methyl-2-Pentanone	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Toluene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
trans-1,3-Dichloropropene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,1,2-Trichloroethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Tetrachloroethene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
2-Hexanone	ND		ppbv	0.50	12/18/21 16:09	12/18/21 16:09
Dibromochloromethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,2-Dibromoethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09

Batch QC

QC961809 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
Chlorobenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Ethylbenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
m,p-Xylenes	ND		ppbv	0.40	12/18/21 16:09	12/18/21 16:09
o-Xylene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Styrene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Bromoform	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,1,2,2-Tetrachloroethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,1,1,2-Tetrachloroethane	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
4-Ethyltoluene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,3,5-Trimethylbenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,2,4-Trimethylbenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,3-Dichlorobenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,4-Dichlorobenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Benzyl chloride	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,2-Dichlorobenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
1,2,4-Trichlorobenzene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Hexachlorobutadiene	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
Xylene (total)	ND		ppbv	0.20	12/18/21 16:09	12/18/21 16:09
TIC:Benzene, (1-methylpropyl)-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Benzene, 1,2,3-trichloro-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Benzene, 1-chloro-4-methyl-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Benzene, n-butyl-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Benzene, tert-butyl-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Butane, 2-methoxy-2-methyl-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Diisopropyl ether	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Propane, 1,2,3-trichloro-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Propane, 2,2-dichloro-	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:Propane, 2-ethoxy-2-methyl	ND		ppbv		12/18/21 16:09	12/18/21 16:09
TIC:p-Cymene	ND		ppbv		12/18/21 16:09	12/18/21 16:09
Surrogates				Limits		
Bromofluorobenzene	104%		%REC	60-140	12/18/21 16:09	12/18/21 16:09

ND Not Detected
b See narrative



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

December 03, 2021

Eric Davis
CH2M Hill, Inc.
P.O. Box 241329
Denver, CO 80224

Re : KMEP Norwalk Biosparge Startup / 693142
MB187341 / 1K01011

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 11/01/21 13:19 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 Analyticals.

Sincerely,

A handwritten signature in black ink, appearing to read 'Allen A.'.

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Fixed Gases					
Ambiant Air	1K01011-01	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-7	1K01011-02	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-15	1K01011-03	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-22	1K01011-04	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-11-7	1K01011-05	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-11-15	1K01011-06	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-11-22	1K01011-07	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-13-7	1K01011-08	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-13-15	1K01011-09	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-13-22	1K01011-10	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-14R-8	1K01011-11	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-14R-16	1K01011-12	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-14R-22	1K01011-13	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-20-5	1K01011-14	Vapor	10	11/01/21 10:55	11/01/21 13:19
SVM-20-14.5	1K01011-15	Vapor	10	11/01/21 10:55	11/01/21 13:19
SVM-18-5	1K01011-16	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-18-14.5	1K01011-17	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-18-14.5 DUP	1K01011-18	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-19-5	1K01011-19	Vapor	10	11/01/21 11:40	11/01/21 13:19

Allen Aminian

Allen Aminian
 QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Ambient Air	1K01011-20	Vapor	10	11/02/21 07:40	11/01/21 13:19
SVM-26-10	1K01011-21	Vapor	10	11/02/21 08:00	11/01/21 13:19
SVM-26-5	1K01011-22	Vapor	10	11/02/21 08:00	11/01/21 13:19
SVM-27-5	1K01011-23	Vapor	10	11/02/21 08:23	11/01/21 13:19
SVM-27-10	1K01011-24	Vapor	10	11/02/21 08:25	11/01/21 13:19
SVM-24-5	1K01011-25	Vapor	10	11/02/21 09:05	11/01/21 13:19
SVM-24-10	1K01011-26	Vapor	10	11/02/21 09:05	11/01/21 13:19
SVM-25-5	1K01011-27	Vapor	10	11/02/21 09:45	11/01/21 13:19
SVM-25-10	1K01011-28	Vapor	10	11/02/21 09:45	11/01/21 13:19
SVM-21-5	1K01011-29	Vapor	10	11/02/21 10:30	11/01/21 13:19
SVM-21-14.5	1K01011-30	Vapor	10	11/02/21 10:30	11/01/21 13:19
SVM-23-5	1K01011-31	Vapor	10	11/02/21 11:00	11/01/21 13:19
SVM-23-14.5	1K01011-32	Vapor	10	11/02/21 11:00	11/01/21 13:19
SVM-22-5	1K01011-33	Vapor	10	11/02/21 11:30	11/01/21 13:19
SVM-22-14.5	1K01011-34	Vapor	10	11/02/21 11:30	11/01/21 13:19
SVM-17-5	1K01011-35	Vapor	10	11/02/21 12:00	11/01/21 13:19
SVM-17-14.5	1K01011-36	Vapor	10	11/02/21 12:00	11/01/21 13:19
SVM-15-7	1K01011-37	Vapor	10	11/03/21 08:22	11/01/21 13:19
SVM-15-15	1K01011-38	Vapor	10	11/03/21 08:22	11/01/21 13:19
SVM-15-22	1K01011-39	Vapor	10	11/03/21 08:22	11/01/21 13:19

Allen Aminian
 QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Ambient Air	1K01011-40	Vapor	10	11/03/21 08:20	11/01/21 13:19
SVM-6-7	1K01011-41	Vapor	10	11/03/21 08:45	11/01/21 13:19
SVM-6-13	1K01011-42	Vapor	10	11/03/21 08:45	11/01/21 13:19
SVM-7-7	1K01011-43	Vapor	10	11/03/21 09:10	11/01/21 13:19
SVM-7-13	1K01011-44	Vapor	10	11/03/21 09:10	11/01/21 13:19
SVM-10-15	1K01011-45	Vapor	10	11/03/21 09:35	11/01/21 13:19
SVM-9-5	1K01011-46	Vapor	10	11/03/21 10:10	11/01/21 13:19
SVM-9-14.5	1K01011-47	Vapor	10	11/03/21 10:30	11/01/21 13:19
SVM-9-14.5 DUP	1K01011-48	Vapor	10	11/03/21 10:30	11/01/21 13:19
SVM-1-5	1K01011-49	Vapor	10	11/03/21 10:55	11/01/21 13:19
SVM-1-15	1K01011-50	Vapor	10	11/03/21 10:55	11/01/21 13:19
SVM-2-5	1K01011-51	Vapor	10	11/03/21 11:20	11/01/21 13:19
Ambient Air	1K01011-52	Vapor	10	11/04/21 08:34	11/01/21 13:19
SVM-3-5	1K01011-53	Vapor	10	11/04/21 08:37	11/01/21 13:19
SVM-3-15	1K01011-54	Vapor	10	11/04/21 08:37	11/01/21 13:19
SVM-5-5	1K01011-55	Vapor	10	11/04/21 09:05	11/01/21 13:19
SVM-5-15	1K01011-56	Vapor	10	11/04/21 09:05	11/01/21 13:19
SVM-8-5	1K01011-57	Vapor	10	11/04/21 09:25	11/01/21 13:19
SVM-8-15	1K01011-58	Vapor	10	11/04/21 09:25	11/01/21 13:19
SVM-16-7	1K01011-59	Vapor	10	11/04/21 10:05	11/01/21 13:19

Allen Aminian
 QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-16-7-DUP	1K01011-60	Vapor	10	11/04/21 10:05	11/01/21 13:19
SVM-16-16	1K01011-61	Vapor	10	11/04/21 09:58	11/01/21 13:19
SVM-16-22	1K01011-62	Vapor	10	11/04/21 09:59	11/01/21 13:19
<u>TO-15 (Mid Level)</u>					
Ambiant Air	1K01011-01	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-7	1K01011-02	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-15	1K01011-03	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-22	1K01011-04	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-11-7	1K01011-05	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-11-15	1K01011-06	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-11-22	1K01011-07	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-13-7	1K01011-08	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-13-15	1K01011-09	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-13-22	1K01011-10	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-14R-8	1K01011-11	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-14R-16	1K01011-12	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-14R-22	1K01011-13	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-20-5	1K01011-14	Vapor	10	11/01/21 10:55	11/01/21 13:19
SVM-20-14.5	1K01011-15	Vapor	10	11/01/21 10:55	11/01/21 13:19
SVM-18-5	1K01011-16	Vapor	10	11/01/21 11:25	11/01/21 13:19

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-18-14.5	1K01011-17	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-18-14.5 DUP	1K01011-18	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-19-5 Ambient	1K01011-19	Vapor	10	11/01/21 11:40	11/01/21 13:19
Air SVM-26-10	1K01011-20	Vapor	10	11/02/21 07:40	11/01/21 13:19
SVM-26-5	1K01011-21	Vapor	10	11/02/21 08:00	11/01/21 13:19
SVM-27-5	1K01011-22	Vapor	10	11/02/21 08:00	11/01/21 13:19
SVM-27-10	1K01011-23	Vapor	10	11/02/21 08:23	11/01/21 13:19
SVM-24-5	1K01011-24	Vapor	10	11/02/21 08:25	11/01/21 13:19
SVM-24-10	1K01011-25	Vapor	10	11/02/21 09:05	11/01/21 13:19
SVM-25-5	1K01011-26	Vapor	10	11/02/21 09:05	11/01/21 13:19
SVM-25-10	1K01011-27	Vapor	10	11/02/21 09:45	11/01/21 13:19
SVM-21-5	1K01011-28	Vapor	10	11/02/21 09:45	11/01/21 13:19
SVM-21-14.5	1K01011-29	Vapor	10	11/02/21 10:30	11/01/21 13:19
SVM-23-5	1K01011-30	Vapor	10	11/02/21 10:30	11/01/21 13:19
SVM-23-14.5	1K01011-31	Vapor	10	11/02/21 11:00	11/01/21 13:19
SVM-22-5	1K01011-32	Vapor	10	11/02/21 11:00	11/01/21 13:19
SVM-22-14.5	1K01011-33	Vapor	10	11/02/21 11:30	11/01/21 13:19
SVM-17-5	1K01011-34	Vapor	10	11/02/21 11:30	11/01/21 13:19
SVM-17-14.5	1K01011-35	Vapor	10	11/02/21 12:00	11/01/21 13:19
	1K01011-36	Vapor	10	11/02/21 12:00	11/01/21 13:19

Allen Aminian
 QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-15-7	1K01011-37	Vapor	10	11/03/21 08:22	11/01/21 13:19
SVM-15-15	1K01011-38	Vapor	10	11/03/21 08:22	11/01/21 13:19
SVM-15-22	1K01011-39	Vapor	10	11/03/21 08:22	11/01/21 13:19
Ambient Air	1K01011-40	Vapor	10	11/03/21 08:20	11/01/21 13:19
SVM-6-7	1K01011-41	Vapor	10	11/03/21 08:45	11/01/21 13:19
SVM-6-13	1K01011-42	Vapor	10	11/03/21 08:45	11/01/21 13:19
SVM-7-7	1K01011-43	Vapor	10	11/03/21 09:10	11/01/21 13:19
SVM-7-13	1K01011-44	Vapor	10	11/03/21 09:10	11/01/21 13:19
SVM-10-15	1K01011-45	Vapor	10	11/03/21 09:35	11/01/21 13:19
SVM-9-5	1K01011-46	Vapor	10	11/03/21 10:10	11/01/21 13:19
SVM-9-14.5	1K01011-47	Vapor	10	11/03/21 10:30	11/01/21 13:19
SVM-9-14.5 DUP	1K01011-48	Vapor	10	11/03/21 10:30	11/01/21 13:19
SVM-1-5	1K01011-49	Vapor	10	11/03/21 10:55	11/01/21 13:19
SVM-1-15	1K01011-50	Vapor	10	11/03/21 10:55	11/01/21 13:19
SVM-2-5	1K01011-51	Vapor	10	11/03/21 11:20	11/01/21 13:19
Ambient Air	1K01011-52	Vapor	10	11/04/21 08:34	11/01/21 13:19
SVM-3-5	1K01011-53	Vapor	10	11/04/21 08:37	11/01/21 13:19
SVM-3-15	1K01011-54	Vapor	10	11/04/21 08:37	11/01/21 13:19
SVM-5-5	1K01011-55	Vapor	10	11/04/21 09:05	11/01/21 13:19
SVM-5-15	1K01011-56	Vapor	10	11/04/21 09:05	11/01/21 13:19

Allen Aminian
 QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-8-5	1K01011-57	Vapor	10	11/04/21 09:25	11/01/21 13:19
SVM-8-15	1K01011-58	Vapor	10	11/04/21 09:25	11/01/21 13:19
SVM-16-7	1K01011-59	Vapor	10	11/04/21 10:05	11/01/21 13:19
SVM-16-7-DUP	1K01011-60	Vapor	10	11/04/21 10:05	11/01/21 13:19
SVM-16-16	1K01011-61	Vapor	10	11/04/21 09:58	11/01/21 13:19
SVM-16-22	1K01011-62	Vapor	10	11/04/21 09:59	11/01/21 13:19
<u>TO-3</u>					
Ambiant Air	1K01011-01	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-7	1K01011-02	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-15	1K01011-03	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-12-22	1K01011-04	Vapor	10	11/01/21 08:35	11/01/21 13:19
SVM-11-7	1K01011-05	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-11-15	1K01011-06	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-11-22	1K01011-07	Vapor	10	11/01/21 09:05	11/01/21 13:19
SVM-13-7	1K01011-08	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-13-15	1K01011-09	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-13-22	1K01011-10	Vapor	10	11/01/21 09:38	11/01/21 13:19
SVM-14R-8	1K01011-11	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-14R-16	1K01011-12	Vapor	10	11/01/21 10:20	11/01/21 13:19
SVM-14R-22	1K01011-13	Vapor	10	11/01/21 10:20	11/01/21 13:19

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-20-5	1K01011-14	Vapor	10	11/01/21 10:55	11/01/21 13:19
SVM-20-14.5	1K01011-15	Vapor	10	11/01/21 10:55	11/01/21 13:19
SVM-18-5	1K01011-16	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-18-14.5	1K01011-17	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-18-14.5 DUP	1K01011-18	Vapor	10	11/01/21 11:25	11/01/21 13:19
SVM-19-5 Ambient	1K01011-19	Vapor	10	11/01/21 11:40	11/01/21 13:19
Air SVM-26-10	1K01011-20	Vapor	10	11/02/21 07:40	11/01/21 13:19
SVM-26-5	1K01011-21	Vapor	10	11/02/21 08:00	11/01/21 13:19
SVM-27-5	1K01011-22	Vapor	10	11/02/21 08:00	11/01/21 13:19
SVM-27-10	1K01011-23	Vapor	10	11/02/21 08:23	11/01/21 13:19
SVM-24-5	1K01011-24	Vapor	10	11/02/21 08:25	11/01/21 13:19
SVM-24-10	1K01011-25	Vapor	10	11/02/21 09:05	11/01/21 13:19
SVM-25-5	1K01011-26	Vapor	10	11/02/21 09:05	11/01/21 13:19
SVM-25-10	1K01011-27	Vapor	10	11/02/21 09:45	11/01/21 13:19
SVM-21-5	1K01011-28	Vapor	10	11/02/21 09:45	11/01/21 13:19
SVM-21-14.5	1K01011-29	Vapor	10	11/02/21 10:30	11/01/21 13:19
SVM-23-5	1K01011-30	Vapor	10	11/02/21 10:30	11/01/21 13:19
SVM-23-14.5	1K01011-31	Vapor	10	11/02/21 11:00	11/01/21 13:19
SVM-22-5	1K01011-32	Vapor	10	11/02/21 11:00	11/01/21 13:19
	1K01011-33	Vapor	10	11/02/21 11:30	11/01/21 13:19

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-22-14.5	1K01011-34	Vapor	10	11/02/21 11:30	11/01/21 13:19
SVM-17-5	1K01011-35	Vapor	10	11/02/21 12:00	11/01/21 13:19
SVM-17-14.5	1K01011-36	Vapor	10	11/02/21 12:00	11/01/21 13:19
SVM-15-7	1K01011-37	Vapor	10	11/03/21 08:22	11/01/21 13:19
SVM-15-15	1K01011-38	Vapor	10	11/03/21 08:22	11/01/21 13:19
SVM-15-22	1K01011-39	Vapor	10	11/03/21 08:22	11/01/21 13:19
Ambient Air	1K01011-40	Vapor	10	11/03/21 08:20	11/01/21 13:19
SVM-6-7	1K01011-41	Vapor	10	11/03/21 08:45	11/01/21 13:19
SVM-6-13	1K01011-42	Vapor	10	11/03/21 08:45	11/01/21 13:19
SVM-7-7	1K01011-43	Vapor	10	11/03/21 09:10	11/01/21 13:19
SVM-7-13	1K01011-44	Vapor	10	11/03/21 09:10	11/01/21 13:19
SVM-10-15	1K01011-45	Vapor	10	11/03/21 09:35	11/01/21 13:19
SVM-9-5	1K01011-46	Vapor	10	11/03/21 10:10	11/01/21 13:19
SVM-9-14.5	1K01011-47	Vapor	10	11/03/21 10:30	11/01/21 13:19
SVM-9-14.5 DUP	1K01011-48	Vapor	10	11/03/21 10:30	11/01/21 13:19
SVM-1-5	1K01011-49	Vapor	10	11/03/21 10:55	11/01/21 13:19
SVM-1-15	1K01011-50	Vapor	10	11/03/21 10:55	11/01/21 13:19
SVM-2-5	1K01011-51	Vapor	10	11/03/21 11:20	11/01/21 13:19
Ambient Air	1K01011-52	Vapor	10	11/04/21 08:34	11/01/21 13:19
SVM-3-5	1K01011-53	Vapor	10	11/04/21 08:37	11/01/21 13:19

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-3-15	1K01011-54	Vapor	10	11/04/21 08:37	11/01/21 13:19
SVM-5-5	1K01011-55	Vapor	10	11/04/21 09:05	11/01/21 13:19
SVM-5-15	1K01011-56	Vapor	10	11/04/21 09:05	11/01/21 13:19
SVM-8-5	1K01011-57	Vapor	10	11/04/21 09:25	11/01/21 13:19
SVM-8-15	1K01011-58	Vapor	10	11/04/21 09:25	11/01/21 13:19
SVM-16-7	1K01011-59	Vapor	10	11/04/21 10:05	11/01/21 13:19
SVM-16-7-DUP	1K01011-60	Vapor	10	11/04/21 10:05	11/01/21 13:19
SVM-16-16	1K01011-61	Vapor	10	11/04/21 09:58	11/01/21 13:19
SVM-16-22	1K01011-62	Vapor	10	11/04/21 09:59	11/01/21 13:19

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Fixed Gases by TCD								
Oxygen	Ambiant Air	21	0.20	% by Volum e	2	11/05/21	11/05/21	ASTM D1946M
Oxygen	SVM-12-7	21	0.20	% by Volum e	2	11/05/21	11/05/21	ASTM D1946M
Oxygen	SVM-12-15	18	0.20	% by Volum e	2	11/05/21	11/05/21	ASTM D1946M
Oxygen	SVM-12-22	5.4	0.20	% by Volum e	2	11/05/21	11/05/21	ASTM D1946M
Carbon Dioxide	SVM-12-22	14	0.20	% by Volum e	2	11/05/21	11/05/21	ASTM D1946M
Oxygen	SVM-11-7	22	0.20	% by Volum e	2	11/05/21	11/05/21	ASTM D1946M
Oxygen	SVM-11-15	21	0.20	% by Volum e	2	11/05/21	11/05/21	ASTM D1946M
Oxygen	SVM-11-22	14	0.20	% by Volum e	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-13-7	21	0.20	% by Volum e	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-13-15	21	0.20	% by Volum e	2	11/08/21	11/08/21	ASTM D1946M

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-13-22	16	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-14R-8	22	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-14R-16	21	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-14R-22	5.4	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Carbon Dioxide	SVM-14R-22	11	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-20-5	22	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-20-14.5	23	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-18-5	21	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-18-14.5	22	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-18-14.5 DUP	22	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M
Oxygen	SVM-19-5	22	0.20	% by Volume	2	11/08/21	11/08/21	ASTM D1946M

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	Ambient Air	21	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Methane	SVM-26-10	0.34	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-26-10	23	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-26-5	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-27-5	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-27-10	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-24-5	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-24-10	23	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-25-5	26	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-25-10	21	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-21-5	21	0.10	% by Volume	1	11/12/21	11/12/21	ASTM D1946M

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-21-14.5	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Methane	SVM-23-5	0.27	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-23-5	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-23-14.5	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-22-5	23	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-22-14.5	22	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-17-5	23	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-17-14.5	23	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-15-7	22	0.10	% by Volume	1	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-15-15	20	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M
Oxygen	SVM-15-22	19	0.20	% by Volume	2	11/12/21	11/12/21	ASTM D1946M

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	Ambient Air	21	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-6-7	22	0.10	% by Volume	1	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-6-13	11	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-7-7	20	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-7-13	19	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-10-15	22	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-9-5	17	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-9-14.5	22	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-9-14.5 DUP	22	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-1-5	21	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-1-15	18	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M

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QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-2-5	20	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	Ambient Air	22	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-3-5	22	0.20	% by Volume	2	11/15/21	11/15/21	ASTM D1946M
Oxygen	SVM-3-15	21	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
Oxygen	SVM-5-5	22	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
Oxygen	SVM-5-15	23	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
Oxygen	SVM-8-5	22	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
Oxygen	SVM-8-15	23	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
Oxygen	SVM-16-7	22	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
Oxygen	SVM-16-7-DUP	22	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
Oxygen	SVM-16-16	22	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M

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QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-16-22	13	0.20	% by Volume	2	11/16/21	11/16/21	ASTM D1946M
VOCs by EPA TO-3								
Gasoline Range Organics (GRO)	SVM-14R-22	0.60	0.50	ug/L	1	11/03/21	11/03/21	TO-3
Gasoline Range Organics (GRO)	SVM-16-7-DUP	0.70	0.50	ug/L	1	12/01/21	12/01/21	TO-3
VOCs by GCMS EPA TO-15 (Mid Level)								
Acetone	Ambiant Air	0.026	0.020	ug/L	1	11/03/21	11/03/21	TO-15
1,2-Dichloroethane (EDC)	Ambiant Air	0.0044	0.0040	ug/L	1	11/03/21	11/03/21	TO-15
Ethanol	Ambiant Air	0.030	0.020	ug/L	1	11/03/21	11/03/21	TO-15
Tetrachloroethylene (PCE)	SVM-12-22	0.022	0.010	ug/L	1	11/03/21	11/03/21	TO-15
Tetrachloroethylene (PCE)	SVM-11-22	0.023	0.010	ug/L	1	11/03/21	11/04/21	TO-15
Chloroform	SVM-14R-16	0.042	0.0040	ug/L	1	11/03/21	11/03/21	TO-15
Chloroform	SVM-27-5	0.0057	0.0040	ug/L	1	11/03/21	11/04/21	TO-15
1,2-Dichloroethane (EDC)	SVM-27-5	0.0045	0.0040	ug/L	1	11/03/21	11/04/21	TO-15
Chloroform	SVM-27-10	0.050	0.0040	ug/L	1	11/03/21	11/04/21	TO-15
Naphthalene	SVM-27-10	0.0039	0.0030	ug/L	1	11/03/21	11/04/21	TO-15
Chloroform	SVM-24-5	0.026	0.0040	ug/L	1	11/03/21	11/04/21	TO-15
Chloroform	SVM-24-10	0.0049	0.0040	ug/L	1	11/03/21	11/04/21	TO-15
Chloroform	SVM-25-5	0.016	0.0040	ug/L	1	11/03/21	11/04/21	TO-15
Naphthalene	SVM-25-5	0.0082	0.0030	ug/L	1	11/03/21	11/04/21	TO-15
Chloroform	SVM-25-10	0.017	0.0040	ug/L	1	11/03/21	11/04/21	TO-15
Chloroform	SVM-22-5	0.016	0.0040	ug/L	1	11/03/21	11/05/21	TO-15
Bromodichloromethane	SVM-22-14.5	0.0054	0.0025	ug/L	1	11/03/21	11/05/21	TO-15
Chloroform	SVM-22-14.5	0.18 E	0.0040	ug/L	1	11/03/21	11/05/21	TO-15
Tetrachloroethylene (PCE)	SVM-15-15	0.016	0.010	ug/L	1	11/08/21	11/08/21	TO-15
Tetrachloroethylene (PCE)	SVM-15-22	0.010	0.010	ug/L	1	11/08/21	11/08/21	TO-15

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LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Tetrachloroethylene (PCE)	SVM-7-13	0.044	0.010	ug/L	1	11/08/21	11/08/21	TO-15
Tetrachloroethylene (PCE)	SVM-9-5	0.055	0.010	ug/L	1	11/08/21	11/09/21	TO-15
Tetrachloroethylene (PCE)	SVM-2-5	0.016	0.010	ug/L	1	11/12/21	11/13/21	TO-15
Trichloroethylene (TCE)	SVM-2-5	0.029	0.020	ug/L	1	11/12/21	11/13/21	TO-15
Bromodichloromethane	SVM-3-5	0.0076	0.0025	ug/L	1	11/12/21	11/13/21	TO-15
Chloroform	SVM-3-5	0.013	0.0040	ug/L	1	11/12/21	11/13/21	TO-15
Bromodichloromethane	SVM-3-15	0.013	0.0025	ug/L	1	11/12/21	11/13/21	TO-15
Chloroform	SVM-3-15	0.036	0.0040	ug/L	1	11/12/21	11/13/21	TO-15

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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

	11/01/21	11/01/21	11/01/21	11/01/21	
Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-01	1K01011-02	1K01011-03	1K01011-04	
Client ID No:	Ambiant Air	SVM-12-7	SVM-12-15	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

	11/01/21	11/01/21	11/01/21	11/01/21	MRL
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50

Surrogates

	11/01/21	11/01/21	11/01/21	11/01/21	<u>%REC Limits</u>
4-Bromofluorobenzene	90%	91%	91%	91%	70-130

Allen Aminian

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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-05	1K01011-06	1K01011-07	1K01011-08	
Client ID No:	SVM-11-7	SVM-11-15	SVM-11-22	SVM-13-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	89%	89%	88%	90%	<u>%REC Limits</u> 70-130
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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-09	1K01011-10	1K01011-11	1K01011-12	
Client ID No:	SVM-13-15	SVM-13-22	SVM-14R-8	SVM-14R-16	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	87%	119%	116%	113%	<u>%REC Limits</u> 70-130
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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-13	1K01011-14	1K01011-15	1K01011-16	
Client ID No:	SVM-14R-22	SVM-20-5	SVM-20-14.5	SVM-18-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	0.60	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	112%	117%	113%	114%	%REC Limits 70-130
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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/2021	11/01/2021	11/01/2021	11/02/2021	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-17	1K01011-18	1K01011-19	1K01011-20	
Client ID No:	SVM-18-14.5	SVM-18-14.5 DUP	SVM-19-5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	111%	109%	114%	112%	%REC Limits 70-130
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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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-21	1K01011-22	1K01011-23	1K01011-24	
Client ID No:	SVM-26-10	SVM-26-5	SVM-27-5	SVM-27-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	90%	91%	92%	92%	%REC Limits 70-130
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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-25	1K01011-26	1K01011-27	1K01011-28	
Client ID No:	SVM-24-5	SVM-24-10	SVM-25-5	SVM-25-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	90%	91%	91%	91%	<u>%REC Limits</u> 70-130
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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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-29	1K01011-30	1K01011-31	1K01011-32	
Client ID No:	SVM-21-5	SVM-21-14.5	SVM-23-5	SVM-23-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	92%	90%	90%	90%	<u>%REC Limits</u> 70-130
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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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

	11/02/21	11/02/21	11/02/21	11/02/21	
Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-33	1K01011-34	1K01011-35	1K01011-36	
Client ID No:	SVM-22-5	SVM-22-14.5	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)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

					<u>%REC Limits</u>
4-Bromofluorobenzene	89%	92%	98%	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 EPA TO-3

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-37	1K01011-38	1K01011-39	1K01011-40	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	90%	93%	90%	91%	<u>%REC Limits</u> 70-130
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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-41	1K01011-42	1K01011-43	1K01011-44	
Client ID No:	SVM-6-7	SVM-6-13	SVM-7-7	SVM-7-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	90%	92%	90%	91%	<u>%REC Limits</u> 70-130
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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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-45	1K01011-46	1K01011-47	1K01011-48	
Client ID No:	SVM-10-15	SVM-9-5	SVM-9-14.5	SVM-9-14.5 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	94%	89%	91%	91%	<u>%REC Limits</u> 70-130
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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/04/21	
Date Prepared:	11/08/21	11/08/21	11/12/21	11/12/21	
Date Analyzed:	11/08/21	11/08/21	11/13/21	11/13/21	
AA ID No:	1K01011-49	1K01011-50	1K01011-51	1K01011-52	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	90%	90%	91%	91%	<u>%REC Limits</u> 70-130
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 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/13/21	11/13/21	11/13/21	11/13/21	
AA ID No:	1K01011-53	1K01011-54	1K01011-55	1K01011-56	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	89%	89%	89%	91%	<u>%REC Limits</u> 70-130
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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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	12/01/21	12/01/21	12/01/21	
Date Analyzed:	11/13/21	12/01/21	12/01/21	12/01/21	
AA ID No:	1K01011-57	1K01011-58	1K01011-59	1K01011-60	
Client ID No:	SVM-8-5	SVM-8-15	SVM-16-7	SVM-16-7-DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	0.70	0.50
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Surrogates

4-Bromofluorobenzene	91%	95%	92%	97%	<u>%REC Limits</u> 70-130
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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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	
Date Prepared:	12/01/21	12/01/21	
Date Analyzed:	12/01/21	12/01/21	
AA ID No:	1K01011-61	1K01011-62	
Client ID No:	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	
Dilution Factor:	1	1	MRL

TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	0.50
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Surrogates

4-Bromofluorobenzene	92%	94%	<u>%REC Limits</u> 70-130
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Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21
AA ID No:	1K01011-01	1K01011-02	1K01011-03	1K01011-04
Client ID No:	Ambiant Air	SVM-12-7	SVM-12-15	SVM-12-22
Matrix:	Vapor	Vapor	Vapor	Vapor
Dilution Factor:	1	1	1	1

MRL

TO-15 (Mid Level) (TO-15)

Acetone	0.026	<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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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)	0.0044	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21
AA ID No:	1K01011-01	1K01011-02	1K01011-03	1K01011-04
Client ID No:	Ambiant Air	SVM-12-7	SVM-12-15	SVM-12-22
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	0.030	<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	0.022	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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21
AA ID No:	1K01011-01	1K01011-02	1K01011-03	1K01011-04
Client ID No:	Ambiant Air	SVM-12-7	SVM-12-15	SVM-12-22
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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	102%	102%	103%	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-05	1K01011-06	1K01011-07	1K01011-08	
Client ID No:	SVM-11-7	SVM-11-15	SVM-11-22	SVM-13-7	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-05	1K01011-06	1K01011-07	1K01011-08	
Client ID No:	SVM-11-7	SVM-11-15	SVM-11-22	SVM-13-7	
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	0.023	<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. **AA Project No:** MB187341
Project No: 693142 **Date Received:** 11/01/21
Project Name: KMEP Norwalk Biosparge Startup **Date Reported:** 12/03/21
Method: VOCs by GCMS EPA TO-15 (Mid Level) **Units:** ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-05	1K01011-06	1K01011-07	1K01011-08	
Client ID No:	SVM-11-7	SVM-11-15	SVM-11-22	SVM-13-7	
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	99%	101%	99%	102%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-09	1K01011-10	1K01011-11	1K01011-12	
Client ID No:	SVM-13-15	SVM-13-22	SVM-14R-8	SVM-14R-16	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	0.042	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21
Date Analyzed:	11/04/21	11/03/21	11/03/21	11/03/21
AA ID No:	1K01011-09	1K01011-10	1K01011-11	1K01011-12
Client ID No:	SVM-13-15	SVM-13-22	SVM-14R-8	SVM-14R-16
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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-09	1K01011-10	1K01011-11	1K01011-12	
Client ID No:	SVM-13-15	SVM-13-22	SVM-14R-8	SVM-14R-16	
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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	99%	103%	100%	98%	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-13	1K01011-14	1K01011-15	1K01011-16	
Client ID No:	SVM-14R-22	SVM-20-5	SVM-20-14.5	SVM-18-5	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-13	1K01011-14	1K01011-15	1K01011-16	
Client ID No:	SVM-14R-22	SVM-20-5	SVM-20-14.5	SVM-18-5	
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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/03/21	11/03/21	
AA ID No:	1K01011-13	1K01011-14	1K01011-15	1K01011-16	
Client ID No:	SVM-14R-22	SVM-20-5	SVM-20-14.5	SVM-18-5	
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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	98%	102%	98%	99%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/2021	11/01/2021	11/01/2021	11/02/2021	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/04/21	11/04/21	
AA ID No:	1K01011-17	1K01011-18	1K01011-19	1K01011-20	
Client ID No:	SVM-18-14.5	SVM-18-14.5 DUP	SVM-19-5	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	<0.020	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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/2021	11/01/2021	11/01/2021	11/02/2021	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/04/21	11/04/21	
AA ID No:	1K01011-17	1K01011-18	1K01011-19	1K01011-20	
Client ID No:	SVM-18-14.5	SVM-18-14.5 DUP	SVM-19-5	Ambient Air	
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)	<0.010	<0.010	<0.010	<0.010	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/01/2021	11/01/2021	11/01/2021	11/02/2021	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/03/21	11/03/21	11/04/21	11/04/21	
AA ID No:	1K01011-17	1K01011-18	1K01011-19	1K01011-20	
Client ID No:	SVM-18-14.5	SVM-18-14.5 DUP	SVM-19-5	Ambient Air	
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	97%	95%	99%	98%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-21	1K01011-22	1K01011-23	1K01011-24	
Client ID No:	SVM-26-10	SVM-26-5	SVM-27-5	SVM-27-10	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	0.0057	0.050	0.0040
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	0.0045	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-21	1K01011-22	1K01011-23	1K01011-24	
Client ID No:	SVM-26-10	SVM-26-5	SVM-27-5	SVM-27-10	
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	0.0039	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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-21	1K01011-22	1K01011-23	1K01011-24	
Client ID No:	SVM-26-10	SVM-26-5	SVM-27-5	SVM-27-10	
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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	101%	102%	103%	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-25	1K01011-26	1K01011-27	1K01011-28	
Client ID No:	SVM-24-5	SVM-24-10	SVM-25-5	SVM-25-10	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	0.026	0.0049	0.016	0.017	0.0040
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: MB187341
 Date Received: 11/01/21
 Date Reported: 12/03/21
 Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-25	1K01011-26	1K01011-27	1K01011-28	
Client ID No:	SVM-24-5	SVM-24-10	SVM-25-5	SVM-25-10	
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	0.0082	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/04/21	11/04/21	11/04/21	11/04/21	
AA ID No:	1K01011-25	1K01011-26	1K01011-27	1K01011-28	
Client ID No:	SVM-24-5	SVM-24-10	SVM-25-5	SVM-25-10	
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%	101%	101%	101%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/05/21	11/05/21	11/05/21	11/05/21	
AA ID No:	1K01011-29	1K01011-30	1K01011-31	1K01011-32	
Client ID No:	SVM-21-5	SVM-21-14.5	SVM-23-5	SVM-23-14.5	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/05/21	11/05/21	11/05/21	11/05/21	
AA ID No:	1K01011-29	1K01011-30	1K01011-31	1K01011-32	
Client ID No:	SVM-21-5	SVM-21-14.5	SVM-23-5	SVM-23-14.5	
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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Analyzed:	11/05/21	11/05/21	11/05/21	11/05/21	
AA ID No:	1K01011-29	1K01011-30	1K01011-31	1K01011-32	
Client ID No:	SVM-21-5	SVM-21-14.5	SVM-23-5	SVM-23-14.5	
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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	103%	101%	101%	102%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/04/21	11/04/21	
Date Analyzed:	11/05/21	11/05/21	11/04/21	11/04/21	
AA ID No:	1K01011-33	1K01011-34	1K01011-35	1K01011-36	
Client ID No:	SVM-22-5	SVM-22-14.5	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	<0.0025	0.0054	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	0.016	0.18 [1]	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/04/21	11/04/21	
Date Analyzed:	11/05/21	11/05/21	11/04/21	11/04/21	
AA ID No:	1K01011-33	1K01011-34	1K01011-35	1K01011-36	
Client ID No:	SVM-22-5	SVM-22-14.5	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/03/21	11/03/21	11/04/21	11/04/21	
Date Analyzed:	11/05/21	11/05/21	11/04/21	11/04/21	
AA ID No:	1K01011-33	1K01011-34	1K01011-35	1K01011-36	
Client ID No:	SVM-22-5	SVM-22-14.5	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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	101%	104%	98%	101%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-37	1K01011-38	1K01011-39	1K01011-40	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-37	1K01011-38	1K01011-39	1K01011-40	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	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	0.016	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-37	1K01011-38	1K01011-39	1K01011-40	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	102%	105%	102%	102%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-41	1K01011-42	1K01011-43	1K01011-44	
Client ID No:	SVM-6-7	SVM-6-13	SVM-7-7	SVM-7-13	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
 Date Received: 11/01/21
 Date Reported: 12/03/21
 Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-41	1K01011-42	1K01011-43	1K01011-44	
Client ID No:	SVM-6-7	SVM-6-13	SVM-7-7	SVM-7-13	
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	0.044	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-41	1K01011-42	1K01011-43	1K01011-44	
Client ID No:	SVM-6-7	SVM-6-13	SVM-7-7	SVM-7-13	
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

4-Bromofluorobenzene	100%	104%	102%	101%	%REC Limits 70-130
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Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/09/21	11/09/21	11/09/21	11/09/21	
AA ID No:	1K01011-45	1K01011-46	1K01011-47	1K01011-48	
Client ID No:	SVM-10-15	SVM-9-5	SVM-9-14.5	SVM-9-14.5 DUP	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/09/21	11/09/21	11/09/21	11/09/21	
AA ID No:	1K01011-45	1K01011-46	1K01011-47	1K01011-48	
Client ID No:	SVM-10-15	SVM-9-5	SVM-9-14.5	SVM-9-14.5 DUP	
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	0.055	<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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/09/21	11/09/21	11/09/21	11/09/21	
AA ID No:	1K01011-45	1K01011-46	1K01011-47	1K01011-48	
Client ID No:	SVM-10-15	SVM-9-5	SVM-9-14.5	SVM-9-14.5 DUP	
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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	105%	101%	102%	103%	70-130

Allen Aminian

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

Client:	CH2M Hill, Inc.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/04/21	
Date Prepared:	11/08/21	11/08/21	11/12/21	11/12/21	
Date Analyzed:	11/09/21	11/09/21	11/13/21	11/13/21	
AA ID No:	1K01011-49	1K01011-50	1K01011-51	1K01011-52	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	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	<0.020	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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/04/21	
Date Prepared:	11/08/21	11/08/21	11/12/21	11/12/21	
Date Analyzed:	11/09/21	11/09/21	11/13/21	11/13/21	
AA ID No:	1K01011-49	1K01011-50	1K01011-51	1K01011-52	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	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	<0.020	<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	0.016	<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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/03/21	11/03/21	11/03/21	11/04/21	
Date Prepared:	11/08/21	11/08/21	11/12/21	11/12/21	
Date Analyzed:	11/09/21	11/09/21	11/13/21	11/13/21	
AA ID No:	1K01011-49	1K01011-50	1K01011-51	1K01011-52	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	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	0.029	<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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	102%	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 GCMS EPA TO-15 (Mid Level)

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/13/21	11/13/21	11/13/21	11/13/21	
AA ID No:	1K01011-53	1K01011-54	1K01011-55	1K01011-56	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
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	0.0076	0.013	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	0.013	0.036	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/13/21	11/13/21	11/13/21	11/13/21	
AA ID No:	1K01011-53	1K01011-54	1K01011-55	1K01011-56	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
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.	AA Project No:	MB187341
Project No:	693142	Date Received:	11/01/21
Project Name:	KMEP Norwalk Biosparge Startup	Date Reported:	12/03/21
Method:	VOCs by GCMS EPA TO-15 (Mid Level)	Units:	ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/13/21	11/13/21	11/13/21	11/13/21	
AA ID No:	1K01011-53	1K01011-54	1K01011-55	1K01011-56	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
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

<u>Surrogates</u>					<u>%REC Limits</u>
4-Bromofluorobenzene	100%	99%	100%	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	12/01/21	12/01/21	12/01/21	
Date Analyzed:	11/13/21	12/01/21	12/01/21	12/01/21	
AA ID No:	1K01011-57	1K01011-58	1K01011-59	1K01011-60	
Client ID No:	SVM-8-5	SVM-8-15	SVM-16-7	SVM-16-7-DUP	
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	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
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)	<2.0	<2.0	<2.0	<2.0	2.0
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	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	12/01/21	12/01/21	12/01/21	
Date Analyzed:	11/13/21	12/01/21	12/01/21	12/01/21	
AA ID No:	1K01011-57	1K01011-58	1K01011-59	1K01011-60	
Client ID No:	SVM-8-5	SVM-8-15	SVM-16-7	SVM-16-7-DUP	
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/12/21	12/01/21	12/01/21	12/01/21	
Date Analyzed:	11/13/21	12/01/21	12/01/21	12/01/21	
AA ID No:	1K01011-57	1K01011-58	1K01011-59	1K01011-60	
Client ID No:	SVM-8-5	SVM-8-15	SVM-16-7	SVM-16-7-DUP	
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

4-Bromofluorobenzene	104%	105%	103%	107%	%REC Limits 70-130
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Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	
Date Prepared:	12/01/21	12/01/21	
Date Analyzed:	12/01/21	12/01/21	
AA ID No:	1K01011-61	1K01011-62	
Client ID No:	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	
Dilution Factor:	1	1	MRL

TO-15 (Mid Level) (TO-15)

Acetone	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	
Date Prepared:	12/01/21	12/01/21	
Date Analyzed:	12/01/21	12/01/21	
AA ID No:	1K01011-61	1K01011-62	
Client ID No:	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	
Dilution Factor:	1	1	MRL

TO-15 (Mid Level) (TO-15) (continued)

1,1-Dichloroethylene	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: ug/L

Date Sampled:	11/04/21	11/04/21	
Date Prepared:	12/01/21	12/01/21	
Date Analyzed:	12/01/21	12/01/21	
AA ID No:	1K01011-61	1K01011-62	
Client ID No:	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	
Dilution Factor:	1	1	MRL

TO-15 (Mid Level) (TO-15) (continued)

Toluene	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	0.020

<u>Surrogates</u>			<u>%REC Limits</u>
4-Bromofluorobenzene	104%	104%	70-130

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

	11/01/21	11/01/21	11/01/21	11/01/21	
Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/05/21	11/05/21	11/05/21	11/05/21	
Date Analyzed:	11/05/21	11/05/21	11/05/21	11/05/21	
AA ID No:	1K01011-01	1K01011-02	1K01011-03	1K01011-04	
Client ID No:	Ambiant Air	SVM-12-7	SVM-12-15	SVM-12-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	21	21	18	5.4	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	14	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/05/21	11/05/21	11/08/21	11/08/21	
Date Analyzed:	11/05/21	11/05/21	11/08/21	11/08/21	
AA ID No:	1K01011-05	1K01011-06	1K01011-07	1K01011-08	
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 (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	22	21	14	21	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-09	1K01011-10	1K01011-11	1K01011-12	
Client ID No:	SVM-13-15	SVM-13-22	SVM-14R-8	SVM-14R-16	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	21	16	22	21	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/01/21	11/01/21	11/01/21	11/01/21	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/08/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/08/21	
AA ID No:	1K01011-13	1K01011-14	1K01011-15	1K01011-16	
Client ID No:	SVM-14R-22	SVM-20-5	SVM-20-14.5	SVM-18-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	5.4	22	23	21	0.10
Carbon Dioxide	11	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/01/2021	11/01/2021	11/01/2021	11/02/2021	
Date Prepared:	11/08/21	11/08/21	11/08/21	11/12/21	
Date Analyzed:	11/08/21	11/08/21	11/08/21	11/12/21	
AA ID No:	1K01011-17	1K01011-18	1K01011-19	1K01011-20	
Client ID No:	SVM-18-14.5	SVM-18-14.5 DUP	SVM-19-5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	22	22	22	21	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/12/21	11/12/21	11/12/21	11/12/21	
AA ID No:	1K01011-21	1K01011-22	1K01011-23	1K01011-24	
Client ID No:	SVM-26-10	SVM-26-5	SVM-27-5	SVM-27-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	0.34	<0.20	<0.20	<0.20	0.10
Oxygen	23	22	22	22	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/12/21	11/12/21	11/12/21	11/12/21	
AA ID No:	1K01011-25	1K01011-26	1K01011-27	1K01011-28	
Client ID No:	SVM-24-5	SVM-24-10	SVM-25-5	SVM-25-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	22	23	26	21	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/12/21	11/12/21	11/12/21	11/12/21	
AA ID No:	1K01011-29	1K01011-30	1K01011-31	1K01011-32	
Client ID No:	SVM-21-5	SVM-21-14.5	SVM-23-5	SVM-23-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.10	<0.20	0.27	<0.20	0.10
Oxygen	21	22	22	22	0.10
Carbon Dioxide	<0.10	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/02/21	11/02/21	11/02/21	11/02/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/12/21	
Date Analyzed:	11/12/21	11/12/21	11/12/21	11/12/21	
AA ID No:	1K01011-33	1K01011-34	1K01011-35	1K01011-36	
Client ID No:	SVM-22-5	SVM-22-14.5	SVM-17-5	SVM-17-14.5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	23	22	23	23	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

	11/03/21	11/03/21	11/03/21	11/03/21	
Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/12/21	11/12/21	11/12/21	11/15/21	
Date Analyzed:	11/12/21	11/12/21	11/12/21	11/15/21	
AA ID No:	1K01011-37	1K01011-38	1K01011-39	1K01011-40	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.10	<0.20	<0.20	<0.20	0.10
Oxygen	22	20	19	21	0.10
Carbon Dioxide	<0.10	<0.20	<0.20	<0.20	0.10

Allen Aminian

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

	11/03/21	11/03/21	11/03/21	11/03/21	
Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/15/21	11/15/21	11/15/21	11/15/21	
Date Analyzed:	11/15/21	11/15/21	11/15/21	11/15/21	
AA ID No:	1K01011-41	1K01011-42	1K01011-43	1K01011-44	
Client ID No:	SVM-6-7	SVM-6-13	SVM-7-7	SVM-7-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.10	<0.20	<0.20	<0.20	0.10
Oxygen	22	11	20	19	0.10
Carbon Dioxide	<0.10	<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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/03/21	11/03/21	11/03/21	11/03/21	
Date Prepared:	11/15/21	11/15/21	11/15/21	11/15/21	
Date Analyzed:	11/15/21	11/15/21	11/15/21	11/15/21	
AA ID No:	1K01011-45	1K01011-46	1K01011-47	1K01011-48	
Client ID No:	SVM-10-15	SVM-9-5	SVM-9-14.5	SVM-9-14.5 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	22	17	22	22	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/03/21	11/03/21	11/03/21	11/04/21	
Date Prepared:	11/15/21	11/15/21	11/15/21	11/15/21	
Date Analyzed:	11/15/21	11/15/21	11/15/21	11/15/21	
AA ID No:	1K01011-49	1K01011-50	1K01011-51	1K01011-52	
Client ID No:	SVM-1-5	SVM-1-15	SVM-2-5	Ambient Air	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	21	18	20	22	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/15/21	11/16/21	11/16/21	11/16/21	
Date Analyzed:	11/15/21	11/16/21	11/16/21	11/16/21	
AA ID No:	1K01011-53	1K01011-54	1K01011-55	1K01011-56	
Client ID No:	SVM-3-5	SVM-3-15	SVM-5-5	SVM-5-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	22	21	22	23	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

	11/04/21	11/04/21	11/04/21	11/04/21	
Date Sampled:	11/04/21	11/04/21	11/04/21	11/04/21	
Date Prepared:	11/16/21	11/16/21	11/16/21	11/16/21	
Date Analyzed:	11/16/21	11/16/21	11/16/21	11/16/21	
AA ID No:	1K01011-57	1K01011-58	1K01011-59	1K01011-60	
Client ID No:	SVM-8-5	SVM-8-15	SVM-16-7	SVM-16-7-DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	22	23	22	22	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21
Units: % by Volume

Date Sampled:	11/04/21	11/04/21	
Date Prepared:	11/16/21	11/16/21	
Date Analyzed:	11/16/21	11/16/21	
AA ID No:	1K01011-61	1K01011-62	
Client ID No:	SVM-16-16	SVM-16-22	
Matrix:	Vapor	Vapor	
Dilution Factor:	2	2	MRL

Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	0.10
Oxygen	22	13	0.10
Carbon Dioxide	<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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control									
<i>Batch B1K0832 - *** DEFAULT PREP ***</i>									
Blank (B1K0832-BLK1)				Prepared & Analyzed: 11/08/21					
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L						
Surrogate: 4-Bromofluorobenzene	0.0318		ug/L	0.0358	88.8	70-130			
LCS (B1K0832-BS1)				Prepared & Analyzed: 11/08/21					
Gasoline Range Organics (GRO)	0.703	0.50	ug/L	0.802	87.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.0321		ug/L	0.0358	89.6	70-130			
LCS Dup (B1K0832-BSD1)				Prepared & Analyzed: 11/08/21					
Gasoline Range Organics (GRO)	0.720	0.50	ug/L	0.802	89.8	70-130	2.30	30	
Surrogate: 4-Bromofluorobenzene	0.0333		ug/L	0.0358	93.0	70-130			
<i>Batch B1K1122 - *** DEFAULT PREP ***</i>									
Blank (B1K1122-BLK1)				Prepared & Analyzed: 11/03/21					
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L						
Surrogate: 4-Bromofluorobenzene	0.0320		ug/L	0.0358	89.4	70-130			
LCS (B1K1122-BS1)				Prepared & Analyzed: 11/03/21					
Gasoline Range Organics (GRO)	0.654	0.50	ug/L			70-130			
Surrogate: 4-Bromofluorobenzene	0.0322		ug/L	0.0358	90.0	70-130			
LCS Dup (B1K1122-BSD1)				Prepared & Analyzed: 11/03/21					
Gasoline Range Organics (GRO)	0.671	0.50	ug/L			70-130	2.47	30	
Surrogate: 4-Bromofluorobenzene	0.0329		ug/L	0.0358	91.8	70-130			
<i>Batch B1K1127 - *** DEFAULT PREP ***</i>									
Blank (B1K1127-BLK1)				Prepared & Analyzed: 11/03/21					
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L						
Surrogate: 4-Bromofluorobenzene	0.0344		ug/L	0.0358	96.2	70-130			
LCS (B1K1127-BS1)				Prepared & Analyzed: 11/03/21					
Gasoline Range Organics (GRO)	0.761	0.50	ug/L			70-130			
Surrogate: 4-Bromofluorobenzene	0.0354		ug/L	0.0358	98.8	70-130			
LCS Dup (B1K1127-BSD1)				Prepared & Analyzed: 11/03/21					
Gasoline Range Organics (GRO)	0.793	0.50	ug/L			70-130	4.21	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
VOCs by EPA TO-3 - Quality Control										
<i>Batch B1K1127 - *** DEFAULT PREP ***</i>										
LCS Dup (B1K1127-BSD1) Continued				Prepared & Analyzed: 11/03/21						
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0369		ug/L	0.0358		103	70-130			
<i>Batch B1K1134 - *** DEFAULT PREP ***</i>										
Blank (B1K1134-BLK1)				Prepared & Analyzed: 11/04/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0347		ug/L	0.0358		97.0	70-130			
LCS (B1K1134-BS1)				Prepared: 11/04/21 Analyzed: 11/05/21						
Gasoline Range Organics (GRO)	0.777	0.50	ug/L	0.802		96.9	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0364		ug/L	0.0358		102	70-130			
LCS Dup (B1K1134-BSD1)				Prepared: 11/04/21 Analyzed: 11/05/21						
Gasoline Range Organics (GRO)	0.890	0.50	ug/L	0.802		111	70-130	13.5	30	
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0364		ug/L	0.0358		102	70-130			
<i>Batch B1K1204 - *** DEFAULT PREP ***</i>										
Blank (B1K1204-BLK1)				Prepared & Analyzed: 11/04/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0316		ug/L	0.0358		88.2	70-130			
LCS (B1K1204-BS1)				Prepared & Analyzed: 11/04/21						
Gasoline Range Organics (GRO)	0.671	0.50	ug/L	0.802		83.7	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0321		ug/L	0.0358		89.6	70-130			
LCS Dup (B1K1204-BSD1)				Prepared & Analyzed: 11/04/21						
Gasoline Range Organics (GRO)	0.683	0.50	ug/L	0.802		85.2	70-130	1.81	30	
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0326		ug/L	0.0358		91.2	70-130			
<i>Batch B1L0307 - *** DEFAULT PREP ***</i>										
Blank (B1L0307-BLK1)				Prepared & Analyzed: 12/01/21						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0319		ug/L	0.0358		89.0	70-130			
LCS (B1L0307-BS1)				Prepared & Analyzed: 12/01/21						
Gasoline Range Organics (GRO)	0.931	0.50	ug/L	0.802		116	70-130			

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by EPA TO-3 - Quality Control

*Batch B1L0307 - *** DEFAULT PREP ****

LCS (B1L0307-BS1) Continued

Prepared & Analyzed: 12/01/21

Surrogate: 4-Bromofluorobenzene 0.0339

ug/L 0.0358 94.6 70-130

LCS Dup (B1L0307-BSD1)

Prepared: 12/01/21 Analyzed: 12/02/21

Gasoline Range Organics (GRO) **0.672** 0.50 ug/L 0.802 83.8 70-130 32.3 30

Surrogate: 4-Bromofluorobenzene 0.0345

ug/L 0.0358 96.4 70-130

*Batch B1L0315 - *** DEFAULT PREP ****

Blank (B1L0315-BLK1)

Prepared & Analyzed: 11/12/21

Gasoline Range Organics (GRO) <0.50 0.50 ug/L

Surrogate: 4-Bromofluorobenzene 0.0333

ug/L 0.0358 93.0 70-130

LCS (B1L0315-BS1)

Prepared & Analyzed: 11/12/21

Gasoline Range Organics (GRO) **0.662** 0.50 ug/L 0.802 82.5 70-130

Surrogate: 4-Bromofluorobenzene 0.0334

ug/L 0.0358 93.4 70-130

VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

*Batch B1K0430 - *** DEFAULT PREP ****

Blank (B1K0430-BLK1)

Prepared & Analyzed: 11/03/21

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 <0.0025 0.0025 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) <2.0 2.0 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
<i>Batch B1K0430 - *** DEFAULT PREP ***</i>										
Blank (B1K0430-BLK1) Continued										
Prepared & Analyzed: 11/03/21										
Chloroform	<0.0040	0.0040	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0430 - *** DEFAULT PREP ***</i>										
Blank (B1K0430-BLK1) Continued						Prepared & Analyzed: 11/03/21				
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							
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.143</i>		<i>ug/L</i>	<i>0.143</i>	<i>100</i>	<i>70-130</i>				
LCS (B1K0430-BS1)										Prepared: 11/03/21 Analyzed: 11/04/21

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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 B1K0430 - *** DEFAULT PREP ***										
LCS (B1K0430-BS1) Continued										
Prepared: 11/03/21 Analyzed: 11/04/21										
Acetone	0.0825	0.020	ug/L	0.0950		86.8	70-130			
Benzene	0.109	0.0030	ug/L	0.128		85.0	70-130			
Benzyl chloride	0.171	0.020	ug/L	0.178		96.1	70-130			
Bromodichloromethane	0.267	0.0025	ug/L	0.268		99.8	70-130			
Bromoform	0.479	0.020	ug/L	0.413		116	70-130			
Bromomethane	0.131	0.020	ug/L	0.155		84.0	70-130			
2-Butanone (MEK)	0.105	0.020	ug/L	0.118		88.7	70-130			
Carbon Disulfide	0.117	0.020	ug/L	0.125		93.6	70-130			
Carbon Tetrachloride	0.238	0.020	ug/L	0.252		94.7	70-130			
Chlorobenzene	0.175	0.020	ug/L	0.184		95.1	70-130			
Chloroethane	0.0836	0.020	ug/L	0.106		79.2	70-130			
Chloroform	0.182	0.0040	ug/L	0.195		93.1	70-130			
Chloromethane	0.0682	0.020	ug/L	0.0826		82.6	70-130			
Dibromochloromethane	0.387	0.020	ug/L	0.341		113	70-130			
1,2-Dibromoethane (EDB)	0.311	0.020	ug/L	0.307		101	70-130			
1,2-Dichlorobenzene	0.240	0.020	ug/L	0.240		99.9	70-130			
1,3-Dichlorobenzene	0.237	0.020	ug/L	0.240		98.5	70-130			
1,4-Dichlorobenzene	0.245	0.020	ug/L	0.240		102	70-130			
Dichlorodifluoromethane (R12)	0.194	0.020	ug/L	0.198		97.9	70-130			
1,1-Dichloroethane	0.137	0.020	ug/L	0.162		84.6	70-130			
1,2-Dichloroethane (EDC)	0.156	0.0040	ug/L	0.162		96.6	70-130			
cis-1,2-Dichloroethylene	0.145	0.020	ug/L	0.159		91.3	70-130			
1,1-Dichloroethylene	0.143	0.020	ug/L	0.159		90.4	70-130			
trans-1,2-Dichloroethylene	0.148	0.020	ug/L	0.159		93.5	70-130			
1,2-Dichloropropane	0.160	0.020	ug/L	0.185		86.3	70-130			
trans-1,3-Dichloropropylene	0.165	0.020	ug/L	0.182		91.1	70-130			
cis-1,3-Dichloropropylene	0.165	0.020	ug/L	0.182		90.7	70-130			
Dichlorotetrafluoroethane	0.247	0.020	ug/L	0.280		88.3	70-130			
Ethylbenzene	0.152	0.020	ug/L	0.174		87.5	70-130			
4-Ethyltoluene	0.187	0.020	ug/L	0.197		95.0	70-130			
Hexachlorobutadiene	0.394	0.020	ug/L	0.427		92.4	70-130			
2-Hexanone (MBK)	0.144	0.020	ug/L	0.164		88.1	70-130			

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0430 - *** DEFAULT PREP ***

LCS (B1K0430-BS1) Continued

Prepared: 11/03/21 Analyzed: 11/04/21

Isopropanol (IPA)	0.0694	0.20	ug/L	0.0865		80.3	70-130			
Methylene Chloride	0.104	0.020	ug/L	0.139		74.7	70-130			
4-Methyl-2-pentanone (MIBK)	0.137	0.020	ug/L	0.164		83.4	70-130			
Styrene	0.164	0.020	ug/L	0.170		96.0	70-130			
1,1,2,2-Tetrachloroethane	0.234	0.020	ug/L	0.275		85.4	70-130			
Tetrachloroethylene (PCE)	0.296	0.010	ug/L	0.271		109	70-130			
Toluene	0.140	0.020	ug/L	0.151		92.7	70-130			
1,2,4-Trichlorobenzene	0.269	0.020	ug/L	0.297		90.6	70-130			
1,1,2-Trichloroethane	0.215	0.020	ug/L	0.218		98.4	70-130			
1,1,1-Trichloroethane	0.200	0.020	ug/L	0.218		91.4	70-130			
Trichloroethylene (TCE)	0.216	0.020	ug/L	0.215		100	70-130			
Trichlorofluoromethane (R11)	0.203	0.020	ug/L	0.225		90.4	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.310	0.020	ug/L	0.307		101	70-130			
1,3,5-Trimethylbenzene	0.178	0.020	ug/L	0.197		90.4	70-130			
1,2,4-Trimethylbenzene	0.182	0.020	ug/L	0.197		92.5	70-130			
Vinyl acetate	0.101	0.020	ug/L	0.118		85.5	70-130			
Vinyl chloride	0.0827	0.020	ug/L	0.102		80.9	70-130			
o-Xylene	0.148	0.020	ug/L	0.174		85.0	70-130			
m,p-Xylenes	0.259	0.020	ug/L	0.347		74.7	70-130			
1,2,3-Trichloropropane	0.217	0.020	ug/L	0.241		90.1	70-130			
sec-Butylbenzene	0.216	0.020	ug/L	0.220		98.2	70-130			
Isopropylbenzene	0.190	0.020	ug/L	0.197		96.4	70-130			
n-Propylbenzene	0.185	0.020	ug/L	0.197		93.8	70-130			
4-Isopropyltoluene	0.222	0.020	ug/L	0.220		101	70-130			

Surrogate: 4-Bromofluorobenzene 0.138 ug/L 0.143 96.5 70-130

LCS Dup (B1K0430-BSD1)

Prepared: 11/03/21 Analyzed: 11/04/21

Acetone	0.0833	0.020	ug/L	0.0950		87.6	70-130	0.917	30	
Benzene	0.108	0.0030	ug/L	0.128		84.8	70-130	0.206	30	
Benzyl chloride	0.171	0.020	ug/L	0.178		96.1	70-130	0.0303	30	
Bromodichloromethane	0.273	0.0025	ug/L	0.268		102	70-130	2.18	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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 B1K0430 - *** DEFAULT PREP ***										
LCS Dup (B1K0430-BSD1) Continued										
					Prepared: 11/03/21 Analyzed: 11/04/21					
Bromoform	0.472	0.020	ug/L	0.413		114	70-130	1.46	30	
Bromomethane	0.130	0.020	ug/L	0.155		83.8	70-130	0.298	30	
2-Butanone (MEK)	0.105	0.020	ug/L	0.118		89.1	70-130	0.450	30	
Carbon Disulfide	0.117	0.020	ug/L	0.125		93.6	70-130	0.0534	30	
Carbon Tetrachloride	0.242	0.020	ug/L	0.252		96.1	70-130	1.52	30	
Chlorobenzene	0.177	0.020	ug/L	0.184		96.3	70-130	1.25	30	
Chloroethane	0.0871	0.020	ug/L	0.106		82.5	70-130	4.17	30	
Chloroform	0.182	0.0040	ug/L	0.195		93.0	70-130	0.134	30	
Chloromethane	0.0679	0.020	ug/L	0.0826		82.2	70-130	0.485	30	
Dibromochloromethane	0.390	0.020	ug/L	0.341		114	70-130	0.790	30	
1,2-Dibromoethane (EDB)	0.316	0.020	ug/L	0.307		103	70-130	1.42	30	
1,2-Dichlorobenzene	0.237	0.020	ug/L	0.240		98.7	70-130	1.28	30	
1,3-Dichlorobenzene	0.235	0.020	ug/L	0.240		97.9	70-130	0.611	30	
1,4-Dichlorobenzene	0.243	0.020	ug/L	0.240		101	70-130	0.839	30	
Dichlorodifluoromethane (R12)	0.193	0.020	ug/L	0.198		97.5	70-130	0.435	30	
1,1-Dichloroethane	0.137	0.020	ug/L	0.162		84.5	70-130	0.148	30	
1,2-Dichloroethane (EDC)	0.155	0.0040	ug/L	0.162		95.6	70-130	0.989	30	
cis-1,2-Dichloroethylene	0.143	0.020	ug/L	0.159		90.2	70-130	1.24	30	
1,1-Dichloroethylene	0.145	0.020	ug/L	0.159		91.1	70-130	0.854	30	
trans-1,2-Dichloroethylene	0.147	0.020	ug/L	0.159		92.5	70-130	1.02	30	
1,2-Dichloropropane	0.163	0.020	ug/L	0.185		88.1	70-130	2.04	30	
trans-1,3-Dichloropropylene	0.166	0.020	ug/L	0.182		91.6	70-130	0.574	30	
cis-1,3-Dichloropropylene	0.167	0.020	ug/L	0.182		91.8	70-130	1.23	30	
Dichlorotetrafluoroethane	0.247	0.020	ug/L	0.280		88.2	70-130	0.113	30	
Ethylbenzene	0.153	0.020	ug/L	0.174		87.9	70-130	0.399	30	
4-Ethyltoluene	0.187	0.020	ug/L	0.197		95.0	70-130	0.0263	30	
Hexachlorobutadiene	0.398	0.020	ug/L	0.427		93.3	70-130	0.969	30	
2-Hexanone (MBK)	0.148	0.020	ug/L	0.164		90.2	70-130	2.30	30	
Isopropanol (IPA)	0.0700	0.20	ug/L	0.0865		80.9	70-130	0.846	30	
Methylene Chloride	0.104	0.020	ug/L	0.139		74.6	70-130	0.134	30	
4-Methyl-2-pentanone (MIBK)	0.140	0.020	ug/L	0.164		85.2	70-130	2.11	30	
Styrene	0.165	0.020	ug/L	0.170		97.0	70-130	1.01	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0430 - *** DEFAULT PREP ***

LCS Dup (B1K0430-BSD1) Continued

Prepared: 11/03/21 Analyzed: 11/04/21

1,1,2,2-Tetrachloroethane	0.233	0.020	ug/L	0.275		85.0	70-130	0.499	30	
Tetrachloroethylene (PCE)	0.297	0.010	ug/L	0.271		110	70-130	0.572	30	
Toluene	0.140	0.020	ug/L	0.151		93.0	70-130	0.296	30	
1,2,4-Trichlorobenzene	0.271	0.020	ug/L	0.297		91.2	70-130	0.577	30	
1,1,2-Trichloroethane	0.217	0.020	ug/L	0.218		99.3	70-130	0.860	30	
1,1,1-Trichloroethane	0.200	0.020	ug/L	0.218		91.4	70-130	0.00	30	
Trichloroethylene (TCE)	0.217	0.020	ug/L	0.215		101	70-130	0.397	30	
Trichlorofluoromethane (R11)	0.202	0.020	ug/L	0.225		89.9	70-130	0.527	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.304	0.020	ug/L	0.307		99.0	70-130	2.20	30	
1,3,5-Trimethylbenzene	0.177	0.020	ug/L	0.197		90.1	70-130	0.249	30	
1,2,4-Trimethylbenzene	0.181	0.020	ug/L	0.197		92.2	70-130	0.379	30	
Vinyl acetate	0.102	0.020	ug/L	0.118		86.0	70-130	0.555	30	
Vinyl chloride	0.0833	0.020	ug/L	0.102		81.4	70-130	0.647	30	
o-Xylene	0.147	0.020	ug/L	0.174		84.6	70-130	0.413	30	
m,p-Xylenes	0.263	0.020	ug/L	0.347		75.6	70-130	1.20	30	
1,2,3-Trichloropropane	0.218	0.020	ug/L	0.241		90.3	70-130	0.139	30	
sec-Butylbenzene	0.216	0.020	ug/L	0.220		98.1	70-130	0.102	30	
Isopropylbenzene	0.191	0.020	ug/L	0.197		96.9	70-130	0.517	30	
n-Propylbenzene	0.186	0.020	ug/L	0.197		94.6	70-130	0.796	30	
4-Isopropyltoluene	0.221	0.020	ug/L	0.220		101	70-130	0.173	30	

Surrogate: 4-Bromofluorobenzene 0.139

ug/L 0.143 96.9 70-130

Batch B1K0509 - *** DEFAULT PREP ***

Blank (B1K0509-BLK1)

Prepared & Analyzed: 11/03/21

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	<0.0025	0.0025	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
<i>Batch B1K0509 - *** DEFAULT PREP ***</i>										
Blank (B1K0509-BLK1) Continued										
Prepared & Analyzed: 11/03/21										
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)	<2.0	2.0	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	<0.0040	0.0040	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0509 - *** DEFAULT PREP ***</i>										
Blank (B1K0509-BLK1) Continued										
Prepared & Analyzed: 11/03/21										
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0509 - *** DEFAULT PREP ***</i>										
Blank (B1K0509-BLK1) Continued										
Prepared & Analyzed: 11/03/21										
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							
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.120</i>		<i>ug/L</i>	<i>0.143</i>		<i>84.1</i>	<i>70-130</i>			
LCS (B1K0509-BS1)										
Prepared: 11/03/21 Analyzed: 11/04/21										
Acetone	0.0894	0.020	ug/L	0.0950		94.1	70-130			
Benzene	0.105	0.0030	ug/L	0.128		82.1	70-130			
Benzyl chloride	0.211	0.020	ug/L	0.178		119	70-130			
Bromodichloromethane	0.322	0.0025	ug/L	0.268		120	70-130			
Bromoform	0.540	0.020	ug/L	0.413		130	70-130			
Bromomethane	0.225	0.020	ug/L	0.155		145	70-130			
2-Butanone (MEK)	0.111	0.020	ug/L	0.118		93.9	70-130			
Carbon Disulfide	0.115	0.020	ug/L	0.125		92.0	70-130			
Carbon Tetrachloride	0.323	0.020	ug/L	0.252		128	70-130			
Chlorobenzene	0.187	0.020	ug/L	0.184		101	70-130			
Chloroethane	0.136	0.020	ug/L	0.106		128	70-130			
Chloroform	0.198	0.0040	ug/L	0.195		101	70-130			
Chloromethane	0.0854	0.020	ug/L	0.0826		103	70-130			
Dibromochloromethane	0.382	0.020	ug/L	0.341		112	70-130			
1,2-Dibromoethane (EDB)	0.294	0.020	ug/L	0.307		95.7	70-130			
1,2-Dichlorobenzene	0.208	0.020	ug/L	0.240		86.6	70-130			
1,3-Dichlorobenzene	0.210	0.020	ug/L	0.240		87.2	70-130			
1,4-Dichlorobenzene	0.201	0.020	ug/L	0.240		83.6	70-130			
Dichlorodifluoromethane (R12)	0.201	0.020	ug/L	0.198		102	70-130			
1,1-Dichloroethane	0.147	0.020	ug/L	0.162		91.0	70-130			
1,2-Dichloroethane (EDC)	0.167	0.0040	ug/L	0.162		103	70-130			
cis-1,2-Dichloroethylene	0.149	0.020	ug/L	0.159		94.1	70-130			
1,1-Dichloroethylene	0.154	0.020	ug/L	0.159		96.8	70-130			
trans-1,2-Dichloroethylene	0.148	0.020	ug/L	0.159		93.3	70-130			

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0509 - *** DEFAULT PREP ***</i>										
LCS (B1K0509-BS1) Continued										
Prepared: 11/03/21 Analyzed: 11/04/21										
1,2-Dichloropropane	0.200	0.020	ug/L	0.185		108	70-130			
trans-1,3-Dichloropropylene	0.191	0.020	ug/L	0.182		105	70-130			
cis-1,3-Dichloropropylene	0.189	0.020	ug/L	0.182		104	70-130			
Dichlorotetrafluoroethane	0.302	0.020	ug/L	0.280		108	70-130			
Ethylbenzene	0.189	0.020	ug/L	0.174		109	70-130			
4-Ethyltoluene	0.211	0.020	ug/L	0.197		107	70-130			
Hexachlorobutadiene	0.330	0.020	ug/L	0.427		77.4	70-130			
2-Hexanone (MBK)	0.187	0.020	ug/L	0.164		114	70-130			
Isopropanol (IPA)	0.0768	0.20	ug/L	0.0865		88.8	70-130			
Methylene Chloride	0.102	0.020	ug/L	0.139		73.4	70-130			
4-Methyl-2-pentanone (MIBK)	0.171	0.020	ug/L	0.164		105	70-130			
Styrene	0.163	0.020	ug/L	0.170		95.5	70-130			
1,1,2,2-Tetrachloroethane	0.286	0.020	ug/L	0.275		104	70-130			
Tetrachloroethylene (PCE)	0.238	0.010	ug/L	0.271		87.7	70-130			
Toluene	0.139	0.020	ug/L	0.151		91.9	70-130			
1,2,4-Trichlorobenzene	0.210	0.020	ug/L	0.297		70.6	70-130			
1,1,2-Trichloroethane	0.216	0.020	ug/L	0.218		98.8	70-130			
1,1,1-Trichloroethane	0.227	0.020	ug/L	0.218		104	70-130			
Trichloroethylene (TCE)	0.223	0.020	ug/L	0.215		104	70-130			
Trichlorofluoromethane (R11)	0.255	0.020	ug/L	0.225		113	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.310	0.020	ug/L	0.307		101	70-130			
1,3,5-Trimethylbenzene	0.200	0.020	ug/L	0.197		102	70-130			
1,2,4-Trimethylbenzene	0.205	0.020	ug/L	0.197		104	70-130			
Vinyl acetate	0.104	0.020	ug/L	0.118		88.3	70-130			
Vinyl chloride	0.116	0.020	ug/L	0.102		114	70-130			
o-Xylene	0.182	0.020	ug/L	0.174		105	70-130			
m,p-Xylenes	0.377	0.020	ug/L	0.347		109	70-130			
1,2,3-Trichloropropane	0.274	0.020	ug/L	0.241		114	70-130			
sec-Butylbenzene	0.250	0.020	ug/L	0.220		114	70-130			
Isopropylbenzene	0.225	0.020	ug/L	0.197		114	70-130			
n-Propylbenzene	0.230	0.020	ug/L	0.197		117	70-130			

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0509 - *** DEFAULT PREP ***

LCS (B1K0509-BS1) Continued

Prepared: 11/03/21 Analyzed: 11/04/21

4-Isopropyltoluene	0.254	0.020	ug/L	0.220		116	70-130			
Surrogate: 4-Bromofluorobenzene	0.145		ug/L	0.143		102	70-130			

LCS Dup (B1K0509-BSD1)

Prepared: 11/03/21 Analyzed: 11/04/21

Acetone	0.0910	0.020	ug/L	0.0950		95.7	70-130	1.74	30	
Benzene	0.104	0.0030	ug/L	0.128		81.3	70-130	0.979	30	
Benzyl chloride	0.214	0.020	ug/L	0.178		120	70-130	1.27	30	
Bromodichloromethane	0.323	0.0025	ug/L	0.268		121	70-130	0.436	30	
Bromoform	0.523	0.020	ug/L	0.413		126	70-130	3.19	30	
Bromomethane	0.227	0.020	ug/L	0.155		146	70-130	0.910	30	
2-Butanone (MEK)	0.111	0.020	ug/L	0.118		94.1	70-130	0.239	30	
Carbon Disulfide	0.115	0.020	ug/L	0.125		92.1	70-130	0.0814	30	
Carbon Tetrachloride	0.318	0.020	ug/L	0.252		126	70-130	1.57	30	
Chlorobenzene	0.186	0.020	ug/L	0.184		101	70-130	0.272	30	
Chloroethane	0.135	0.020	ug/L	0.106		128	70-130	0.645	30	
Chloroform	0.195	0.0040	ug/L	0.195		99.7	70-130	1.57	30	
Chloromethane	0.0864	0.020	ug/L	0.0826		105	70-130	1.18	30	
Dibromochloromethane	0.383	0.020	ug/L	0.341		112	70-130	0.267	30	
1,2-Dibromoethane (EDB)	0.295	0.020	ug/L	0.307		96.0	70-130	0.287	30	
1,2-Dichlorobenzene	0.211	0.020	ug/L	0.240		87.9	70-130	1.52	30	
1,3-Dichlorobenzene	0.212	0.020	ug/L	0.240		88.3	70-130	1.17	30	
1,4-Dichlorobenzene	0.202	0.020	ug/L	0.240		84.1	70-130	0.596	30	
Dichlorodifluoromethane (R12)	0.203	0.020	ug/L	0.198		102	70-130	0.808	30	
1,1-Dichloroethane	0.138	0.020	ug/L	0.162		85.0	70-130	6.79	30	
1,2-Dichloroethane (EDC)	0.165	0.0040	ug/L	0.162		102	70-130	0.804	30	
cis-1,2-Dichloroethylene	0.149	0.020	ug/L	0.159		93.7	70-130	0.399	30	
1,1-Dichloroethylene	0.157	0.020	ug/L	0.159		98.7	70-130	1.92	30	
trans-1,2-Dichloroethylene	0.151	0.020	ug/L	0.159		95.1	70-130	1.89	30	
1,2-Dichloropropane	0.199	0.020	ug/L	0.185		108	70-130	0.671	30	
trans-1,3-Dichloropropylene	0.193	0.020	ug/L	0.182		107	70-130	1.28	30	
cis-1,3-Dichloropropylene	0.188	0.020	ug/L	0.182		104	70-130	0.385	30	
Dichlorotetrafluoroethane	0.304	0.020	ug/L	0.280		109	70-130	0.392	30	

Allen Aminian

Allen Aminian
 QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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 B1K0509 - *** DEFAULT PREP ***										
LCS Dup (B1K0509-BSD1) Continued										
					Prepared: 11/03/21 Analyzed: 11/04/21					
Ethylbenzene	0.187	0.020	ug/L	0.174	108	70-130	0.716	30		
4-Ethyltoluene	0.213	0.020	ug/L	0.197	108	70-130	0.789	30		
Hexachlorobutadiene	0.334	0.020	ug/L	0.427	78.3	70-130	1.03	30		
2-Hexanone (MBK)	0.186	0.020	ug/L	0.164	113	70-130	0.769	30		
Isopropanol (IPA)	0.0847	0.20	ug/L	0.0865	97.8	70-130	9.71	30		
Methylene Chloride	0.103	0.020	ug/L	0.139	74.0	70-130	0.882	30		
4-Methyl-2-pentanone (MIBK)	0.170	0.020	ug/L	0.164	104	70-130	0.696	30		
Styrene	0.162	0.020	ug/L	0.170	95.4	70-130	0.157	30		
1,1,2,2-Tetrachloroethane	0.284	0.020	ug/L	0.275	104	70-130	0.578	30		
Tetrachloroethylene (PCE)	0.238	0.010	ug/L	0.271	87.8	70-130	0.0570	30		
Toluene	0.138	0.020	ug/L	0.151	91.8	70-130	0.163	30		
1,2,4-Trichlorobenzene	0.208	0.020	ug/L	0.297	70.2	70-130	0.604	30		
1,1,2-Trichloroethane	0.215	0.020	ug/L	0.218	98.5	70-130	0.355	30		
1,1,1-Trichloroethane	0.226	0.020	ug/L	0.218	103	70-130	0.674	30		
Trichloroethylene (TCE)	0.220	0.020	ug/L	0.215	103	70-130	1.07	30		
Trichlorofluoromethane (R11)	0.259	0.020	ug/L	0.225	115	70-130	1.66	30		
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.307	0.020	ug/L	0.307	100	70-130	0.945	30		
1,3,5-Trimethylbenzene	0.210	0.020	ug/L	0.197	107	70-130	5.09	30		
1,2,4-Trimethylbenzene	0.206	0.020	ug/L	0.197	105	70-130	0.406	30		
Vinyl acetate	0.105	0.020	ug/L	0.118	89.0	70-130	0.806	30		
Vinyl chloride	0.118	0.020	ug/L	0.102	116	70-130	1.59	30		
o-Xylene	0.181	0.020	ug/L	0.174	104	70-130	0.406	30		
m,p-Xylenes	0.378	0.020	ug/L	0.347	109	70-130	0.196	30		
1,2,3-Trichloropropane	0.280	0.020	ug/L	0.241	116	70-130	2.05	30		
sec-Butylbenzene	0.253	0.020	ug/L	0.220	115	70-130	1.03	30		
Isopropylbenzene	0.224	0.020	ug/L	0.197	114	70-130	0.416	30		
n-Propylbenzene	0.230	0.020	ug/L	0.197	117	70-130	0.0856	30		
4-Isopropyltoluene	0.255	0.020	ug/L	0.220	116	70-130	0.345	30		
Surrogate: 4-Bromofluorobenzene	0.145		ug/L	0.143	101	70-130				
Batch B1K0510 - *** 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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0510 - *** DEFAULT PREP ***</i>										
Blank (B1K0510-BLK1)										
Prepared & Analyzed: 11/04/21										
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	<0.0025	0.0025	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)	<2.0	2.0	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	<0.0040	0.0040	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0510 - *** DEFAULT PREP ***

Blank (B1K0510-BLK1) Continued

Prepared & Analyzed: 11/04/21

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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0510 - *** DEFAULT PREP ***

Blank (B1K0510-BLK1) Continued

Prepared & Analyzed: 11/04/21

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 0.143

ug/L 0.143 99.7 70-130

LCS (B1K0510-BS1)

Prepared: 11/04/21 Analyzed: 11/05/21

Acetone	0.0870	0.020	ug/L	0.0950	91.6	70-130
Benzene	0.119	0.0030	ug/L	0.128	93.0	70-130
Benzyl chloride	0.168	0.020	ug/L	0.178	94.2	70-130
Bromodichloromethane	0.299	0.0025	ug/L	0.268	112	70-130
Bromoform	0.474	0.020	ug/L	0.413	115	70-130
Bromomethane	0.146	0.020	ug/L	0.155	93.9	70-130
2-Butanone (MEK)	0.106	0.020	ug/L	0.118	89.8	70-130
Carbon Disulfide	0.128	0.020	ug/L	0.125	103	70-130
Carbon Tetrachloride	0.286	0.020	ug/L	0.252	114	70-130
Chlorobenzene	0.197	0.020	ug/L	0.184	107	70-130
Chloroethane	0.0940	0.020	ug/L	0.106	89.0	70-130
Chloroform	0.201	0.0040	ug/L	0.195	103	70-130
Chloromethane	0.0738	0.020	ug/L	0.0826	89.4	70-130
Dibromochloromethane	0.440	0.020	ug/L	0.341	129	70-130
1,2-Dibromoethane (EDB)	0.383	0.020	ug/L	0.307	125	70-130
1,2-Dichlorobenzene	0.282	0.020	ug/L	0.240	117	70-130
1,3-Dichlorobenzene	0.280	0.020	ug/L	0.240	116	70-130

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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 B1K0510 - *** DEFAULT PREP ***										
LCS (B1K0510-BS1) Continued										
Prepared: 11/04/21 Analyzed: 11/05/21										
1,4-Dichlorobenzene	0.276	0.020	ug/L	0.240		115	70-130			
Dichlorodifluoromethane (R12)	0.218	0.020	ug/L	0.198		110	70-130			
1,1-Dichloroethane	0.150	0.020	ug/L	0.162		92.9	70-130			
1,2-Dichloroethane (EDC)	0.172	0.0040	ug/L	0.162		106	70-130			
cis-1,2-Dichloroethylene	0.157	0.020	ug/L	0.159		99.2	70-130			
1,1-Dichloroethylene	0.156	0.020	ug/L	0.159		98.2	70-130			
trans-1,2-Dichloroethylene	0.161	0.020	ug/L	0.159		101	70-130			
1,2-Dichloropropane	0.187	0.020	ug/L	0.185		101	70-130			
trans-1,3-Dichloropropylene	0.205	0.020	ug/L	0.182		113	70-130			
cis-1,3-Dichloropropylene	0.201	0.020	ug/L	0.182		111	70-130			
Dichlorotetrafluoroethane	0.274	0.020	ug/L	0.280		98.1	70-130			
Ethylbenzene	0.166	0.020	ug/L	0.174		95.8	70-130			
4-Ethyltoluene	0.188	0.020	ug/L	0.197		95.4	70-130			
Hexachlorobutadiene	0.514	0.020	ug/L	0.427		121	70-130			
2-Hexanone (MBK)	0.165	0.020	ug/L	0.164		101	70-130			
Isopropanol (IPA)	0.0497	0.20	ug/L	0.0865		57.4	70-130			QL-02
Methylene Chloride	0.113	0.020	ug/L	0.139		81.0	70-130			
4-Methyl-2-pentanone (MIBK)	0.158	0.020	ug/L	0.164		96.7	70-130			
Styrene	0.185	0.020	ug/L	0.170		108	70-130			
1,1,2,2-Tetrachloroethane	0.263	0.020	ug/L	0.275		95.6	70-130			
Tetrachloroethylene (PCE)	0.344	0.010	ug/L	0.271		127	70-130			
Toluene	0.168	0.020	ug/L	0.151		111	70-130			
1,2,4-Trichlorobenzene	0.343	0.020	ug/L	0.297		116	70-130			
1,1,2-Trichloroethane	0.263	0.020	ug/L	0.218		120	70-130			
1,1,1-Trichloroethane	0.218	0.020	ug/L	0.218		99.8	70-130			
Trichloroethylene (TCE)	0.254	0.020	ug/L	0.215		118	70-130			
Trichlorofluoromethane (R11)	0.228	0.020	ug/L	0.225		102	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.343	0.020	ug/L	0.307		112	70-130			
1,3,5-Trimethylbenzene	0.205	0.020	ug/L	0.197		104	70-130			
1,2,4-Trimethylbenzene	0.205	0.020	ug/L	0.197		104	70-130			
Vinyl acetate	0.110	0.020	ug/L	0.118		93.2	70-130			

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0510 - *** DEFAULT PREP ***

LCS (B1K0510-BS1) Continued

Prepared: 11/04/21 Analyzed: 11/05/21

Vinyl chloride	0.0926	0.020	ug/L	0.102		90.6	70-130			
o-Xylene	0.164	0.020	ug/L	0.174		94.2	70-130			
m,p-Xylenes	0.290	0.020	ug/L	0.347		83.5	70-130			
1,2,3-Trichloropropane	0.224	0.020	ug/L	0.241		92.8	70-130			
sec-Butylbenzene	0.211	0.020	ug/L	0.220		96.3	70-130			
Isopropylbenzene	0.199	0.020	ug/L	0.197		101	70-130			
n-Propylbenzene	0.186	0.020	ug/L	0.197		94.6	70-130			
4-Isopropyltoluene	0.212	0.020	ug/L	0.220		96.7	70-130			

Surrogate: 4-Bromofluorobenzene 0.141 ug/L 0.143 98.3 70-130

LCS Dup (B1K0510-BSD1)

Prepared: 11/04/21 Analyzed: 11/05/21

Acetone	0.0850	0.020	ug/L	0.0950		89.5	70-130	2.32	30	
Benzene	0.115	0.0030	ug/L	0.128		90.3	70-130	2.95	30	
Benzyl chloride	0.169	0.020	ug/L	0.178		94.9	70-130	0.677	30	
Bromodichloromethane	0.289	0.0025	ug/L	0.268		108	70-130	3.47	30	
Bromoform	0.482	0.020	ug/L	0.413		117	70-130	1.77	30	
Bromomethane	0.141	0.020	ug/L	0.155		90.7	70-130	3.49	30	
2-Butanone (MEK)	0.108	0.020	ug/L	0.118		91.7	70-130	2.15	30	
Carbon Disulfide	0.123	0.020	ug/L	0.125		99.0	70-130	3.77	30	
Carbon Tetrachloride	0.278	0.020	ug/L	0.252		110	70-130	2.97	30	
Chlorobenzene	0.198	0.020	ug/L	0.184		107	70-130	0.0932	30	
Chloroethane	0.0912	0.020	ug/L	0.106		86.4	70-130	2.96	30	
Chloroform	0.196	0.0040	ug/L	0.195		100	70-130	2.43	30	
Chloromethane	0.0720	0.020	ug/L	0.0826		87.2	70-130	2.55	30	
Dibromochloromethane	0.414	0.020	ug/L	0.341		122	70-130	6.14	30	
1,2-Dibromoethane (EDB)	0.359	0.020	ug/L	0.307		117	70-130	6.36	30	
1,2-Dichlorobenzene	0.282	0.020	ug/L	0.240		117	70-130	0.213	30	
1,3-Dichlorobenzene	0.278	0.020	ug/L	0.240		116	70-130	0.625	30	
1,4-Dichlorobenzene	0.278	0.020	ug/L	0.240		115	70-130	0.543	30	
Dichlorodifluoromethane (R12)	0.212	0.020	ug/L	0.198		107	70-130	2.76	30	
1,1-Dichloroethane	0.146	0.020	ug/L	0.162		90.0	70-130	3.14	30	
1,2-Dichloroethane (EDC)	0.169	0.0040	ug/L	0.162		104	70-130	1.87	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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 B1K0510 - *** DEFAULT PREP ***										
LCS Dup (B1K0510-BSD1) Continued										
Prepared: 11/04/21 Analyzed: 11/05/21										
cis-1,2-Dichloroethylene	0.152	0.020	ug/L	0.159		95.7	70-130	3.62	30	
1,1-Dichloroethylene	0.153	0.020	ug/L	0.159		96.6	70-130	1.64	30	
trans-1,2-Dichloroethylene	0.155	0.020	ug/L	0.159		98.0	70-130	3.41	30	
1,2-Dichloropropane	0.184	0.020	ug/L	0.185		99.6	70-130	1.37	30	
trans-1,3-Dichloropropylene	0.192	0.020	ug/L	0.182		106	70-130	6.48	30	
cis-1,3-Dichloropropylene	0.191	0.020	ug/L	0.182		105	70-130	5.24	30	
Dichlorotetrafluoroethane	0.261	0.020	ug/L	0.280		93.3	70-130	4.96	30	
Ethylbenzene	0.168	0.020	ug/L	0.174		96.8	70-130	1.12	30	
4-Ethyltoluene	0.190	0.020	ug/L	0.197		96.5	70-130	1.15	30	
Hexachlorobutadiene	0.513	0.020	ug/L	0.427		120	70-130	0.332	30	
2-Hexanone (MBK)	0.156	0.020	ug/L	0.164		95.2	70-130	5.61	30	
Isopropanol (IPA)	0.0737	0.20	ug/L	0.0865		85.2	70-130	39.0	30	
Methylene Chloride	0.107	0.020	ug/L	0.139		77.3	70-130	4.61	30	
4-Methyl-2-pentanone (MIBK)	0.149	0.020	ug/L	0.164		91.0	70-130	6.10	30	
Styrene	0.186	0.020	ug/L	0.170		109	70-130	0.827	30	
1,1,2,2-Tetrachloroethane	0.264	0.020	ug/L	0.275		96.0	70-130	0.391	30	
Tetrachloroethylene (PCE)	0.342	0.010	ug/L	0.271		126	70-130	0.514	30	
Toluene	0.157	0.020	ug/L	0.151		104	70-130	6.65	30	
1,2,4-Trichlorobenzene	0.345	0.020	ug/L	0.297		116	70-130	0.517	30	
1,1,2-Trichloroethane	0.245	0.020	ug/L	0.218		112	70-130	6.94	30	
1,1,1-Trichloroethane	0.214	0.020	ug/L	0.218		98.1	70-130	1.74	30	
Trichloroethylene (TCE)	0.247	0.020	ug/L	0.215		115	70-130	2.94	30	
Trichlorofluoromethane (R11)	0.217	0.020	ug/L	0.225		96.6	70-130	5.12	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.336	0.020	ug/L	0.307		109	70-130	2.28	30	
1,3,5-Trimethylbenzene	0.203	0.020	ug/L	0.197		103	70-130	0.989	30	
1,2,4-Trimethylbenzene	0.208	0.020	ug/L	0.197		106	70-130	1.24	30	
Vinyl acetate	0.108	0.020	ug/L	0.118		91.2	70-130	2.19	30	
Vinyl chloride	0.0896	0.020	ug/L	0.102		87.7	70-130	3.25	30	
o-Xylene	0.163	0.020	ug/L	0.174		94.0	70-130	0.186	30	
m,p-Xylenes	0.292	0.020	ug/L	0.347		83.9	70-130	0.478	30	
1,2,3-Trichloropropane	0.224	0.020	ug/L	0.241		92.9	70-130	0.0538	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0510 - *** DEFAULT PREP ***</i>										
LCS Dup (B1K0510-BSD1) Continued										
					Prepared: 11/04/21 Analyzed: 11/05/21					
sec-Butylbenzene	0.211	0.020	ug/L	0.220	96.0	70-130	0.260	30		
Isopropylbenzene	0.199	0.020	ug/L	0.197	101	70-130	0.0741	30		
n-Propylbenzene	0.187	0.020	ug/L	0.197	95.3	70-130	0.763	30		
4-Isopropyltoluene	0.216	0.020	ug/L	0.220	98.3	70-130	1.67	30		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.144</i>		<i>ug/L</i>	<i>0.143</i>	<i>100</i>	<i>70-130</i>				
<i>Batch B1K0511 - *** DEFAULT PREP ***</i>										
Blank (B1K0511-BLK1)										
					Prepared & Analyzed: 11/04/21					
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	<0.0025	0.0025	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)	<2.0	2.0	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	<0.0040	0.0040	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0511 - *** DEFAULT PREP ***</i>										
Blank (B1K0511-BLK1) Continued										
Prepared & Analyzed: 11/04/21										
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0511 - *** DEFAULT PREP ***</i>										
Blank (B1K0511-BLK1) Continued										
Prepared & Analyzed: 11/04/21										
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							
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.121</i>		<i>ug/L</i>	<i>0.143</i>		<i>84.2</i>	<i>70-130</i>			
LCS (B1K0511-BS1)										
Prepared & Analyzed: 11/04/21										
Acetone	0.0934	0.020	ug/L	0.0950		98.3	70-130			
Benzene	0.104	0.0030	ug/L	0.128		81.1	70-130			
Benzyl chloride	0.189	0.020	ug/L	0.178		106	70-130			
Bromodichloromethane	0.313	0.0025	ug/L	0.268		117	70-130			
Bromoform	0.487	0.020	ug/L	0.413		118	70-130			
Bromomethane	0.225	0.020	ug/L	0.155		145	70-130			QL-04
2-Butanone (MEK)	0.116	0.020	ug/L	0.118		98.3	70-130			
Carbon Disulfide	0.120	0.020	ug/L	0.125		96.6	70-130			
Carbon Tetrachloride	0.312	0.020	ug/L	0.252		124	70-130			

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0511 - *** DEFAULT PREP ***</i>										
LCS (B1K0511-BS1) Continued						Prepared & Analyzed: 11/04/21				
Chlorobenzene	0.182	0.020	ug/L	0.184		98.8	70-130			
Chloroethane	0.129	0.020	ug/L	0.106		122	70-130			
Chloroform	0.195	0.0040	ug/L	0.195		99.7	70-130			
Chloromethane	0.0863	0.020	ug/L	0.0826		104	70-130			
Dibromochloromethane	0.354	0.020	ug/L	0.341		104	70-130			
1,2-Dibromoethane (EDB)	0.287	0.020	ug/L	0.307		93.3	70-130			
1,2-Dichlorobenzene	0.244	0.020	ug/L	0.240		101	70-130			
1,3-Dichlorobenzene	0.234	0.020	ug/L	0.240		97.3	70-130			
1,4-Dichlorobenzene	0.226	0.020	ug/L	0.240		94.1	70-130			
Dichlorodifluoromethane (R12)	0.208	0.020	ug/L	0.198		105	70-130			
1,1-Dichloroethane	0.147	0.020	ug/L	0.162		90.7	70-130			
1,2-Dichloroethane (EDC)	0.167	0.0040	ug/L	0.162		103	70-130			
cis-1,2-Dichloroethylene	0.149	0.020	ug/L	0.159		93.7	70-130			
1,1-Dichloroethylene	0.161	0.020	ug/L	0.159		102	70-130			
trans-1,2-Dichloroethylene	0.153	0.020	ug/L	0.159		96.5	70-130			
1,2-Dichloropropane	0.186	0.020	ug/L	0.185		101	70-130			
trans-1,3-Dichloropropylene	0.192	0.020	ug/L	0.182		106	70-130			
cis-1,3-Dichloropropylene	0.181	0.020	ug/L	0.182		99.8	70-130			
Dichlorotetrafluoroethane	0.317	0.020	ug/L	0.280		113	70-130			
Ethylbenzene	0.183	0.020	ug/L	0.174		105	70-130			
4-Ethyltoluene	0.183	0.020	ug/L	0.197		92.9	70-130			
Hexachlorobutadiene	0.483	0.020	ug/L	0.427		113	70-130			
2-Hexanone (MBK)	0.184	0.020	ug/L	0.164		112	70-130			
Isopropanol (IPA)	0.0720	0.20	ug/L	0.0865		83.2	70-130			
Methylene Chloride	0.102	0.020	ug/L	0.139		73.5	70-130			
4-Methyl-2-pentanone (MIBK)	0.169	0.020	ug/L	0.164		103	70-130			
Styrene	0.167	0.020	ug/L	0.170		97.9	70-130			
1,1,2,2-Tetrachloroethane	0.298	0.020	ug/L	0.275		109	70-130			
Tetrachloroethylene (PCE)	0.229	0.010	ug/L	0.271		84.6	70-130			
Toluene	0.129	0.020	ug/L	0.151		85.6	70-130			
1,2,4-Trichlorobenzene	0.331	0.020	ug/L	0.297		112	70-130			
1,1,2-Trichloroethane	0.205	0.020	ug/L	0.218		93.8	70-130			

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0511 - *** DEFAULT PREP ***

LCS (B1K0511-BS1) Continued

Prepared & Analyzed: 11/04/21

1,1,1-Trichloroethane	0.228	0.020	ug/L	0.218		104	70-130			
Trichloroethylene (TCE)	0.204	0.020	ug/L	0.215		95.0	70-130			
Trichlorofluoromethane (R11)	0.265	0.020	ug/L	0.225		118	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.313	0.020	ug/L	0.307		102	70-130			
1,3,5-Trimethylbenzene	0.220	0.020	ug/L	0.197		112	70-130			
1,2,4-Trimethylbenzene	0.213	0.020	ug/L	0.197		108	70-130			
Vinyl acetate	0.110	0.020	ug/L	0.118		93.1	70-130			
Vinyl chloride	0.120	0.020	ug/L	0.102		117	70-130			
o-Xylene	0.181	0.020	ug/L	0.174		104	70-130			
m,p-Xylenes	0.372	0.020	ug/L	0.347		107	70-130			
1,2,3-Trichloropropane	0.306	0.020	ug/L	0.241		127	70-130			
sec-Butylbenzene	0.274	0.020	ug/L	0.220		125	70-130			
Isopropylbenzene	0.254	0.020	ug/L	0.197		129	70-130			
n-Propylbenzene	0.253	0.020	ug/L	0.197		129	70-130			
4-Isopropyltoluene	0.279	0.020	ug/L	0.220		127	70-130			

Surrogate: 4-Bromofluorobenzene 0.147 ug/L 0.143 102 70-130

LCS Dup (B1K0511-BSD1)

Prepared & Analyzed: 11/04/21

Acetone	0.0949	0.020	ug/L	0.0950		99.8	70-130	1.59	30	
Benzene	0.107	0.0030	ug/L	0.128		84.1	70-130	3.57	30	
Benzyl chloride	0.199	0.020	ug/L	0.178		112	70-130	5.23	30	
Bromodichloromethane	0.334	0.0025	ug/L	0.268		125	70-130	6.42	30	
Bromoform	0.524	0.020	ug/L	0.413		127	70-130	7.30	30	
Bromomethane	0.243	0.020	ug/L	0.155		156	70-130	7.67	30	QL-04
2-Butanone (MEK)	0.117	0.020	ug/L	0.118		98.9	70-130	0.659	30	
Carbon Disulfide	0.122	0.020	ug/L	0.125		98.0	70-130	1.39	30	
Carbon Tetrachloride	0.327	0.020	ug/L	0.252		130	70-130	4.69	30	
Chlorobenzene	0.194	0.020	ug/L	0.184		105	70-130	6.35	30	
Chloroethane	0.132	0.020	ug/L	0.106		125	70-130	2.39	30	
Chloroform	0.200	0.0040	ug/L	0.195		103	70-130	2.82	30	
Chloromethane	0.0866	0.020	ug/L	0.0826		105	70-130	0.382	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0511 - *** DEFAULT PREP ***</i>										
LCS Dup (B1K0511-BSD1) Continued										
Prepared & Analyzed: 11/04/21										
Dibromochloromethane	0.376	0.020	ug/L	0.341		110	70-130	5.89	30	
1,2-Dibromoethane (EDB)	0.307	0.020	ug/L	0.307		100	70-130	6.91	30	
1,2-Dichlorobenzene	0.259	0.020	ug/L	0.240		108	70-130	5.86	30	
1,3-Dichlorobenzene	0.231	0.020	ug/L	0.240		96.0	70-130	1.27	30	
1,4-Dichlorobenzene	0.240	0.020	ug/L	0.240		100	70-130	6.05	30	
Dichlorodifluoromethane (R12)	0.210	0.020	ug/L	0.198		106	70-130	1.04	30	
1,1-Dichloroethane	0.150	0.020	ug/L	0.162		92.5	70-130	1.97	30	
1,2-Dichloroethane (EDC)	0.172	0.0040	ug/L	0.162		106	70-130	2.82	30	
cis-1,2-Dichloroethylene	0.154	0.020	ug/L	0.159		97.0	70-130	3.46	30	
1,1-Dichloroethylene	0.163	0.020	ug/L	0.159		103	70-130	1.20	30	
trans-1,2-Dichloroethylene	0.160	0.020	ug/L	0.159		101	70-130	4.11	30	
1,2-Dichloropropane	0.201	0.020	ug/L	0.185		109	70-130	7.50	30	
trans-1,3-Dichloropropylene	0.203	0.020	ug/L	0.182		112	70-130	5.49	30	
cis-1,3-Dichloropropylene	0.193	0.020	ug/L	0.182		106	70-130	6.45	30	
Dichlorotetrafluoroethane	0.319	0.020	ug/L	0.280		114	70-130	0.637	30	
Ethylbenzene	0.195	0.020	ug/L	0.174		112	70-130	6.42	30	
4-Ethyltoluene	0.198	0.020	ug/L	0.197		101	70-130	8.23	30	
Hexachlorobutadiene	0.485	0.020	ug/L	0.427		114	70-130	0.573	30	
2-Hexanone (MBK)	0.187	0.020	ug/L	0.164		114	70-130	1.48	30	
Isopropanol (IPA)	0.0825	0.20	ug/L	0.0865		95.4	70-130	13.6	30	
Methylene Chloride	0.107	0.020	ug/L	0.139		76.7	70-130	4.29	30	
4-Methyl-2-pentanone (MIBK)	0.173	0.020	ug/L	0.164		106	70-130	2.18	30	
Styrene	0.175	0.020	ug/L	0.170		103	70-130	4.81	30	
1,1,2,2-Tetrachloroethane	0.312	0.020	ug/L	0.275		114	70-130	4.65	30	
Tetrachloroethylene (PCE)	0.247	0.010	ug/L	0.271		91.1	70-130	7.43	30	
Toluene	0.139	0.020	ug/L	0.151		92.2	70-130	7.45	30	
1,2,4-Trichlorobenzene	0.323	0.020	ug/L	0.297		109	70-130	2.40	30	
1,1,2-Trichloroethane	0.218	0.020	ug/L	0.218		99.9	70-130	6.33	30	
1,1,1-Trichloroethane	0.235	0.020	ug/L	0.218		108	70-130	3.11	30	
Trichloroethylene (TCE)	0.222	0.020	ug/L	0.215		103	70-130	8.23	30	
Trichlorofluoromethane (R11)	0.268	0.020	ug/L	0.225		119	70-130	1.08	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0511 - *** DEFAULT PREP ***</i>										
LCS Dup (B1K0511-BSD1) Continued					Prepared & Analyzed: 11/04/21					
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.317	0.020	ug/L	0.307		103	70-130	1.39	30	
1,3,5-Trimethylbenzene	0.233	0.020	ug/L	0.197		119	70-130	6.12	30	
1,2,4-Trimethylbenzene	0.229	0.020	ug/L	0.197		116	70-130	7.30	30	
Vinyl acetate	0.113	0.020	ug/L	0.118		95.8	70-130	2.84	30	
Vinyl chloride	0.123	0.020	ug/L	0.102		120	70-130	2.48	30	
o-Xylene	0.190	0.020	ug/L	0.174		109	70-130	5.06	30	
m,p-Xylenes	0.398	0.020	ug/L	0.347		115	70-130	6.91	30	
1,2,3-Trichloropropane	0.364	0.020	ug/L	0.241		151	70-130	17.1	30	QL-03
sec-Butylbenzene	0.283	0.020	ug/L	0.220		129	70-130	3.14	30	
Isopropylbenzene	0.245	0.020	ug/L	0.197		124	70-130	3.57	30	
n-Propylbenzene	0.253	0.020	ug/L	0.197		129	70-130	0.0972	30	
4-Isopropyltoluene	0.290	0.020	ug/L	0.220		132	70-130	4.09	30	QL-03
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.144</i>		<i>ug/L</i>	<i>0.143</i>		<i>101</i>	<i>70-130</i>			
Duplicate (B1K0511-DUP1)					Source: 1K03021-04 Prepared & Analyzed: 11/04/21					
Acetone	<0.020	0.020	ug/L						30	
Allyl chloride	<0.020	0.020	ug/L						30	
tert-Amyl-Methyl Ether (TAME)	<0.020	0.020	ug/L						30	
Benzene	<0.0030	0.0030	ug/L						30	
Benzyl chloride	<0.020	0.020	ug/L						30	
Bromodichloromethane	<0.0025	0.0025	ug/L						30	
Bromoform	<0.020	0.020	ug/L						30	
Bromomethane	<0.020	0.020	ug/L						30	
1,3-Butadiene	<0.020	0.020	ug/L						30	
2-Butanone (MEK)	<0.020	0.020	ug/L						30	
tert-Butyl Alcohol (TBA)	<2.0	2.0	ug/L						30	
Carbon Disulfide	<0.020	0.020	ug/L						30	
Carbon Tetrachloride	<0.020	0.020	ug/L						30	
Chlorobenzene	<0.020	0.020	ug/L						30	
Chloroethane	<0.020	0.020	ug/L						30	
Chloroform	<0.0040	0.0040	ug/L						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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0511 - *** DEFAULT PREP ***</i>										
Duplicate (B1K0511-DUP1) Continued Source: 1K03021-04 Prepared & Analyzed: 11/04/21										
Chloromethane	<0.020	0.020	ug/L						30	
Cyclohexane	<0.020	0.020	ug/L						30	
Dibromochloromethane	<0.020	0.020	ug/L						30	
1,2-Dibromoethane (EDB)	<0.020	0.020	ug/L						30	
1,2-Dichlorobenzene	<0.020	0.020	ug/L						30	
1,3-Dichlorobenzene	<0.020	0.020	ug/L						30	
1,4-Dichlorobenzene	<0.020	0.020	ug/L						30	
Dichlorodifluoromethane (R12)	<0.020	0.020	ug/L						30	
1,1-Dichloroethane	<0.020	0.020	ug/L						30	
1,2-Dichloroethane (EDC)	<0.0040	0.0040	ug/L						30	
cis-1,2-Dichloroethylene	<0.020	0.020	ug/L						30	
1,1-Dichloroethylene	<0.020	0.020	ug/L						30	
trans-1,2-Dichloroethylene	<0.020	0.020	ug/L						30	
1,2-Dichloropropane	<0.020	0.020	ug/L						30	
trans-1,3-Dichloropropylene	<0.020	0.020	ug/L						30	
cis-1,3-Dichloropropylene	<0.020	0.020	ug/L						30	
Dichlorotetrafluoroethane	<0.020	0.020	ug/L						30	
Diisopropyl ether (DIPE)	<0.020	0.020	ug/L						30	
1,4-Dioxane	<0.020	0.020	ug/L						30	
Ethanol	0.280	0.020	ug/L		0.244			14.0	30	
Ethyl Acetate	<0.020	0.020	ug/L						30	
Ethylbenzene	<0.020	0.020	ug/L						30	
Ethyl-tert-Butyl Ether (ETBE)	<0.020	0.020	ug/L						30	
4-Ethyltoluene	<0.020	0.020	ug/L						30	
Heptane	<0.020	0.020	ug/L						30	
Hexachlorobutadiene	<0.020	0.020	ug/L						30	
n-Hexane	<0.020	0.020	ug/L						30	
2-Hexanone (MBK)	<0.020	0.020	ug/L						30	
Isopropanol (IPA)	<0.20	0.20	ug/L						30	
Methyl-tert-Butyl Ether (MTBE)	<0.020	0.020	ug/L						30	
Methylene Chloride	<0.020	0.020	ug/L						30	
4-Methyl-2-pentanone (MIBK)	<0.020	0.020	ug/L						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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0511 - *** DEFAULT PREP ***

Duplicate (B1K0511-DUP1) Continued Source: 1K03021-04 Prepared & Analyzed: 11/04/21

Naphthalene	<0.0030	0.0030	ug/L						30	
Propylene	<0.020	0.020	ug/L						30	
Styrene	<0.020	0.020	ug/L						30	
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L						30	
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L						30	
Tetrahydrofuran (THF)	<0.020	0.020	ug/L						30	
Toluene	<0.020	0.020	ug/L						30	
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L						30	
1,1,2-Trichloroethane	<0.020	0.020	ug/L						30	
1,1,1-Trichloroethane	<0.020	0.020	ug/L						30	
Trichloroethylene (TCE)	<0.020	0.020	ug/L						30	
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L						30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L						30	
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L						30	
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L						30	
2,2,4-Trimethylpentane	<0.020	0.020	ug/L						30	
Vinyl acetate	<0.020	0.020	ug/L						30	
Vinyl bromide	<0.020	0.020	ug/L						30	
Vinyl chloride	<0.020	0.020	ug/L						30	
o-Xylene	<0.020	0.020	ug/L						30	
m,p-Xylenes	<0.020	0.020	ug/L						30	
1,2,3-Trichloropropane	<0.020	0.020	ug/L						30	
sec-Butylbenzene	<0.020	0.020	ug/L						30	
Isopropylbenzene	<0.020	0.020	ug/L						30	
n-Propylbenzene	<0.020	0.020	ug/L						30	
4-Isopropyltoluene	<0.020	0.020	ug/L						30	
n-Butylbenzene	<0.020	0.020	ug/L						30	

Surrogate: 4-Bromofluorobenzene 0.148 ug/L 0.143 104 70-130

Batch B1K0831 - *** DEFAULT PREP ***

Blank (B1K0831-BLK1)

Prepared & Analyzed: 11/08/21

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0831 - *** DEFAULT PREP ***

Blank (B1K0831-BLK1) Continued

Prepared & Analyzed: 11/08/21

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	<0.0025	0.0025	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)	<2.0	2.0	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	<0.0040	0.0040	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
<i>Batch B1K0831 - *** DEFAULT PREP ***</i>										
Blank (B1K0831-BLK1) Continued										
Prepared & Analyzed: 11/08/21										
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K0831 - *** DEFAULT PREP ***

Blank (B1K0831-BLK1) Continued

Prepared & Analyzed: 11/08/21

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 0.144

ug/L 0.143 100 70-130

LCS (B1K0831-BS1)

Prepared: 11/08/21 Analyzed: 11/09/21

Acetone	0.0902	0.020	ug/L	0.0950	94.9	70-130
Benzene	0.122	0.0030	ug/L	0.128	95.4	70-130
Benzyl chloride	0.174	0.020	ug/L	0.178	97.6	70-130
Bromodichloromethane	0.317	0.0025	ug/L	0.268	118	70-130
Bromoform	0.506	0.020	ug/L	0.413	122	70-130
Bromomethane	0.149	0.020	ug/L	0.155	95.8	70-130
2-Butanone (MEK)	0.114	0.020	ug/L	0.118	96.6	70-130
Carbon Disulfide	0.129	0.020	ug/L	0.125	104	70-130
Carbon Tetrachloride	0.298	0.020	ug/L	0.252	119	70-130
Chlorobenzene	0.208	0.020	ug/L	0.184	113	70-130
Chloroethane	0.0963	0.020	ug/L	0.106	91.2	70-130
Chloroform	0.208	0.0040	ug/L	0.195	106	70-130
Chloromethane	0.0787	0.020	ug/L	0.0826	95.2	70-130
Dibromochloromethane	0.442	0.020	ug/L	0.341	130	70-130
1,2-Dibromoethane (EDB)	0.390	0.020	ug/L	0.307	127	70-130
1,2-Dichlorobenzene	0.293	0.020	ug/L	0.240	122	70-130
1,3-Dichlorobenzene	0.288	0.020	ug/L	0.240	120	70-130

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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 B1K0831 - *** DEFAULT PREP ***										
LCS (B1K0831-BS1) Continued										
Prepared: 11/08/21 Analyzed: 11/09/21										
1,4-Dichlorobenzene	0.287	0.020	ug/L	0.240		120	70-130			
Dichlorodifluoromethane (R12)	0.208	0.020	ug/L	0.198		105	70-130			
1,1-Dichloroethane	0.151	0.020	ug/L	0.162		93.4	70-130			
1,2-Dichloroethane (EDC)	0.176	0.0040	ug/L	0.162		109	70-130			
cis-1,2-Dichloroethylene	0.159	0.020	ug/L	0.159		100	70-130			
1,1-Dichloroethylene	0.162	0.020	ug/L	0.159		102	70-130			
trans-1,2-Dichloroethylene	0.162	0.020	ug/L	0.159		102	70-130			
1,2-Dichloropropane	0.194	0.020	ug/L	0.185		105	70-130			
trans-1,3-Dichloropropylene	0.207	0.020	ug/L	0.182		114	70-130			
cis-1,3-Dichloropropylene	0.203	0.020	ug/L	0.182		112	70-130			
Dichlorotetrafluoroethane	0.279	0.020	ug/L	0.280		99.8	70-130			
Ethylbenzene	0.178	0.020	ug/L	0.174		102	70-130			
4-Ethyltoluene	0.199	0.020	ug/L	0.197		101	70-130			
Hexachlorobutadiene	0.523	0.020	ug/L	0.427		123	70-130			
2-Hexanone (MBK)	0.168	0.020	ug/L	0.164		103	70-130			
Isopropanol (IPA)	0.0751	0.20	ug/L	0.0865		86.8	70-130			
Methylene Chloride	0.113	0.020	ug/L	0.139		81.5	70-130			
4-Methyl-2-pentanone (MIBK)	0.162	0.020	ug/L	0.164		98.6	70-130			
Styrene	0.194	0.020	ug/L	0.170		114	70-130			
1,1,2,2-Tetrachloroethane	0.274	0.020	ug/L	0.275		99.8	70-130			
Tetrachloroethylene (PCE)	0.346	0.010	ug/L	0.271		127	70-130			
Toluene	0.169	0.020	ug/L	0.151		112	70-130			
1,2,4-Trichlorobenzene	0.360	0.020	ug/L	0.297		121	70-130			
1,1,2-Trichloroethane	0.262	0.020	ug/L	0.218		120	70-130			
1,1,1-Trichloroethane	0.227	0.020	ug/L	0.218		104	70-130			
Trichloroethylene (TCE)	0.265	0.020	ug/L	0.215		123	70-130			
Trichlorofluoromethane (R11)	0.233	0.020	ug/L	0.225		104	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.354	0.020	ug/L	0.307		115	70-130			
1,3,5-Trimethylbenzene	0.211	0.020	ug/L	0.197		107	70-130			
1,2,4-Trimethylbenzene	0.215	0.020	ug/L	0.197		109	70-130			
Vinyl acetate	0.114	0.020	ug/L	0.118		96.0	70-130			

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0831 - *** DEFAULT PREP ***</i>										
LCS (B1K0831-BS1) Continued					Prepared: 11/08/21 Analyzed: 11/09/21					
Vinyl chloride	0.0909	0.020	ug/L	0.102		88.9	70-130			
o-Xylene	0.173	0.020	ug/L	0.174		99.5	70-130			
m,p-Xylenes	0.299	0.020	ug/L	0.347		86.1	70-130			
1,2,3-Trichloropropane	0.237	0.020	ug/L	0.241		98.2	70-130			
sec-Butylbenzene	0.219	0.020	ug/L	0.220		99.6	70-130			
Isopropylbenzene	0.209	0.020	ug/L	0.197		107	70-130			
n-Propylbenzene	0.196	0.020	ug/L	0.197		99.9	70-130			
4-Isopropyltoluene	0.224	0.020	ug/L	0.220		102	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.143</i>		<i>ug/L</i>	<i>0.143</i>		<i>99.6</i>	<i>70-130</i>			
LCS Dup (B1K0831-BSD1)					Prepared: 11/08/21 Analyzed: 11/09/21					
Acetone	0.0897	0.020	ug/L	0.0950		94.4	70-130	0.528	30	
Benzene	0.124	0.0030	ug/L	0.128		96.6	70-130	1.33	30	
Benzyl chloride	0.175	0.020	ug/L	0.178		98.1	70-130	0.505	30	
Bromodichloromethane	0.317	0.0025	ug/L	0.268		118	70-130	0.0423	30	
Bromoform	0.500	0.020	ug/L	0.413		121	70-130	1.17	30	
Bromomethane	0.152	0.020	ug/L	0.155		98.0	70-130	2.27	30	
2-Butanone (MEK)	0.116	0.020	ug/L	0.118		98.2	70-130	1.57	30	
Carbon Disulfide	0.129	0.020	ug/L	0.125		103	70-130	0.434	30	
Carbon Tetrachloride	0.290	0.020	ug/L	0.252		115	70-130	2.69	30	
Chlorobenzene	0.208	0.020	ug/L	0.184		113	70-130	0.199	30	
Chloroethane	0.0964	0.020	ug/L	0.106		91.3	70-130	0.0548	30	
Chloroform	0.206	0.0040	ug/L	0.195		105	70-130	0.945	30	
Chloromethane	0.0759	0.020	ug/L	0.0826		91.9	70-130	3.55	30	
Dibromochloromethane	0.442	0.020	ug/L	0.341		130	70-130	0.116	30	
1,2-Dibromoethane (EDB)	0.382	0.020	ug/L	0.307		124	70-130	2.03	30	
1,2-Dichlorobenzene	0.292	0.020	ug/L	0.240		122	70-130	0.370	30	
1,3-Dichlorobenzene	0.291	0.020	ug/L	0.240		121	70-130	0.872	30	
1,4-Dichlorobenzene	0.291	0.020	ug/L	0.240		121	70-130	1.19	30	
Dichlorodifluoromethane (R12)	0.208	0.020	ug/L	0.198		105	70-130	0.286	30	
1,1-Dichloroethane	0.154	0.020	ug/L	0.162		95.0	70-130	1.75	30	
1,2-Dichloroethane (EDC)	0.177	0.0040	ug/L	0.162		109	70-130	0.0229	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0831 - *** DEFAULT PREP ***</i>										
LCS Dup (B1K0831-BSD1) Continued										
Prepared: 11/08/21 Analyzed: 11/09/21										
cis-1,2-Dichloroethylene	0.162	0.020	ug/L	0.159		102	70-130	1.75	30	
1,1-Dichloroethylene	0.162	0.020	ug/L	0.159		102	70-130	0.122	30	
trans-1,2-Dichloroethylene	0.162	0.020	ug/L	0.159		102	70-130	0.147	30	
1,2-Dichloropropane	0.193	0.020	ug/L	0.185		105	70-130	0.0717	30	
trans-1,3-Dichloropropylene	0.205	0.020	ug/L	0.182		113	70-130	0.661	30	
cis-1,3-Dichloropropylene	0.200	0.020	ug/L	0.182		110	70-130	1.49	30	
Dichlorotetrafluoroethane	0.280	0.020	ug/L	0.280		100	70-130	0.225	30	
Ethylbenzene	0.177	0.020	ug/L	0.174		102	70-130	0.343	30	
4-Ethyltoluene	0.196	0.020	ug/L	0.197		99.5	70-130	1.69	30	
Hexachlorobutadiene	0.530	0.020	ug/L	0.427		124	70-130	1.28	30	
2-Hexanone (MBK)	0.169	0.020	ug/L	0.164		103	70-130	0.267	30	
Isopropanol (IPA)	0.0742	0.20	ug/L	0.0865		85.8	70-130	1.12	30	
Methylene Chloride	0.113	0.020	ug/L	0.139		81.7	70-130	0.245	30	
4-Methyl-2-pentanone (MIBK)	0.161	0.020	ug/L	0.164		98.0	70-130	0.610	30	
Styrene	0.194	0.020	ug/L	0.170		114	70-130	0.132	30	
1,1,2,2-Tetrachloroethane	0.272	0.020	ug/L	0.275		99.1	70-130	0.729	30	
Tetrachloroethylene (PCE)	0.348	0.010	ug/L	0.271		128	70-130	0.567	30	
Toluene	0.167	0.020	ug/L	0.151		111	70-130	1.25	30	
1,2,4-Trichlorobenzene	0.367	0.020	ug/L	0.297		124	70-130	1.92	30	
1,1,2-Trichloroethane	0.257	0.020	ug/L	0.218		118	70-130	1.96	30	
1,1,1-Trichloroethane	0.226	0.020	ug/L	0.218		104	70-130	0.650	30	
Trichloroethylene (TCE)	0.257	0.020	ug/L	0.215		120	70-130	2.94	30	
Trichlorofluoromethane (R11)	0.235	0.020	ug/L	0.225		104	70-130	0.504	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.348	0.020	ug/L	0.307		114	70-130	1.51	30	
1,3,5-Trimethylbenzene	0.213	0.020	ug/L	0.197		108	70-130	0.742	30	
1,2,4-Trimethylbenzene	0.216	0.020	ug/L	0.197		110	70-130	0.616	30	
Vinyl acetate	0.115	0.020	ug/L	0.118		96.8	70-130	0.803	30	
Vinyl chloride	0.0916	0.020	ug/L	0.102		89.6	70-130	0.756	30	
o-Xylene	0.174	0.020	ug/L	0.174		100	70-130	0.476	30	
m,p-Xylenes	0.308	0.020	ug/L	0.347		88.8	70-130	3.06	30	
1,2,3-Trichloropropane	0.240	0.020	ug/L	0.241		99.6	70-130	1.44	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K0831 - *** DEFAULT PREP ***</i>										
LCS Dup (B1K0831-BSD1) Continued										
					Prepared: 11/08/21 Analyzed: 11/09/21					
sec-Butylbenzene	0.221	0.020	ug/L	0.220	101	70-130	0.949	30		
Isopropylbenzene	0.207	0.020	ug/L	0.197	105	70-130	1.16	30		
n-Propylbenzene	0.198	0.020	ug/L	0.197	100	70-130	0.549	30		
4-Isopropyltoluene	0.225	0.020	ug/L	0.220	102	70-130	0.122	30		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.143</i>		<i>ug/L</i>	<i>0.143</i>	<i>100</i>	<i>70-130</i>				
<i>Batch B1K1626 - *** DEFAULT PREP ***</i>										
Blank (B1K1626-BLK1)										
					Prepared & Analyzed: 11/12/21					
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	<0.0025	0.0025	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)	<2.0	2.0	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	<0.0040	0.0040	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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 B1K1626 - *** DEFAULT PREP ***										
Blank (B1K1626-BLK1) Continued										
Prepared & Analyzed: 11/12/21										
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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K1626 - *** DEFAULT PREP ***

Blank (B1K1626-BLK1) Continued

Prepared & Analyzed: 11/12/21

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 0.148 ug/L

0.143 104 70-130

LCS (B1K1626-BS1)

Prepared: 11/12/21 Analyzed: 11/13/21

Acetone	0.0920	0.020	ug/L	0.0950	96.8	70-130
Benzene	0.121	0.0030	ug/L	0.128	95.0	70-130
Benzyl chloride	0.164	0.020	ug/L	0.178	92.2	70-130
Bromodichloromethane	0.308	0.0025	ug/L	0.268	115	70-130
Bromoform	0.489	0.020	ug/L	0.413	118	70-130
Bromomethane	0.147	0.020	ug/L	0.155	94.4	70-130
2-Butanone (MEK)	0.112	0.020	ug/L	0.118	95.1	70-130
Carbon Disulfide	0.130	0.020	ug/L	0.125	104	70-130
Carbon Tetrachloride	0.290	0.020	ug/L	0.252	115	70-130

Allen Aminian
 QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K1626 - *** DEFAULT PREP ***</i>										
LCS (B1K1626-BS1) Continued										
Prepared: 11/12/21 Analyzed: 11/13/21										
Chlorobenzene	0.207	0.020	ug/L	0.184		112	70-130			
Chloroethane	0.0909	0.020	ug/L	0.106		86.1	70-130			
Chloroform	0.205	0.0040	ug/L	0.195		105	70-130			
Chloromethane	0.0774	0.020	ug/L	0.0826		93.7	70-130			
Dibromochloromethane	0.426	0.020	ug/L	0.341		125	70-130			
1,2-Dibromoethane (EDB)	0.368	0.020	ug/L	0.307		120	70-130			
1,2-Dichlorobenzene	0.276	0.020	ug/L	0.240		115	70-130			
1,3-Dichlorobenzene	0.276	0.020	ug/L	0.240		115	70-130			
1,4-Dichlorobenzene	0.276	0.020	ug/L	0.240		115	70-130			
Dichlorodifluoromethane (R12)	0.192	0.020	ug/L	0.198		97.2	70-130			
1,1-Dichloroethane	0.153	0.020	ug/L	0.162		94.7	70-130			
1,2-Dichloroethane (EDC)	0.177	0.0040	ug/L	0.162		109	70-130			
cis-1,2-Dichloroethylene	0.159	0.020	ug/L	0.159		100	70-130			
1,1-Dichloroethylene	0.160	0.020	ug/L	0.159		101	70-130			
trans-1,2-Dichloroethylene	0.169	0.020	ug/L	0.159		106	70-130			
1,2-Dichloropropane	0.182	0.020	ug/L	0.185		98.4	70-130			
trans-1,3-Dichloropropylene	0.193	0.020	ug/L	0.182		106	70-130			
cis-1,3-Dichloropropylene	0.192	0.020	ug/L	0.182		106	70-130			
Dichlorotetrafluoroethane	0.279	0.020	ug/L	0.280		99.8	70-130			
Ethylbenzene	0.176	0.020	ug/L	0.174		102	70-130			
4-Ethyltoluene	0.189	0.020	ug/L	0.197		96.2	70-130			
Hexachlorobutadiene	0.516	0.020	ug/L	0.427		121	70-130			
2-Hexanone (MBK)	0.157	0.020	ug/L	0.164		96.1	70-130			
Isopropanol (IPA)	0.0741	0.20	ug/L	0.0865		85.7	70-130			
Methylene Chloride	0.113	0.020	ug/L	0.139		81.2	70-130			
4-Methyl-2-pentanone (MIBK)	0.153	0.020	ug/L	0.164		93.7	70-130			
Styrene	0.186	0.020	ug/L	0.170		109	70-130			
1,1,2,2-Tetrachloroethane	0.273	0.020	ug/L	0.275		99.3	70-130			
Tetrachloroethylene (PCE)	0.339	0.010	ug/L	0.271		125	70-130			
Toluene	0.163	0.020	ug/L	0.151		108	70-130			
1,2,4-Trichlorobenzene	0.348	0.020	ug/L	0.297		117	70-130			
1,1,2-Trichloroethane	0.250	0.020	ug/L	0.218		115	70-130			

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K1626 - *** DEFAULT PREP ***</i>										
LCS (B1K1626-BS1) Continued										
					Prepared: 11/12/21 Analyzed: 11/13/21					
1,1,1-Trichloroethane	0.228	0.020	ug/L	0.218		104	70-130			
Trichloroethylene (TCE)	0.253	0.020	ug/L	0.215		118	70-130			
Trichlorofluoromethane (R11)	0.234	0.020	ug/L	0.225		104	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.360	0.020	ug/L	0.307		118	70-130			
1,3,5-Trimethylbenzene	0.205	0.020	ug/L	0.197		104	70-130			
1,2,4-Trimethylbenzene	0.207	0.020	ug/L	0.197		105	70-130			
Vinyl acetate	0.117	0.020	ug/L	0.118		98.8	70-130			
Vinyl chloride	0.0911	0.020	ug/L	0.102		89.0	70-130			
o-Xylene	0.173	0.020	ug/L	0.174		99.6	70-130			
m,p-Xylenes	0.286	0.020	ug/L	0.347		82.3	70-130			
1,2,3-Trichloropropane	0.308	0.020	ug/L	0.241		128	70-130			
sec-Butylbenzene	0.226	0.020	ug/L	0.220		103	70-130			
Isopropylbenzene	0.250	0.020	ug/L	0.197		127	70-130			
n-Propylbenzene	0.226	0.020	ug/L	0.197		115	70-130			
4-Isopropyltoluene	0.266	0.020	ug/L	0.220		121	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.142</i>		<i>ug/L</i>	<i>0.143</i>		<i>99.3</i>	<i>70-130</i>			
LCS Dup (B1K1626-BSD1)										
					Prepared: 11/12/21 Analyzed: 11/13/21					
Acetone	0.0972	0.020	ug/L	0.0950		102	70-130	5.52	30	
Benzene	0.114	0.0030	ug/L	0.128		89.3	70-130	6.16	30	
Benzyl chloride	0.161	0.020	ug/L	0.178		90.3	70-130	2.10	30	
Bromodichloromethane	0.326	0.0025	ug/L	0.268		121	70-130	5.67	30	
Bromoform	0.488	0.020	ug/L	0.413		118	70-130	0.127	30	
Bromomethane	0.151	0.020	ug/L	0.155		97.0	70-130	2.77	30	
2-Butanone (MEK)	0.109	0.020	ug/L	0.118		92.1	70-130	3.23	30	
Carbon Disulfide	0.122	0.020	ug/L	0.125		98.0	70-130	6.21	30	
Carbon Tetrachloride	0.297	0.020	ug/L	0.252		118	70-130	2.27	30	
Chlorobenzene	0.202	0.020	ug/L	0.184		110	70-130	2.16	30	
Chloroethane	0.0951	0.020	ug/L	0.106		90.1	70-130	4.57	30	
Chloroform	0.201	0.0040	ug/L	0.195		103	70-130	1.86	30	
Chloromethane	0.0761	0.020	ug/L	0.0826		92.2	70-130	1.64	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1K1626 - *** DEFAULT PREP ***</i>										
LCS Dup (B1K1626-BSD1) Continued										
					Prepared: 11/12/21 Analyzed: 11/13/21					
Dibromochloromethane	0.481	0.020	ug/L	0.341		141	70-130	12.3	30	
1,2-Dibromoethane (EDB)	0.396	0.020	ug/L	0.307		129	70-130	7.39	30	
1,2-Dichlorobenzene	0.278	0.020	ug/L	0.240		116	70-130	0.694	30	
1,3-Dichlorobenzene	0.277	0.020	ug/L	0.240		115	70-130	0.370	30	
1,4-Dichlorobenzene	0.277	0.020	ug/L	0.240		115	70-130	0.0870	30	
Dichlorodifluoromethane (R12)	0.203	0.020	ug/L	0.198		102	70-130	5.31	30	
1,1-Dichloroethane	0.148	0.020	ug/L	0.162		91.6	70-130	3.36	30	
1,2-Dichloroethane (EDC)	0.179	0.0040	ug/L	0.162		110	70-130	1.14	30	
cis-1,2-Dichloroethylene	0.153	0.020	ug/L	0.159		96.6	70-130	3.46	30	
1,1-Dichloroethylene	0.163	0.020	ug/L	0.159		103	70-130	2.04	30	
trans-1,2-Dichloroethylene	0.160	0.020	ug/L	0.159		101	70-130	5.38	30	
1,2-Dichloropropane	0.181	0.020	ug/L	0.185		97.8	70-130	0.586	30	
trans-1,3-Dichloropropylene	0.216	0.020	ug/L	0.182		119	70-130	11.1	30	
cis-1,3-Dichloropropylene	0.213	0.020	ug/L	0.182		117	70-130	10.1	30	
Dichlorotetrafluoroethane	0.301	0.020	ug/L	0.280		107	70-130	7.46	30	
Ethylbenzene	0.171	0.020	ug/L	0.174		98.4	70-130	3.18	30	
4-Ethyltoluene	0.189	0.020	ug/L	0.197		96.1	70-130	0.104	30	
Hexachlorobutadiene	0.509	0.020	ug/L	0.427		119	70-130	1.33	30	
2-Hexanone (MBK)	0.175	0.020	ug/L	0.164		107	70-130	10.6	30	
Isopropanol (IPA)	0.0764	0.20	ug/L	0.0865		88.3	70-130	3.07	30	
Methylene Chloride	0.108	0.020	ug/L	0.139		77.9	70-130	4.18	30	
4-Methyl-2-pentanone (MIBK)	0.169	0.020	ug/L	0.164		103	70-130	9.90	30	
Styrene	0.186	0.020	ug/L	0.170		109	70-130	0.229	30	
1,1,2,2-Tetrachloroethane	0.271	0.020	ug/L	0.275		98.9	70-130	0.479	30	
Tetrachloroethylene (PCE)	0.296	0.010	ug/L	0.271		109	70-130	13.5	30	
Toluene	0.181	0.020	ug/L	0.151		120	70-130	10.9	30	
1,2,4-Trichlorobenzene	0.339	0.020	ug/L	0.297		114	70-130	2.49	30	
1,1,2-Trichloroethane	0.281	0.020	ug/L	0.218		129	70-130	11.5	30	
1,1,1-Trichloroethane	0.225	0.020	ug/L	0.218		103	70-130	1.38	30	
Trichloroethylene (TCE)	0.263	0.020	ug/L	0.215		122	70-130	3.50	30	
Trichlorofluoromethane (R11)	0.252	0.020	ug/L	0.225		112	70-130	7.51	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1K1626 - *** DEFAULT PREP ***

LCS Dup (B1K1626-BSD1) Continued

Prepared: 11/12/21 Analyzed: 11/13/21

1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.338	0.020	ug/L	0.307		110	70-130	6.57	30	
1,3,5-Trimethylbenzene	0.204	0.020	ug/L	0.197		104	70-130	0.385	30	
1,2,4-Trimethylbenzene	0.206	0.020	ug/L	0.197		105	70-130	0.238	30	
Vinyl acetate	0.114	0.020	ug/L	0.118		96.2	70-130	2.66	30	
Vinyl chloride	0.0948	0.020	ug/L	0.102		92.7	70-130	3.99	30	
o-Xylene	0.169	0.020	ug/L	0.174		97.5	70-130	2.13	30	
m,p-Xylenes	0.308	0.020	ug/L	0.347		88.8	70-130	7.54	30	
1,2,3-Trichloropropane	0.308	0.020	ug/L	0.241		128	70-130	0.0196	30	
sec-Butylbenzene	0.283	0.020	ug/L	0.220		129	70-130	22.4	30	
Isopropylbenzene	0.251	0.020	ug/L	0.197		128	70-130	0.588	30	
n-Propylbenzene	0.249	0.020	ug/L	0.197		127	70-130	9.76	30	
4-Isopropyltoluene	0.265	0.020	ug/L	0.220		121	70-130	0.372	30	

Surrogate: 4-Bromofluorobenzene 0.138

ug/L 0.143

96.7 70-130

Batch B1L0303 - *** DEFAULT PREP ***

Blank (B1L0303-BLK1)

Prepared & Analyzed: 12/01/21

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	<0.0025	0.0025	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)	<2.0	2.0	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
<i>Batch B1L0303 - *** DEFAULT PREP ***</i>										
Blank (B1L0303-BLK1) Continued										
Prepared & Analyzed: 12/01/21										
Chloroform	<0.0040	0.0040	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
<i>Batch B1L0303 - *** DEFAULT PREP ***</i>										
Blank (B1L0303-BLK1) Continued										
Prepared & Analyzed: 12/01/21										
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							
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.143</i>		<i>ug/L</i>	<i>0.143</i>	<i>100</i>	<i>70-130</i>				
LCS (B1L0303-BS1)										
Prepared & Analyzed: 12/01/21										

Allen Aminian
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

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										
<i>Batch B1L0303 - *** DEFAULT PREP ***</i>										
LCS (B1L0303-BS1) Continued						Prepared & Analyzed: 12/01/21				
Acetone	0.106	0.020	ug/L	0.0950		112	70-130			
Benzene	0.127	0.0030	ug/L	0.128		99.6	70-130			
Benzyl chloride	0.172	0.020	ug/L	0.178		96.7	70-130			
Bromodichloromethane	0.304	0.0025	ug/L	0.268		113	70-130			
Bromoform	0.492	0.020	ug/L	0.413		119	70-130			
Bromomethane	0.127	0.020	ug/L	0.155		82.0	70-130			
2-Butanone (MEK)	0.122	0.020	ug/L	0.118		103	70-130			
Carbon Disulfide	0.132	0.020	ug/L	0.125		106	70-130			
Carbon Tetrachloride	0.289	0.020	ug/L	0.252		115	70-130			
Chlorobenzene	0.198	0.020	ug/L	0.184		108	70-130			
Chloroethane	0.105	0.020	ug/L	0.106		99.2	70-130			
Chloroform	0.214	0.0040	ug/L	0.195		110	70-130			
Chloromethane	0.0786	0.020	ug/L	0.0826		95.2	70-130			
Dibromochloromethane	0.425	0.020	ug/L	0.341		125	70-130			
1,2-Dibromoethane (EDB)	0.372	0.020	ug/L	0.307		121	70-130			
1,2-Dichlorobenzene	0.253	0.020	ug/L	0.240		105	70-130			
1,3-Dichlorobenzene	0.259	0.020	ug/L	0.240		108	70-130			
1,4-Dichlorobenzene	0.256	0.020	ug/L	0.240		106	70-130			
Dichlorodifluoromethane (R12)	0.216	0.020	ug/L	0.198		109	70-130			
1,1-Dichloroethane	0.162	0.020	ug/L	0.162		100	70-130			
1,2-Dichloroethane (EDC)	0.187	0.0040	ug/L	0.162		115	70-130			
cis-1,2-Dichloroethylene	0.173	0.020	ug/L	0.159		109	70-130			
1,1-Dichloroethylene	0.163	0.020	ug/L	0.159		103	70-130			
trans-1,2-Dichloroethylene	0.165	0.020	ug/L	0.159		104	70-130			
1,2-Dichloropropane	0.194	0.020	ug/L	0.185		105	70-130			
trans-1,3-Dichloropropylene	0.204	0.020	ug/L	0.182		112	70-130			
cis-1,3-Dichloropropylene	0.209	0.020	ug/L	0.182		115	70-130			
Dichlorotetrafluoroethane	0.300	0.020	ug/L	0.280		107	70-130			
Ethylbenzene	0.173	0.020	ug/L	0.174		99.7	70-130			
4-Ethyltoluene	0.198	0.020	ug/L	0.197		101	70-130			
Hexachlorobutadiene	0.444	0.020	ug/L	0.427		104	70-130			
2-Hexanone (MBK)	0.167	0.020	ug/L	0.164		102	70-130			

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control

Batch B1L0303 - *** DEFAULT PREP ***

LCS (B1L0303-BS1) Continued

Prepared & Analyzed: 12/01/21

Isopropanol (IPA)	0.108	0.20	ug/L	0.0865	124	70-130
Methylene Chloride	0.136	0.020	ug/L	0.139	97.7	70-130
4-Methyl-2-pentanone (MIBK)	0.167	0.020	ug/L	0.164	102	70-130
Styrene	0.174	0.020	ug/L	0.170	102	70-130
1,1,2,2-Tetrachloroethane	0.253	0.020	ug/L	0.275	92.0	70-130
Tetrachloroethylene (PCE)	0.345	0.010	ug/L	0.271	127	70-130
Toluene	0.164	0.020	ug/L	0.151	109	70-130
1,2,4-Trichlorobenzene	0.285	0.020	ug/L	0.297	96.1	70-130
1,1,2-Trichloroethane	0.254	0.020	ug/L	0.218	117	70-130
1,1,1-Trichloroethane	0.231	0.020	ug/L	0.218	106	70-130
Trichloroethylene (TCE)	0.255	0.020	ug/L	0.215	119	70-130
Trichlorofluoromethane (R11)	0.244	0.020	ug/L	0.225	109	70-130
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.364	0.020	ug/L	0.307	119	70-130
1,3,5-Trimethylbenzene	0.192	0.020	ug/L	0.197	97.5	70-130
1,2,4-Trimethylbenzene	0.187	0.020	ug/L	0.197	95.3	70-130
Vinyl acetate	0.127	0.020	ug/L	0.118	107	70-130
Vinyl chloride	0.0965	0.020	ug/L	0.102	94.3	70-130
o-Xylene	0.165	0.020	ug/L	0.174	94.8	70-130
m,p-Xylenes	0.296	0.020	ug/L	0.347	85.2	70-130
1,2,3-Trichloropropane	0.269	0.020	ug/L	0.241	111	70-130
sec-Butylbenzene	0.243	0.020	ug/L	0.220	111	70-130
Isopropylbenzene	0.225	0.020	ug/L	0.197	114	70-130
n-Propylbenzene	0.218	0.020	ug/L	0.197	111	70-130
4-Isopropyltoluene	0.250	0.020	ug/L	0.220	114	70-130
Surrogate: 4-Bromofluorobenzene	0.152		ug/L	0.143	106	70-130

Fixed Gases by TCD - Quality Control

Batch B1K0505 - *** DEFAULT PREP ***

Blank (B1K0505-BLK1)

Prepared & Analyzed: 11/05/21

Methane	<0.10	0.10	% by Volume			
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Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
<i>Batch B1K0505 - *** DEFAULT PREP ***</i>										
Blank (B1K0505-BLK1) Continued Prepared & Analyzed: 11/05/21										
Oxygen	0.581	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1K0505-BS1) Prepared & Analyzed: 11/05/21										
Methane	2.79	0.10	% by Volume				70-130			
Oxygen	2.23	0.10	% by Volume				70-130			
Carbon Dioxide	8.56	0.10	% by Volume				70-130			
LCS Dup (B1K0505-BSD1) Prepared & Analyzed: 11/05/21										
Methane	2.76	0.10	% by Volume				70-130	0.974	30	
Oxygen	2.24	0.10	% by Volume				70-130	0.402	30	
Carbon Dioxide	8.55	0.10	% by Volume				70-130	0.0701	30	
Duplicate (B1K0505-DUP1) Source: 1K01011-04 Prepared & Analyzed: 11/05/21										
Methane	<0.20	0.20	% by Volume		<0.20				30	
Oxygen	5.50	0.20	% by Volume		5.40			1.76	30	
Carbon Dioxide	13.4	0.20	% by Volume		13.5			1.46	30	
<i>Batch B1K0818 - *** DEFAULT PREP ***</i>										
Blank (B1K0818-BLK1) Prepared & Analyzed: 11/08/21										
Methane	<0.10	0.10	% by Volume							
Oxygen	1.04	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: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
<i>Batch B1K0818 - *** DEFAULT PREP ***</i>										
Blank (B1K0818-BLK1) Continued Prepared & Analyzed: 11/08/21										
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1K0818-BS1) Prepared & Analyzed: 11/08/21										
Methane	2.64	0.10	% by Volume				70-130			
Oxygen	2.44	0.10	% by Volume				70-130			
Carbon Dioxide	7.43	0.10	% by Volume				70-130			
LCS Dup (B1K0818-BSD1) Prepared & Analyzed: 11/08/21										
Methane	2.84	0.10	% by Volume				70-130	7.35	30	
Oxygen	2.30	0.10	% by Volume				70-130	6.20	30	
Carbon Dioxide	8.72	0.10	% by Volume				70-130	16.0	30	
Duplicate (B1K0818-DUP1) Source: 1K01011-14 Prepared & Analyzed: 11/08/21										
Methane	<0.20	0.20	% by Volume		<0.20				30	
Oxygen	5.48	0.20	% by Volume		22.2			121	30	
Carbon Dioxide	11.2	0.20	% by Volume		<0.20				30	
<i>Batch B1K1116 - *** DEFAULT PREP ***</i>										
Blank (B1K1116-BLK1) Prepared & Analyzed: 11/12/21										
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1K1116-BS1) Prepared & Analyzed: 11/12/21										

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
<i>Batch B1K1116 - *** DEFAULT PREP ***</i>										
Methane	2.91	0.10	% by Volume				70-130			
Oxygen	2.19	0.10	% by Volume				70-130			
Carbon Dioxide	8.01	0.10	% by Volume				70-130			
LCS Dup (B1K1116-BSD1) Prepared & Analyzed: 11/12/21										
Methane	2.86	0.10	% by Volume				70-130	1.53	30	
Oxygen	2.17	0.10	% by Volume				70-130	0.735	30	
Carbon Dioxide	8.44	0.10	% by Volume				70-130	5.24	30	
Duplicate (B1K1116-DUP1) Source: 1K01011-32 Prepared & Analyzed: 11/12/21										
Methane	<0.20	0.20	% by Volume		<0.20				30	
Oxygen	23.2	0.20	% by Volume		22.3			4.05	30	
Carbon Dioxide	<0.20	0.20	% by Volume		<0.20				30	
<i>Batch B1K1522 - *** DEFAULT PREP ***</i>										
Blank (B1K1522-BLK1) Prepared & Analyzed: 11/15/21										
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1K1522-BS1) Prepared & Analyzed: 11/15/21										
Methane	2.79	0.10	% by Volume				70-130			
Oxygen	2.50	0.10	% by Volume				70-130			

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
<i>Batch B1K1522 - *** DEFAULT PREP ***</i>										
LCS (B1K1522-BS1) Continued Prepared & Analyzed: 11/15/21										
Carbon Dioxide	7.81	0.10	% by Volume				70-130			
LCS Dup (B1K1522-BSD1) Prepared & Analyzed: 11/15/21										
Methane	2.83	0.10	% by Volume				70-130	1.21	30	
Oxygen	2.33	0.10	% by Volume				70-130	7.17	30	
Carbon Dioxide	8.27	0.10	% by Volume				70-130	5.73	30	
Duplicate (B1K1522-DUP1) Source: 1K01011-45 Prepared & Analyzed: 11/15/21										
Methane	<0.20	0.20	% by Volume		<0.20				30	
Oxygen	22.1	0.20	% by Volume		21.6			2.47	30	
Carbon Dioxide	<0.20	0.20	% by Volume		<0.20				30	
<i>Batch B1K1621 - *** DEFAULT PREP ***</i>										
Blank (B1K1621-BLK1) Prepared & Analyzed: 11/16/21										
Methane	<0.10	0.10	% by Volume							
Oxygen	0.886	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B1K1621-BS1) Prepared & Analyzed: 11/16/21										
Methane	2.79	0.10	% by Volume				70-130			
Oxygen	2.50	0.10	% by Volume				70-130			
Carbon Dioxide	2.81	0.10	% by Volume				70-130			
LCS Dup (B1K1621-BSD1) Prepared & Analyzed: 11/16/21										

Allen Aminian
QA/QC Manager



LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Fixed Gases by TCD - Quality Control										
<i>Batch B1K1621 - *** DEFAULT PREP ***</i>										
Methane	2.83	0.10	% by Volume				70-130	1.21	30	
Oxygen	2.33	0.10	% by Volume				70-130	7.17	30	
Carbon Dioxide	8.27	0.10	% by Volume				70-130	98.6	30	
Duplicate (B1K1621-DUP1)										
Source: 1K01011-57 Prepared & Analyzed: 11/16/21										
Methane	<0.20	0.20	% by Volume		<0.20				30	
Oxygen	22.1	0.20	% by Volume		21.5			2.75	30	
Carbon Dioxide	<0.20	0.20	% by Volume		<0.20				30	

Allen Aminian
 QA/QC Manager



LABORATORY ANALYSIS RESULTS

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Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup

AA Project No: MB187341
Date Received: 11/01/21
Date Reported: 12/03/21

Special Notes

- [1] = E : The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate.
- [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] = QL-04 : The recovery for this analyte in the LCS and LCSD is marginally above the upper control limit. Since the analyte was not detected in any of the associated samples, the analytical results for this analyte are valid.

A handwritten signature in black ink, appearing to read 'Allen Aminian'.

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.: 23611

20204891

Page 1 of 2

Client: Jacobs Project Name / No.: Norwalk Sampler's Name: John Kohn
 Project Manager: Nils . O Site Address: 15306 Norwalk blv Sampler's Signature: [Signature]
 Phone: City: Norwalk P.O. No.:
 Fax: State & Zip: 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	Please enter the TAT Turnaround Codes ** below										Special Instructions		
						1015	70-3	Fixed base										
Ambient Air	1K0101	-01	11/1/21	835	Soil	1	X	X										
SUM-12-7		-02		835			X											
SUM-12-15		-03		835			X											
SUM-12-22		-04		835			X											
SUM-11-7		-05		905			X											
SUM-11-15		-06		905			X											
SUM-11-22		-07		905			X											
SUM-13-7		-08		938			X											
SUM-13-15		-09		938			X											
SUM-13-22		-10		938			X											
SUM-14R-8		-11		1020			X											
SUM-14R-16		-12		1020			X											
SUM-14R-22		-13		1020			X											
SUM-20-5		-14		1055			X											
SUM-20-14.5		-15		1055			X											

For Laboratory Use

REVIEWED

Date 11/9/21 Time 15:30

TAT 10 Days Sign: [Signature]

Relinquished by [Signature]

Date 11/1/21

Time 1200

Received by [Signature]

Relinquished by [Signature]

Date 11/1/21

Time 13:14

Received by [Signature]

Relinquished by

Date

Time

Received by

A.A. Project No.: MB187341/1K0101

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A.A. COC No.: 23612

20204890

Page 2 of 2

Client: <u>Jacobs</u>	Project Name / No.: <u>Normalle</u>	Sampler's Name: <u>Juan Beck</u>
Project Manager: <u>Nils O</u>	Site Address: <u>1506 Normalle</u>	Sampler's Signature:
Phone:	City: <u>Normalle</u>	P.O. No.:
Fax:	State & Zip: <u>CA</u>	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	Please enter the TAT Turnaround Codes ** below										Special Instructions			
						TOIS	TO-3	Fixed Cont											
<u>SVM-18-5</u>	<u>1K01011</u>	<u>-16</u>	<u>11/1/21</u>	<u>1125</u>	<u>Gene</u>	<u>1</u>	X	X	X										
<u>SVM-18-14.5</u>		<u>-17</u>	<u>↓</u>	<u>1125</u>	<u>↓</u>	<u>↓</u>	X	X	X										
<u>SVM-18-14.5 Day</u>		<u>-18</u>	<u>↓</u>	<u>1125</u>	<u>↓</u>	<u>↓</u>	X	X	X										
<u>SVM-19-5</u>		<u>-19</u>	<u>↓</u>	<u>1140</u>	<u>↓</u>	<u>↓</u>	X	X	X										

<p>For Laboratory Use</p> <p>Date <u>11/9/21</u> Time <u>15:31</u></p> <p>TAT <u>10</u> Days Sign: </p>	<p>Relinquished by </p> <p>Relinquished by </p> <p>Relinquished by </p>	<p>Date <u>11/1/21</u></p> <p>Date <u>11/1/21</u></p> <p>Date</p>	<p>Time <u>1200</u></p> <p>Time <u>13:14</u></p> <p>Time</p>	<p>Received by </p> <p>Received by </p> <p>Received by</p>
<p>A.A. Project No.: <u>MB187341 / 1K01011</u></p>				

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Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 23626

20204892

Page 1 of 2

Client: Jacobs Project Name / No.: Normalle Sampler's Name: Juan Rodriguez
 Project Manager: Niels .G Site Address: Normalle blvd Sampler's Signature: [Signature]
 Phone: City: Normalle 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	Please enter the TAT Turnaround Codes ** below										Special Instructions			
						T015	T03	Fixed Conts											
Ambient A.A.	1K0101	- 20	11/2/21	740	312pm	1	X												
SUM-26-10		21		800		1	X												
SUM-26-5		22		800		1	X												
SUM-27-5		23		823		1	X												
SUM-27-10		24		825		1	X												
SUM-24-5		25		905		1	X												
SUM-24-10		26		905		1	X												
SUM-25-5		27		945		1	X												
SUM-25-10		28		945		1	X												
SUM-21-5		29		1030		1	X												
SUM-21-14.5		30		1030		1	X												
SUM-23-5		31		1100		1	X												
SUM-23-14.5		32		1100		1	X												
SUM-22-5		33		1130		1	X												
SUM-22-14.5		34		1130		1	X												

For Laboratory Use REVIEWED Date <u>11/9/21</u> Time <u>1513</u> TAT <u>10</u> Days Sign <u>[Signature]</u>	Relinquished by <u>Nathan Harrison</u>	Date <u>11/2/21</u>	Time <u>1210</u>	Received by <u>[Signature]</u>
	Relinquished by <u>[Signature]</u>	Date <u>11/2/21</u>	Time <u>1335</u>	Received by <u>[Signature]</u>
	Relinquished by	Date	Time	Received by

A.A. Project No.: M3187341/1K0101

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Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 23627

20204893

Page 2 of 2

Client: Jacobs Project Name / No.: Normal Sampler's Name: Don Roday
 Project Manager: Nils O Site Address: Normal, CA Sampler's Signature: [Signature]
 Phone: City: Normal 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	Please enter the TAT Turnaround Codes ** below										Special Instructions		
						TO15	TO-3	Fired Carry										
Sum-17-5	1K01011 - 35	11/2/21	1200	SALOM	1	X	X	X										
Sum-17-14.5	- 36	↓	1200	↓	1	X	X	X										

REVIEWED For Laboratory Use Date: <u>11/1/21</u> Time: <u>15:31</u> TAT <u>10</u> Days Sign: <u>[Signature]</u>	Relinquished by <u>Nathaniel Harrison</u>	Date <u>11/2/21</u>	Time <u>12:10</u>	Received by <u>[Signature]</u>
	Relinquished by <u>[Signature]</u>	Date <u>11/2/21</u>	Time <u>13:35</u>	Received by <u>[Signature]</u>
	Relinquished by	Date	Time	Received by

A.A. Project No.: MB187341/1K01011

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A.A. COC No.: 23642

20204895

Page 1 of 1

Client: <u>Jacobs</u>	Project Name / No.: <u>Norwalk</u>	Sampler's Name: <u>Juan Rodriguez</u>
Project Manager: <u>MIS .0</u>	Site Address: <u>Norwalk Blvd</u>	Sampler's Signature:
Phone:	City: <u>Norwalk</u>	P.O. No.:
Fax:	State & Zip: <u>CA</u>	Quote No.:

TAT Turnaround Codes **

- ① = Same Day Rush
- ② = 24 Hour Rush
- ③ = 48 Hour Rush
- ④ = 72 Hour Rush
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- X = 10 Working Days (Standard TAT)

ANALYSIS REQUESTED (Test Name)

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Please enter the TAT Turnaround Codes ** below										Special Instructions	
						TD15	TD-3	Fixed GWS									
SUM-15-7	1K01011 -37	11/3/21	822	Sum a	1	X	X										
SUM-15-15	-38		822			X	X										
SUM-15-22	39		822			X	X										
Ambient AIR	40		820			X	X										
SUM-6-7	41		845			X	X										
SUM-6-13	42		845			X	X										
SUM-7-7	43		910			X	X										
SUM-7-13	44		910			X	X										
SUM-10-15	45		935			X	X										
SUM-9-5	46		1010			X	X										
SUM-9-14.5	47		1030			X	X										
SUM-9-14.5	48		1030			X	X										
SUM-1-5	49		1055			X	X										
SUM-1-15	50		1055			X	X										
SUM-2-5	51		1120			X	X										

<p>For Laboratory Use</p> <p style="text-align: center; font-weight: bold; font-size: 1.2em;">REVIEWED</p> <p>Date <u>11/9/21</u> Time <u>15:32</u></p> <p>TAT <u>10</u> Days Sign: </p> <p style="text-align: center; font-size: 0.8em;">BAC</p>	<p>Relinquished by <u>Jacobs</u> </p> <p>Relinquished by </p> <p>Relinquished by </p>	<p>Date</p> <p><u>11/3/21</u></p> <p>Date</p> <p><u>11/3/21</u></p> <p>Date</p>	<p>Time</p> <p><u>11:35</u></p> <p>Time</p> <p><u>14:14</u></p> <p>Time</p>	<p>Received by </p> <p>Received by </p> <p>Received by</p>
<p>A.A. Project No.: <u>MB187342 / MB187341 / 1K01011</u></p>				

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Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 23646

20204898

Page 1 of 1

Client: <u>Jacobs</u>	Project Name / No.: <u>Norwalk</u>	Sampler's Name: <u>Dean Reddy</u>
Project Manager: <u>Mills</u>	Site Address: <u>Norwalk blvd</u>	Sampler's Signature: <u>[Signature]</u>
Phone:	City: <u>Norwalk</u>	P.O. No.:
Fax:	State & Zip: <u>CA</u>	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	Please enter the TAT Turnaround Codes ** below										Special Instructions		
						TOIS	TO-3	Fixed Gases										
Ambient Air	1K01011 - 52	11/4/21	834	Swag	1	X	X	X										
Sum-3-5	- 53		837			X	X	X										
Sum-3-15	- 54		837			X	X	X										
Sum-5-5	- 55		905			X	X	X										
Sum-5-15	- 56		905			X	X	X										
Sum-8-5	- 57		925			X	X	X										
Sum-8-15	- 58		925			X	X	X										
Sum-16-7	- 59		1005			X	X	X										
Sum-16-7 Dup	- 60		1005			X	X	X										
Sum-16-16	- 61		958			X	X	X										
Sum-16-22	- 62		959			X	X	X										

For Laboratory Use

Date 11/9/21 Time 15:32
 TAT 10 Days Sign: [Signature]

Relinquished by

Date

Time

Received by

Relinquished by

Date

Time

Received by

Relinquished by

Date

Time

Received by

A.A. Project No.: MB181341R01011

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Appendix B
Phase I Natural Source Zone Depletion Preliminary Results –
Technical Memorandum and Updated Helium Diffusion Calculations

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Subject	Natural Source Zone Depletion Preliminary Results, SFPP Norwalk Pump Station, Norwalk, California	Project Name	SFPP Norwalk Pump Station, Norwalk, California
Attention	Ryan Koch/Kinder Morgan, Inc.		
From	Lindsay Reynolds/Jacobs Wyatt Nolan/Jacobs Trevre Andrews/Jacobs		
Date	October 29, 2020		
Copies to	Eric Davis/Jacobs		

This technical memorandum provides an update on the current natural source zone depletion (NSZD) evaluation at the SFPP, L.P. (SFPP) Norwalk Pump Station, located at 15306 Norwalk Boulevard, Norwalk, California (the site). The overall goal of this project is to evaluate the rate of NSZD under ambient conditions.

1. Introduction

As part of this effort, active remedies at the site were transitioned from their current operation to a configuration that allowed the assessment of NSZD rates under ambient conditions. Specifically, this involved a temporary suspension of hydraulic control and recovery (i.e., groundwater pump and treat), soil vapor extraction (SVE), and biosparging in the south-central area, as recommended in the *Biosparging Effectiveness Evaluation and Recommendations – South-Central Area* (Jacobs, 2019).

2. Objectives

NSZD processes occur in the subsurface and are often capable of contaminant reduction rates of active remedies. This site provides opportunities to evaluate NSZD rates under the following conditions:

1. South-central area following nearly 3 years of treatment with horizontal biosparging.
2. Southeastern area prior to the startup of the recently installed horizontal biosparging system.
3. Southeastern area following the operation of the recently installed horizontal biosparging system.
4. Evaluation of two ¹⁴C (a radioactive isotope of carbon) sampling methodologies to determine the most viable technique for the future of site-specific NSZD work. Not all sampling methodologies are effective in each area of the site, in particular, determination of NSZD rates in the south-central offsite area where a majority of the surface is covered by structures requires the use of soil vapor probes rather than surface flux meters to determine NSZD rates.

3. Methodology

Petroleum hydrocarbon constituents in light nonaqueous phase liquid (LNAPL) undergo a variety of degradation processes, including volatilization, dissolution, and biodegradation (Kostecki and Calabrese, 1989; NRC, 1993; Johnson et al., 2006). NSZD is a term used to describe the collective, naturally occurring processes of dissolution, volatilization, and biodegradation in the subsurface that act to degrade LNAPL and convert petroleum hydrocarbon constituents to innocuous aqueous and gaseous by-products. These processes physically degrade the LNAPL by mass transfer of chemical components to the aqueous phase where they are biologically broken down to benign end products such as carbon dioxide (CO₂). CO₂ subsequently transports into and through the vadose zone and can be measured at the ground surface as CO₂ efflux.

NSZD rates were evaluated using three technologies at the site:

- LI-COR CO₂ efflux measurements
- E-Flux CO₂ traps
- Field precipitation of ¹⁴BaCO₃

E-Flux CO₂ traps and ¹⁴BaCO₃ samples utilize the radioisotope ¹⁴C to allow for the apportionment of petroleum-degradation-derived CO₂ from LI-COR CO₂ measured efflux.

3.1 LI-COR CO₂ Efflux Measurements

The NSZD field investigation was conducted between April 16 and 23, 2020, and May 5 and 7, 2020. Soil CO₂ efflux was measured using the LI-COR Biosciences Inc. (LI-COR) 870 and Smart Chamber dynamic closed chamber (DCC) assembly. A LI-COR survey involves embedding shallow soil collars into the ground surface at various locations across the site. Using an infrared CO₂ gas analyzer (IRGA) and chamber unit, the LI-COR DCC methodology directly measures the concentrations of CO₂ emitted into a vented, ground-surface-mounted chamber over a short time. The LI-COR DCC system involves the collection of large amounts of discrete, time series CO₂ concentration data ultimately allowing for the calculation of CO₂ efflux and a stoichiometrically back-calculated NSZD rate. Using the automated IRGA and intermittent chamber closure, the system measures the change in chamber CO₂ concentration over a set time from each location. A summary of all LI-COR CO₂ measurement locations, dates, and atmospheric conditions is presented in Table 1.

After the field survey, the raw data were tabulated, and the concentration versus time curve fit was optimized for each observation. Following curve fit optimization, the method detection limit was calculated using field blank values, the data were validated removing outliers and poor-quality data, and nondetect values were assigned, where appropriate.

3.2 E-Flux CO₂ Traps

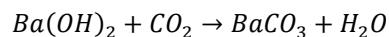
The CO₂ traps used in this study were designed by Colorado State University and were made commercially available by E-Flux. The E-Flux traps are designed for longer-term, in situ monitoring of CO₂ efflux. The E-Flux trap assembly consists of three parts: an approximately 6-inch length of 4-inch inside-diameter polyvinyl chloride (PVC) receiver pipe with basal metal angle anchors, a short PVC E-Flux trap equipped

with a moisture-resistant media (SODASORB) that adsorbs CO₂, and a 6-inch (15-centimeter)-diameter protective rain cover. The receiver pipe is installed in the shallow ground surface and soil is compacted to pre-existing conditions inside and outside the pipe to allow soil vapor to pass up through the pipe in approximately undisturbed conditions (E-Flux, 2019).

The E-Flux trap is a flow-through methodology intended to capture and sorb CO₂ as it migrates upward through the receiver pipe. The E-Flux trap contains two sorbent pucks; the upper sorbent is used to scrub atmospheric CO₂ and prevent it from migrating into the lower sorbent puck. The lower sorbent is used to capture the CO₂ solely emitted from the underlying subsurface. The upper sorbent puck is discarded at the laboratory after verifying that atmospheric CO₂ did not break through the upper puck, and the lower puck is analyzed to estimate the efflux. Unlike the LI-COR system, no pumping or field measurements are required. Over a pre-established period of time, on the order of 2 to 3 weeks, the E-Flux trap passively allows soil vapor to move through and sorbs the CO₂ mass. Analogous to a trip blank used for a groundwater volatile organic compound (VOC) sampling program, a separate E-Flux trap accompanies the samples and remains capped, containerized, and onsite for the duration of deployment. Upon termination of the deployment period, the sorbent E-Flux traps are sent back to the E-Flux laboratory for CO₂ and ¹⁴C analysis.

3.3 Field Precipitation of ¹⁴BaCO₃

The BaCO₃ radiocarbon sampling method was developed by the University of Ottawa in 2019. This method uses compact, commercially available sampling equipment and laboratory-prepared sample containers. The sample containers are 4.5-milliliter (mL) exetainers with a butyl septum cap and hold approximately 0.5 mL of a barium hydroxide solution. Sampling produces a precipitated mineral, witherite (BaCO₃) for later analysis of radiocarbon isotopic signatures. The precipitate is the product of the reaction between a barium hydroxide (Ba(OH)₂) solution housed in the sampling container and the CO₂ from the subsurface soil gas.



Soil gas is drawn from soil probes manufactured by AMS Inc. (American Falls, Idaho). Soil probes are installed to a depth of approximately 12 inches below the ground surface with a rubber mallet. The top of the soil probe is fitted with a 3/16-inch adapter manufactured by AMS Inc., that is connected to 3/16-inch inner diameter flexible tubing. Bev-A-Line tubing is used because it is impermeable to CO₂, which prevents atmospheric CO₂ sample contamination. Tubing is connected to a three-way gas lock to direct air flow during the sampling procedure. The other two ports on the gas lock are connected to a 60-mL syringe and a 3-inch-long, 22-gauge needle. The needle is used to pierce the sample container septum and the gas lock is turned to allow the soil gas to be pushed out through the needle and into the barium hydroxide solution. Each sample container has soil CO₂ added to it twice, 24 hours apart.

Samples are shipped to the University of Ottawa's A.E. Lalonde Accelerator Mass Spectrometer Laboratory for analysis and subsequent reporting.

Mineralogical samples were shipped to the University of Ottawa A.E. Lalonde Laboratory for analysis by Accelerator Mass Spectrometry (AMS) for ¹⁴C fraction. ¹⁴C signatures were measured using a

3-millivolt (mV) accelerator mass spectrometer and were corrected using laboratory standard blank and modern standards.

The NSZD monitoring program performed at the site between April 16 and 23, 2020, and May 5 and 7, 2020, included monitoring of 50 LI-COR locations plus 5 replicates, E-Flux trap sampling at 8 locations, and ¹⁴C radiocarbon sampling at 14 locations plus 1 duplicate.

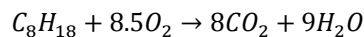
4. Results

4.1 CO₂ Efflux Survey

CO₂ efflux survey locations were selected throughout the site in varying levels of previously identified groundwater impacts or measured LNAPL (Figure 1). Furthermore, the survey locations were selected to encompass both the south-central and southeastern areas of the site. The south-central area of the site represents NSZD rates following nearly 3 years of treatment with horizontal biosparging. The southeastern area of the site represents NSZD rates prior to the startup of the recently installed horizontal biosparging system.

NSZD rates are often reported in many different units. Laboratory and field data are typically reported in micromoles per square meter per second (μmol/m²/s). Typically, hydrocarbon mass degraded per unit area per unit time is more relevant to remedial progress. To convert from field units to a unit mass of hydrocarbon at a site, a representative hydrocarbon molecule must be selected. Octane was selected as the representative hydrocarbon molecule for the site because the majority of the hydrocarbons released were in the gasoline range.

Once the measured CO₂ efflux is corrected to reflect the component that is attributable to hydrocarbon degradation, the rate can be stoichiometrically converted to the LNAPL degradation/loss occurring via NSZD (Davidson et al., 2002; Molins et al., 2010; Sihota et al., 2011a, 2011b, 2013). To estimate the mass of hydrocarbon degraded from CO₂ efflux, a representative hydrocarbon compound is assumed by reviewing historical soil and groundwater impacts. The microbially mediated oxidation reaction can be approximated as follows, with the molecular formula C₈H₁₈:



Using isotopically corrected CO₂ efflux values and a representative hydrocarbon, efflux rates measured in μmol/m²/sec can be converted to the rate of NSZD in units of gallons per acre per year (gal/acre/year).

$$R_{NSZD} = Efflux_{Fossil\ Fuel} * \frac{1\ mol}{1 \times 10^6\ \mu mol} * \frac{1\ mol\ C_8H_{18}}{8\ mol\ CO_2} * \frac{114.23\ g\ C_8H_{18}}{1\ mol\ C_8H_{18}} * \frac{86400\ sec}{1\ day} * \frac{365\ day}{1\ year}$$

$$* \frac{1\ ml\ C_8H_{18}}{0.702\ gC_8H_{18}} * \frac{1\ L}{1000\ mL} * \frac{1\ gallon}{3.785\ L} * \frac{1\ m^2}{0.000247\ acre}$$

$$R_{NSZD} = \frac{gallon}{acre\ year}$$

Using this methodology, it can be determined that NSZD rates attributed to the biodegradation of octane can be calculated with a conversion factor of 624.

$$R_{NSZD} = Efflux_{Fossil\ Fuel} * 624$$

This conversion results in approximately 1 $\mu\text{mol}/\text{m}^2/\text{s}$ at this site being equivalent to 624 gallons of octane per acre per year.

CO_2 rates are calculated using either exponential or linear regression methods to fit the observed dataset. Typically, the fitting method that best matches the data trend is used. In most cases, exponential fitting best matches the data. However, using exponential efflux calculations can overestimate CO_2 respiration, as there is not necessarily enough carbon substrate to warrant the calculated rates (Tracy, 2015). Based on this, the data were fit using linear regression methods; the results of the regression are included in Table 1.

4.2 NSZD Quality Control Results

To assess the variability in LI-COR measurements at immediately adjacent locations during the May 2020 survey, five replicate LI-COR collars (NW-08D, NW-27D, NW-38D, NW-43D, and NW-48D) were installed during the CO_2 efflux event. The difference in total CO_2 efflux between the parent and duplicate collars ranged from 0.06 $\mu\text{mol}/\text{m}^2/\text{s}$ (NW-27/NW-27D) to 2.51 $\mu\text{mol}/\text{m}^2/\text{s}$ (NW-48/NW-48D) (Table 2). The relative percent difference (RPD) ranged from 6 percent (NW-27/NW-27D) to 40 percent (NW-38/NW-38D).

Standards for soil gas efflux sample variability have not been established to date. An RPD of 30 percent is generally considered acceptable for environmental samples such as soil. The higher difference observed for the parent and duplicate pair for NW-48 is likely attributable to naturally occurring heterogeneities within the shallow subsurface that affect soil gas flow. Therefore, the associated results from NW-08, NW-38, and NW-48 should be considered less reliable, but still relevant estimates because of low field duplicate precision.

4.3 E-Flux Traps

E-Flux traps for the collection of the radiocarbon signature of carbon dioxide ($^{14}\text{CO}_2$) were installed throughout the site complementary to LI-COR collars as a part of the NSZD survey (Figure 1).

Standard quality control procedure for the use of E-Flux traps involves the use of a field blank set up to be stored onsite during trap deployment and subsequent analysis alongside deployed field traps. The field blank stored on the site in this survey was measured to have 0.68 fraction modern carbon (FmC), which was used to correct analyzed ^{14}C values from all other traps. The data are presented in Table 1.

4.4 $^{14}\text{BaCO}_3$ Sampling

Soil probes for $^{14}\text{BaCO}_3$ sample collection of the radiocarbon signature of carbon dioxide ($^{14}\text{CO}_2$) were installed throughout the site complementary to LI-COR collars as a part of the NSZD survey (Figure 1).

$^{14}\text{CO}_2$ measured at the site ranged from 0.62 FmC (NW-40) to 0.99 FmC (NW-53). The ^{14}C results are summarized in Table 1.

¹⁴C Quality Control Results

One duplicate ¹⁴CO₂ sample was collected at NW-10 during the NSZD survey to assess the variability in ¹⁴CO₂ measurements at immediately adjacent locations during the April 2020 survey. The sample did not yield adequate sample volumes to be analyzed by the laboratory.

4.5 Comparison of ¹⁴CO₂ Sampling Techniques

Four locations were chosen to conduct a side by side comparison of both the E-Flux trap and ¹⁴BaCO₃ sampling techniques. Comparative data are presented in Table 3.

Standards for soil gas efflux sample variability have not been established to date. An RPD of 30 percent is generally considered acceptable for environmental samples such as soil.

5. Discussion

Overall hydrocarbon degradation rates calculated at the site (Table 1) vary between approximately 11 (NW-31) and 489 (NW-50) gal/acre/year, which confirms natural biodegradation of hydrocarbon constituents is occurring at various rates around the site.

Using the corrected ¹⁴C fossil fuel fraction (modern carbon vs. hydrocarbon) allows for a more accurate and refined estimate of subsurface hydrocarbon degradation rates versus solely using LI-COR efflux results. These annual estimates assume that NSZD rates, which are in part driven by subsurface temperatures, remain constant throughout the year, or that the rates measured in mid- to late-spring are representative of the annual mean.

The hydrocarbon degradation rate measured varies primarily due to the proximity of hydrocarbon constituents to a given measurement, but also due to variability in degradation rates and the volatile gas migration capability through heterogeneities in the vadose zone at each location. For the purposes of this study, it is assumed that the NSZD rates at different locations are mainly driven by the primary factor — proximity to hydrocarbon constituents.

Figure 1 shows the measured NSZD rate (gal/acre/year) for each sample location. The southeastern area of the site shows that the higher the dissolved-phase concentrations, the higher the likelihood that residual LNAPL is present and degrading near those concentrations. Based on a comparison of NSZD rates and spatial distribution of the dissolved phase, areas of residual LNAPL that are likely present and degrading, and location of the historically operated horizontal biosparging equipment, the following observations can be made:

- The highest NSZD rates (approximately 500 gal/acre/year) correspond to the areas adjacent to residual LNAPL that has not been treated with biosparging remediation (i.e., the southeastern area).
- The lowest NSZD rates (approximately 11 gal/acre/year) correspond to the area where horizontal biosparging equipment was historically operated (i.e., the south-central onsite area).
- Measurable NSZD rates are present in all areas of detected dissolved-phase concentrations.

- The total NSZD rate for the south-central onsite area illustrated on Figure 1 is 900 gallons/year.
- The total NSZD rate for the southeastern area illustrated on Figure 1 is 500 gallons/year.

The comparative analysis of E-Flux trap and $^{14}\text{BaCO}_3$ sampling techniques for the analysis of the ^{14}C signature of CO_2 efflux showed that both methods produce comparable results. Going forward, $^{14}\text{BaCO}_3$ sampling techniques will be used at the site as they allow collection of NSZD data in the south-central offsite areas where surface flux meters would not be effective and $^{14}\text{BaCO}_3$ sampling techniques allow the collection of a higher density of samples across the site.

6. Conclusions

As part of this effort, active remedies at the site were transitioned from their current operation to a configuration that allowed the assessment of the NSZD rates under ambient conditions. Specifically, this involved a temporary suspension of hydraulic control and recovery (i.e., groundwater pump and treat), SVE, and biosparging in the south-central area, as recommended in the *Biosparging Effectiveness Evaluation and Recommendations – South-Central Area* (Jacobs, 2019).

This NSZD evaluation sought to evaluate NSZD processes occurring in the subsurface with consideration of historical and future horizontal biosparging operations. NSZD rates observed confirm that NSZD can be measured at this site and that significant rates (up to approximately 1,400 gal/acre/year) of biodegradation are occurring in the subsurface. Reduced NSZD rates were observed in the south-central onsite area, which has undergone biosparging operations. Higher rates of NSZD were observed in the southeastern area, which has not undergone biosparging operations.

This study also sought to evaluate two methods for sampling the ^{14}C signature of CO_2 efflux. Results of this study show both methods produce comparable technical results that will allow the continued use of ^{14}C barium carbonate sampling to correct NSZD rates at the site, in particular in the south-central offsite areas where NSZD rates must be measured using vapor probes due to the degree of ground cover.

7. References

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Tables

Table 1. Summary of Sitewide NSZD Measurements, May 2020

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Pressure (kPa)	Temperature (°F)	Total CO ₂ Efflux (μmol/m ² /s)	Closest ¹⁴ C Sample	Normalized ¹⁴ C	¹⁴ C Fossil Fuel Fraction	¹⁴ C Corrected CO ₂ Efflux (μmol/m ² /s)	Estimated Hydrocarbon Degradation (g/m ² /day)	Estimated Hydrocarbon Degraded (gallon/acre/year)
South-Central Area										
NW-01	06-May-20	101.3	95.2	1.75	NW-03	0.90	0.10	0.1672	0.2059	104
NW-02	06-May-20	101.3	90.3	0.81	NW-03	0.90	0.10	0.0775	0.0954	48
NW-03	06-May-20	101.3	91.8	3.64	NW-03	0.90	0.10	0.3470	0.4272	216
NW-04	06-May-20	101.3	90.9	1.41	NW-03	0.90	0.10	0.1344	0.1655	84
NW-05	06-May-20	101.3	90.3	1.11	NW-10	0.88	0.12	0.1375	0.1693	86
NW-06	06-May-20	101.3	87.0	1.36	NW-12	0.94	0.06	0.0807	0.0993	50
NW-07	06-May-20	101.3	90.8	1.00	NW-12	0.94	0.06	0.0596	0.0734	37
NW-08	06-May-20	101.3	85.9	2.85	NW-18	0.89	0.11	0.3196	0.3934	199
NW-08D	06-May-20	101.3	85.1	2.03	NW-18	0.89	0.11	0.2276	0.2802	142
NW-09	06-May-20	101.3	89.6	2.10	NW-18	0.89	0.11	0.2347	0.2889	146
NW-10	06-May-20	101.3	90.6	2.91	NW-10	0.88	0.12	0.3611	0.4446	225
NW-11	06-May-20	101.3	91.3	0.32	NW-10	0.88	0.12	0.0398	0.0490	25
NW-12	06-May-20	101.3	71.2	0.91	NW-12	0.94	0.06	0.0541	0.0666	34
NW-13	06-May-20	101.3	95.1	0.67	NW-12	0.94	0.06	0.0400	0.0492	25
NW-14	06-May-20	101.3	93.9	0.98	NW-15	0.77	0.23	0.2212	0.2723	138
NW-15	06-May-20	101.3	92.4	0.52	NW-15	0.77	0.23	0.1177	0.1449	73
NW-16	06-May-20	101.3	68.9	3.56	NW-26	0.92	0.08	0.2903	0.3574	181
NW-17	06-May-20	101.3	74.4	0.96	NW-26	0.92	0.08	0.0784	0.0966	49
NW-18	06-May-20	101.3	87.0	2.28	NW-18	0.89	0.11	0.2557	0.3149	160
NW-19	06-May-20	101.3	86.0	1.13	NW-10	0.88	0.12	0.1406	0.1731	88
NW-20	06-May-20	101.3	85.8	1.83	NW-21	0.94	0.06	0.1022	0.1259	64
NW-21	06-May-20	101.3	96.0	1.42	NW-21	0.94	0.06	0.0793	0.0976	49
NW-22	06-May-20	101.2	98.8	0.41	NW-21	0.94	0.06	0.0229	0.0281	14
NW-23	06-May-20	101.2	97.6	0.50	NW-33	0.89	0.11	0.0557	0.0686	35
NW-24	06-May-20	101.2	96.6	1.24	NW-15	0.77	0.23	0.2801	0.3449	175
NW-25	06-May-20	101.3	76.3	1.95	NW-26	0.92	0.08	0.1588	0.1955	99
NW-26	06-May-20	101.3	76.9	3.80	NW-26	0.92	0.08	0.3095	0.3810	193
NW-27	06-May-20	101.3	83.3	1.10	NW-26	0.92	0.08	0.0898	0.1106	56
NW-27D	06-May-20	101.3	81.5	1.04	NW-26	0.92	0.08	0.0849	0.1045	53
NW-28	06-May-20	101.3	83.5	2.90	NW-28	0.87	0.13	0.3903	0.4805	243
NW-29	06-May-20	101.3	82.1	0.41	NW-26	0.92	0.08	0.0332	0.0408	21
NW-30	06-May-20	101.3	98.7	0.91	NW-30	0.96	0.04	0.0336	0.0414	21
NW-31	06-May-20	101.3	99.5	0.47	NW-30	0.96	0.04	0.0174	0.0215	11
NW-32	06-May-20	101.3	99.2	0.69	NW-33	0.89	0.11	0.0766	0.0943	48
NW-33	06-May-20	101.2	97.9	1.26	NW-33	0.89	0.11	0.1409	0.1734	88
NW-34	07-May-20	101.2	99.7	0.90	NW-34	0.95	0.05	0.0445	0.0548	28
NW-35	06-May-20	101.2	99.1	1.20	NW-36	0.67	0.33	0.3954	0.4868	247
NW-36	06-May-20	101.2	98.4	1.50	NW-36	0.67	0.33	0.4966	0.6114	310
NW-37	06-May-20	101.2	100.9	0.87	NW-36	0.67	0.33	0.2892	0.3561	180

Table 1. Summary of Sitewide NSZD Measurements, May 2020

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Pressure (kPa)	Temperature (°F)	Total CO ₂ Efflux (μmol/m ² /s)	Closest ¹⁴ C Sample	Normalized ¹⁴ C	¹⁴ C Fossil Fuel Fraction	¹⁴ C Corrected CO ₂ Efflux (μmol/m ² /s)	Estimated Hydrocarbon Degradation (g/m ² /day)	Estimated Hydrocarbon Degraded (gallon/acre/year)
NW-38	06-May-20	101.2	99.4	1.46	NW-36	0.67	0.33	0.4816	0.5929	300
NW-38D	06-May-20	101.2	99.7	0.97	NW-36	0.67	0.33	0.3222	0.3967	201
NW-39	06-May-20	101.1	100.6	0.87	NW-36	0.67	0.33	0.2876	0.3541	179
Southeastern Area										
NW-40	05-May-20	101.5	72.8	1.11	NW-40	0.59	0.41	0.4584	0.5644	286
NW-41	05-May-20	101.5	73.2	1.15	NW-40	0.59	0.41	0.4744	0.5841	296
NW-42	05-May-20	101.5	71.4	1.03	NW-40	0.59	0.41	0.4222	0.5198	263
NW-43	05-May-20	101.5	69.2	1.55	NW-55	0.89	0.11	0.1679	0.2067	105
NW-43D	05-May-20	101.5	69.4	1.80	NW-55	0.89	0.11	0.1955	0.2407	122
NW-44	05-May-20	101.5	68.0	0.89	NW-55	0.89	0.11	0.0969	0.1193	60
NW-45	05-May-20	101.5	76.3	4.45	NW-46	0.94	0.06	0.2852	0.3511	178
NW-46	05-May-20	101.5	72.2	2.10	NW-46	0.94	0.06	0.1346	0.1657	84
NW-47	05-May-20	101.5	84.1	1.80	NW-40	0.59	0.41	0.7393	0.9102	461
NW-48	05-May-20	101.5	79.9	5.52	NW-46	0.94	0.06	0.3533	0.4350	220
NW-48D	05-May-20	101.5	85.0	8.03	NW-46	0.94	0.06	0.5140	0.6328	321
NW-49	05-May-20	101.5	87.8	5.17	NW-46	0.94	0.06	0.3311	0.4077	207
NW-50	05-May-20	101.5	83.0	7.24	NW-55	0.89	0.11	0.7841	0.9654	489
NW-51	05-May-20	101.5	87.9	9.15	NW-51	0.96	0.04	0.3492	0.4299	218
NW-52	05-May-20	101.5	85.1	11.43	NW-51	0.96	0.04	0.4361	0.5370	272
NW-53	05-May-20	101.5	89.5	10.32	NW-53	0.97	0.03	0.3564	0.4388	222
NW-54	05-May-20	101.5	89.4	8.12	NW-53	0.97	0.03	0.2807	0.3456	175
NW-55	05-May-20	101.5	80.0	5.06	NW-55	0.89	0.11	0.5486	0.6754	342

Notes:

Octane (C₈H₁₈) was used as the representative hydrocarbon.

NSZD results represent order of magnitude values and may vary from reporting period to reporting period as additional site information is added and analytical methods are refined; however, the overall conclusions drawn from the NSZD results do not change the remedial implications except when noted.

°F = degrees Fahrenheit

μmol/m²/s = micromoles per square meter per second

¹⁴C = radiocarbon

g/m²/d = grams per square meter per day

kPa = kilo Pascals

Table 2. Quality Assurance and Quality Control of LI-COR Total CO₂ Efflux*SFPP Norwalk Pump Station, Norwalk, California*

Location	Parent CO ₂ Efflux (μmol/m ² /s)	Replicate CO ₂ Efflux (μmol/m ² /s)	Difference in Efflux (μmol/m ² /s)	RPD
NW-08	2.85	2.03	0.82	34%
NW-27	1.10	1.04	0.06	6%
NW-38	1.46	0.97	0.48	40%
NW-43	1.55	1.80	0.25	15%
NW-48	5.52	8.03	2.51	37%

Notes:

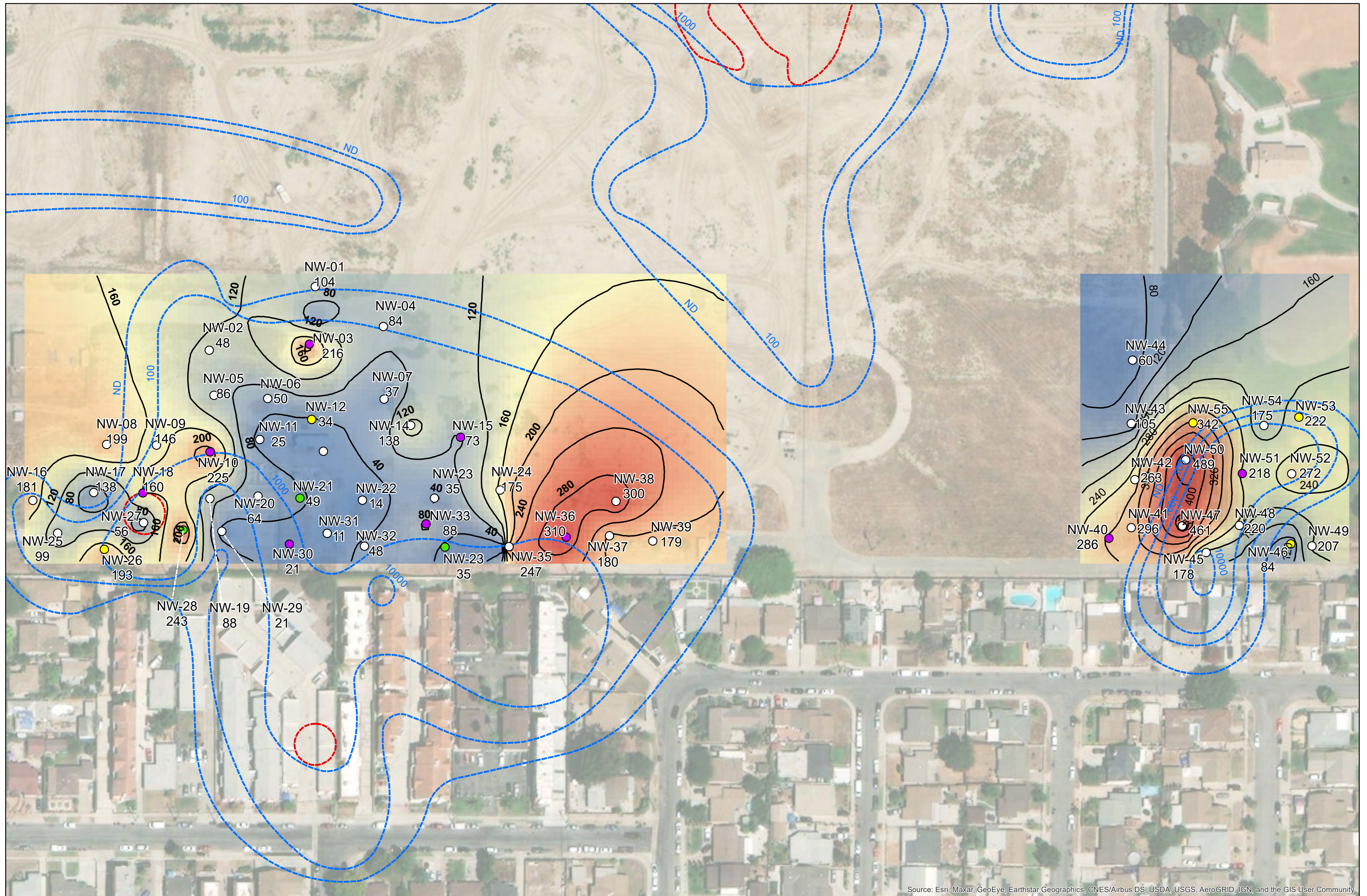
RPD = relative percent difference = $|Parent-Replicate|/((Parent + Replicate)/2)$ μmol/m²/s = micromole per meter squared per second**Table 3. Comparative Results of E-Flux Trap and ¹⁴BaCO₃ Sampling Techniques***SFPP Norwalk Pump Station, Norwalk, California*

Location	E-Flux Trap	¹⁴ BaCO ₃ Sample	RPD
NW-26	0.92	0.92	0.3%
NW-46	0.95	0.94	1.0%
NW-53	0.97	0.97	0.1%
NW-55	0.95	0.89	6.3%

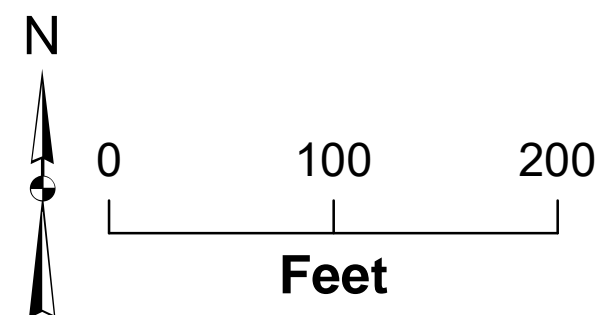
Notes:

RPD = relative percent difference = $|Parent-Replicate|/((Parent + Replicate)/2)$ μmol/m²/s = micromole per meter squared per second

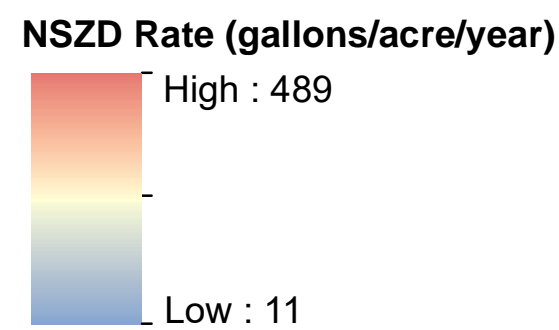
Figure



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



- Legend**
- LICOR Only
 - BaCO₃
 - Both ¹⁴C Methods
 - E-Flux
 - 50 gallons/acre/year Contour



- ▭ Inferred May 2020 Groundwater TPH Concentrations
- ▭ Inferred May 2020 extent of LNAPL

Figure 1. Measured NSZD Rates May 2020
 SFPP Norwalk Pump Station
 Natural Source Zone Depletion
 Technical Memorandum

Appendix B.1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

Location	Easting	Northing	Top of Screen (ft. bgs.)	Bottom of Screen (ft. bgs.)
SV-10S	6540267.797	1782708.769	5	5.5
SV-12S	6539753.345	1782829.667	5	5.5
SV-14S	6540106.046	1782578.069	5	5.5
SV-17S	6541215.289	1782771.241	5	5.5
SV-2SS	6541235.093	1782827.926	0	0.5
SV-4S	6540608.994	1782810.542	5	5.5
SV-6S	6540261.953	1782812.013	5	5.5
SV-7AS	6540091.235	1782773.231	5.5	6
SV-7ASS	6540091.235	1782773.231	0	0.5
SV-7SS	6540091.235	1782773.231	0	0.5
SV-8ASS	6540091.768	1782718.355	0	0.5
SV-8S	6540091.768	1782718.355	5.5	6
SV-8SS	6540091.768	1782718.355	0	0.5
SV-9SS	6540148.554	1782688.239	0	0.5
SVM-01D	6539934.158	1782751.202	15	15.5
SVM-01S	6539934.158	1782751.202	5	5.5
SVM-02D	6539915.418	1782654.309	14.5	15
SVM-02S	6539915.418	1782654.309	5	5.5
SVM-03D	6540352.913	1782727.013	15	15.5
SVM-03S	6540352.913	1782727.013	5	5.5
SVM-04D	6540443.669	1782822.529	14.5	15
SVM-04S	6540443.669	1782822.529	5	5.5
SVM-05D	6540258.286	1782817.347	15	15.5
SVM-05S	6540258.286	1782817.347	5	5.5
SVM-06D	6540063.541	1782775.007	13	13.5
SVM-06S	6540063.541	1782775.007	7	7.5
SVM-07D	6540126.172	1782701.947	13	13.5
SVM-07S	6540126.172	1782701.947	7	7.5
SVM-08D	6540256.879	1782712.476	15	15.5
SVM-08S	6540256.879	1782712.476	5	5.5
SVM-09D	6541218.214	1782917.453	14.5	15
SVM-09S	6541218.214	1782917.453	5	5.5
SVM-10D	6540114.074	1782567.878	15	15.5
SVM-10S	6540114.074	1782567.878	7.5	8
SVM-11D	6540094.409	1783048.449	22	22.5
SVM-11M	6540094.409	1783048.449	15	15.5
SVM-11S	6540094.409	1783048.449	7	7.5
SVM-12D	6539846.272	1782941.099	22	22.5
SVM-12M	6539846.272	1782941.099	15	15.5
SVM-12S	6539846.272	1782941.099	7	7.5
SVM-13D	6540111.667	1782935.598	22	22.5
SVM-13M	6540111.667	1782935.598	15	15.5
SVM-13S	6540111.667	1782935.598	7	7.5
SVM-14D	6540263.685	1782908.941	22	22.5
SVM-14M	6540263.685	1782908.941	15	15.5
SVM-14RD	6540263.685	1782908.941	22	22.5
SVM-14RM	6540263.685	1782908.941	16	16.5
SVM-14RS	6540263.685	1782908.941	8	8.5
SVM-14S	6540263.685	1782908.941	7	7.5
SVM-15D	6540050.251	1782841.391	22	22.5

Appendix B.1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

Location	Easting	Northing	Top of Screen (ft. bgs.)	Bottom of Screen (ft. bgs.)
SVM-15M	6540050.251	1782841.391	15	15.5
SVM-15S	6540050.251	1782841.391	7	7.5
SVM-16D	6540255.489	1782631.499	22	22.5
SVM-16M	6540255.489	1782631.499	16	16.5
SVM-16S	6540255.489	1782631.499	7	7.5
SVM-17D	6541150.721	1782934.107	14.5	15
SVM-17S	6541150.721	1782934.107	5	5.5
SVM-18D	6541173.614	1783140.197	14.5	15
SVM-18S	6541173.614	1783140.197	5	5.5
SVM-19D	6541044.618	1783056.483	14.5	15
SVM-19S	6541044.618	1783056.483	5	5.5
SVM-20D	6541168.995	1783039.791	14.5	15
SVM-20S	6541168.995	1783039.791	5	5.5
SVM-21D	6541178.744	1782873.691	14.5	15
SVM-21S	6541178.744	1782873.691	5	5.5
SVM-22D	6541265.209	1782872.123	14.5	15
SVM-22S	6541265.209	1782872.123	5	5.5
SVM-23D	6541353.950	1782871.308	14.5	15
SVM-23S	6541353.950	1782871.308	5	5.5
SVM-24D	6541189.441	1782750.500	10	10.5
SVM-24S	6541189.441	1782750.500	5	5.5
SVM-25D	6541358.591	1782748.693	10	10.5
SVM-25S	6541358.591	1782748.693	5	5.5
SVM-26S	6540745.140	1782736.030	10	10.5
SVM-26D	6540745.140	1782736.030	5	5.5
SVM-27S	6541011.400	1782737.530	10	10.5
SVM-27D	6541011.400	1782737.530	5	5.5
SVP-105D	6539634.209	1782925.319	10	10.5
SVP-105S	6539634.209	1782925.319	5	5.5
SVP-106D	6539730.236	1782930.562	10	10.5
SVP-106S	6539730.236	1782930.562	5	5.5
SVP-107D	6539946.272	1782906.510	10	10.5
SVP-107S	6539946.272	1782906.510	5	5.5
SVP-108D	6540562.436	1782924.664	10	10.5
SVP-108S	6540562.436	1782924.664	5	5.5
SVP-109D	6540729.130	1782904.636	10	10.5
SVP-109S	6540729.130	1782904.636	5	5.5

Notes:

S = Shallow

M = Middle

D = Deep

SVM = Soil Vapor Monitoring

SVP = Soil Vapor Probe

SV = Historical Soil Vapor Location (no longer accessible)

Appendix B.2. Helium Diffusion Calculations

SFPF Norwalk Pump Station, Norwalk, California

Location	Probe Location	Depth (ft)	Depth (m)	CO2 Concentrations (%)								2021 Summary													
				2014	2015	2016	2017	2018	2019	2020	2021	Average CO2 Concentration (2014-2021)	dC/dz Vertical CO2 Gradient to Overlying Probe	Mass Conversion (Eq. D.5)	Mass Gradient (mgCO2/m3m)	Mass Gradient (gCO2/m3m)	Dco2 ^{eff} (cm2/s)	Dco2 ^{eff} (m2/s)	NSZD Rate using Ficks Law (gCO2/m2day)	CO2 Octane Correction of NSZD Rate (gOctane/m2day)	Applied C14 Correction Rate	NSZD Rate using Ficks Law (gCO2/m2day) (C14 Corrected)	CO2 Octane Correction of NSZD Rate (gOctane/m2day) (C14 Corrected)	NSZD Rate (galOctane/m2day) (C14 Corrected)	NSZD Rate (galOctane/acre/year) (C14 Corrected)
SVM-01D	Offsite South Central	15.0	4.6	0.5	0.1	0.1	0.1	0.1	0.2	0.2	1.1	0.30	-0.005	NA	NA	NA	NA	NA	NA	0.56	NA	NA	0.00	0	
SVM-01S	Offsite South Central	5.5	1.7	0.4	0.1	0.1	0.1	0.1	0.2	0.2	1.3	0.31													
SVM-02D	Offsite South Central	15.0	4.6	0.6							1.8	1.19	0.265	15923	3559	3.6	0.018	0.000002	0.74	0.21	0.56	0.32	0.09	0.10	36
SVM-02S	Offsite South Central	5.5	1.7	1.0	0.2	0.2	0.1	0.1	0.4	0.2	1.2	0.42													
SVM-03D	Offsite South Central	15.5	4.7	1.6	0.5	0.2	0.5	0.3	0.2	0.4	0.2	0.48	0.073	6419	983	1.0	0.018	0.000002	0.20	0.06	0.56	0.09	0.03	0.03	10
SVM-03S	Offsite South Central	5.5	1.7	0.7	0.3	0.1	0.2	0.2	0.2	0.2	0.1	0.25													
SVM-05D	Offsite South Central	16.0	4.9	0.3	0.2	0.1	0.2	0.1	0.2	0.4	0.1	0.19	0.003	2540	41	0.0	0.018	0.000002	0.01	0.00	0.56	0.00	0.00	0.00	0
SVM-05S	Offsite South Central	5.5	1.7	0.6	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.18													
SVM-06D	Offsite South Central	16.5	5.0	0.2	0.2	0.1	0.2	1.0	0.2	0.2	0.1	0.27	0.026	3641	353	0.4	0.018	0.000002	0.07	0.02	0.56	0.03	0.01	0.01	4
SVM-06S	Offsite South Central	7.0	2.1	0.2	0.1	0.1	0.1	0.4	0.2	0.2	0.2	0.19													
SVM-07D	Offsite South Central	13.75	4.2	1.0	0.9	0.6	0.5	1.2	0.3	0.5	0.6	0.69	0.074	9313	1000	1.0	0.018	0.000002	0.21	0.06	0.56	0.09	0.03	0.03	10
SVM-07S	Offsite South Central	7.5	2.3	1.0	0.6	0.2	0.5	0.7	0.2	0.6	0.6	0.55													
SVM-08D	Offsite South Central	15.5	4.7	0.4	0.4	0.1	0.2	0.2	0.2	0.2	0.2	0.23	-0.005	NA	NA	NA	NA	NA	NA	0.56	NA	NA	0.00	0	
SVM-08S	Offsite South Central	5.5	1.7	0.5	0.3	0.1	0.2	0.1	0.2	0.4	0.1	0.24													
SVM-10D	Offsite South Central	16.0	4.9	6.5	5.4	2.5	2.4	3.6	2.6	3.3	1.3	3.43	1.367	46130	18367	18.4	0.018	0.000002	3.81	1.09	0.56	1.68	0.48	0.51	186
SVM-10S	Offsite South Central	8.0	2.4			0.1						0.10													
SVM-15D	Offsite South Central	22.5	6.9	1.2	0.4	0.3	0.6	0.3	0.5	0.2	0.4	0.47	0.076	6283	1027	1.0	0.018	0.000002	0.21	0.06	0.56	0.09	0.03	0.03	10
SVM-15M	Offsite South Central	15.5	4.7	0.7	0.2	0.1	0.4	0.2	0.2	0.2	0.5	0.30	-0.014	NA	NA	NA	NA	NA	NA	0.56	NA	NA	0.00	0	
SVM-15S	Offsite South Central	7.5	2.3	0.6	0.2	0.1	0.3	0.1	0.2	0.7	0.5	0.34													
SVM-16D	Offsite South Central	22.5	6.9	15.0	13.0	4.4	7.5	6.7	8.8	12.6	1.1	8.64	3.866	116109	51946	51.9	0.018	0.000002	10.77	3.07	0.56	4.74	1.35	1.44	527
SVM-16M	Offsite South Central	16.0	4.9	1.8	1.5	0.4	0.8	2.4	0.3	0.6	0.2	0.98	0.230	13194	3097	3.1	0.018	0.000002	0.64	0.18	0.56	0.28	0.08	0.09	31
SVM-16S	Offsite South Central	7.5	2.3	0.4	0.7	0.3	0.5	0.4	0.2	0.2	0.4	0.38													
SVM-11D	South Central Onsite	22.5	6.9	0.7	0.3	3.8	11.3	7.9	4.9	5.5	3.5	4.74	1.386	63641	18630	18.6	0.018	0.000002	3.86	1.10	0.56	1.70	0.48	0.52	189
SVM-11M	South Central Onsite	15.5	4.7	0.9	1.0	0.4	6.6	2.7	0.5	1.3	1.0	1.78	0.430	23891	5773	5.8	0.018	0.000002	1.20	0.34	0.56	0.53	0.15	0.16	59
SVM-11S	South Central Onsite	7.5	2.3	0.8	0.6	0.4	1.4	1.2	0.3	0.2	1.0	0.73													
SVM-12D	South Central Onsite	22.5	6.9	16.0	5.4	6.1	12.7	7.4	3.7	5.1	9.3	8.20	2.259	110174	30352	30.4	0.018	0.000002	6.29	1.79	0.56	2.77	0.79	0.84	308
SVM-12M	South Central Onsite	15.5	4.7	3.8	2.5	1.9	8.4	6.1	1.1	1.5	1.9	3.38	0.861	45415	11571	11.6	0.018	0.000002	2.40	0.68	0.56	1.06	0.30	0.32	117
SVM-12S	South Central Onsite	7.5	2.3	0.8	1.1	0.5	3.1	2.9	0.9	0.6	0.4	1.28													
SVM-13D	South Central Onsite	23.5	7.2	6.1	0.4	0.7	2.8	0.7	0.4	0.2	2.3	1.70	0.677	22820	9091	9.1	0.018	0.000002	1.89	0.54	0.56	0.83	0.24	0.25	92
SVM-13M	South Central Onsite	16.0	4.9	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.15	0.002	2038	22	0.0	0.018	0.000002	0.00	0.00	0.56	0.00	0.00	0.00	0
SVM-13S	South Central Onsite	7.5	2.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.15													
SVM-14D	South Central Onsite	22.5	6.9	12.0	12.0	0.6	1.3					6.49	1.976	87178	26550	26.6	0.018	0.000002	5.51	1.57	0.56	2.42	0.69	0.74	269
SVM-14M	South Central Onsite	15.5	4.7	2.3	4.7	1.8	0.4					2.27	0.638	30530	8576	8.6	0.018	0.000002	1.78	0.51	0.56	0.78	0.22	0.24	87
SVM-14S	South Central Onsite	7.5	2.3	0.7	0.5	1.1	0.6					0.72													
SVM-14RD	South Central Onsite	23.5	7.2					1.6	1.0	5.5	5.8	3.50	0.906	46998	12180	12.2	0.018	0.000002	2.53	0.72	0.56	1.11	0.32	0.34	124
SVM-14RM	South Central Onsite	16.5	5.0					0.8	0.5	1.6	3.4	1.56	0.279	21012	3748	3.7	0.018	0.000002	0.78	0.22	0.56	0.34	0.10	0.10	38
SVM-14RS	South Central Onsite	8.5	2.6					0.8	0.7	0.8	1.2	0.88													
SVP-105D	South Central Onsite	10.5	3.2			1.6		1.3	1.4			1.43	0.197	19260	2645	2.6	0.018	0.000002	0.55	0.16	0.56	0.24	0.07	0.07	27
SVP-105S	South Central Onsite	5.5	1.7			1.1		1.1	1.2			1.13													
SVP-106D	South Central Onsite	10.5	3.2			1.5		1.2	0.8			1.15	0.131	15497	1763	1.8	0.018	0.000002	0.37	0.10	0.56	0.16	0.05	0.05	18
SVP-106S	South Central Onsite	5.5	1.7			0.9		1.0	1.0			0.95													
SVP-107D	South Central Onsite	10.5	3.2			0.3		0.2	0.2			0.22	-0.418	NA	NA	NA	NA	NA	NA	0.56	NA	NA	0.00	0	

Appendix C
BS-02 Narrative and Operations Data

Appendix C. BS-02 Narrative and Operations Data
 SFPP Norwalk Pump Station, Norwalk, California

Date	Operational Data						VOC Mass Removal					O2 Calculations				
	SVE Influent Max of CO2 (%)	SVE Influent Max of O2 (%)	SVE Influent Max of VOCs (ppmv)	Max of SVE Influent Flow (scfm)	Operational Efficiency	Corrected SVE Flow (scfm)	Removal Rate (VOC ppm/ft3/minute)	VOC Mass Removal Rate (lb/minute)	VOC Mass Removal Rate (lb/day)	Cumulative Equivalent Mass Removed (lbs)	O2 Depletion (%)	O2 Depletion (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/day)	Cumulative Equivalent Mass Consumed by O2 (lbs)	Difference O2 vs CO2
5/15/20 11:30	2.40	17.20	0.00	196.00	0.00	0.31	0.00	0.00000	0.00	0	5.3	0.00	0.00	0.51	0	0
5/15/20 12:46	2.70	17.70	263.50	188.00	0.00	0.29	77.40	0.00002	0.02	0	4.8	0.00	0.00	0.44	0	0
5/18/20 8:20	2.20	19.30	563.00	166.00	0.00	0.26	146.03	0.00003	0.05	0	3.2	0.00	0.00	0.26	1	0
5/18/20 8:20	2.20	19.30	0.00	166.00	0.00	0.26	0.00	0.00000	0.00	0	3.2	0.00	0.00	0.26	1	0
5/18/20 11:58	1.60	19.20	655.00	160.00	0.00	0.25	163.75	0.00004	0.05	0	3.3	0.00	0.00	0.26	1	0
5/20/20 8:25	1.70	18.20	403.00	168.00	1.00	168.00	67704.00	0.01488	21.42	20	4.3	0.55	0.16	225.61	210	-209
5/20/20 8:25	1.70	18.20	0.00	168.00	1.00	168.00	0.00	0.00000	0.00	20	4.3	0.55	0.16	225.61	210	-209
5/20/20 11:18	1.50	18.80	252.00	168.00	1.00	168.00	42336.00	0.00930	13.40	21	3.7	0.48	0.13	194.13	235	-223
5/22/20 14:15	1.30	18.80	533.00	179.00	1.00	179.00	95407.00	0.02097	30.19	67	3.7	0.51	0.14	206.84	661	-472
5/22/20 14:15	1.30	18.80	0.00	179.00	1.00	179.00	0.00	0.00000	0.00	67	3.7	0.51	0.14	178.89	661	-472
5/26/20 8:46	1.10	18.70	526.00	168.00	1.00	168.00	88368.00	0.01942	27.96	120	3.8	0.49	0.14	199.38	1427	-949
5/26/20 14:18	1.00	18.50	397.00	177.00	1.00	177.00	70269.00	0.01544	22.24	126	4	0.54	0.15	221.11	1476	-984
5/27/20 8:10	1.20	18.90	383.00	168.00	1.00	168.00	64344.00	0.01414	20.36	141	3.6	0.46	0.13	188.88	1628	-1093
5/29/20 9:13	1.20	19.20	368.00	168.00	1.00	167.22	61537.78	0.01352	19.47	182	3.3	0.42	0.12	172.34	1997	-1326
6/3/20 14:48	5.40	19.20	1129.00	172.00	1.00	172.00	194188.00	0.04267	61.45	394	3.3	0.43	0.12	177.27	2912	-1895
6/4/20 10:08	0.80	19.90	687.10	180.00	1.00	180.00	123678.00	0.02718	39.14	434	2.6	0.36	0.10	146.16	3042	-1779
6/5/20 13:00	1.10	19.00	1300.00	180.00	1.00	180.00	234000.00	0.05142	74.05	498	3.5	0.48	0.14	196.75	3234	-1918
6/5/20 13:00	1.10	19.00	0.00	180.00	1.00	180.00	0.00	0.00000	0.00	498	3.5	0.48	0.14	196.75	3234	-1918
6/10/20 10:45	1.10	19.00	1050.00	224.00	1.00	224.00	235200.00	0.05168	74.43	680	3.5	0.60	0.17	244.85	4317	-2681
6/23/20 10:30	1.80	18.40	323.00	206.00	1.00	205.18	66273.96	0.01456	20.97	1300	4.1	0.64	0.18	262.73	7614	-4923
6/24/20 11:20	1.00	18.90	650.00	205.00	0.99	203.78	132456.85	0.02911	41.91	1332	3.6	0.56	0.16	229.11	7869	-5052
6/26/20 7:45	1.30	17.80	706.00	212.00	0.99	210.74	148781.10	0.03269	47.08	1415	4.7	0.76	0.21	309.33	8367	-5426
6/30/20 12:49	1.50	19.10	560.00	202.92	1.00	202.92	113635.20	0.02497	35.96	1590	3.4	0.53	0.15	215.47	9472	-6150
7/6/20 11:34	1.10	19.20	575.00	209.00	1.00	209.00	120175.00	0.02641	38.03	1810	3.3	0.53	0.15	215.40	10753	-6835
7/8/20 13:02	1.20	18.50	98.80	208.00	0.95	197.18	19481.08	0.00428	6.16	1855	4	0.60	0.17	246.32	11229	-7155
7/10/20 14:30	0.90	19.00	638.50	209.68	0.95	198.77	126914.32	0.02789	40.16	1903	3.5	0.53	0.15	217.27	11707	-7472
7/14/20 10:30	0.70	19.30	699.10	205.70	0.95	195.00	136322.12	0.02996	43.14	2000	3.2	0.48	0.14	194.88	12529	-7996
7/17/20 8:13	0.70	19.30	699.10	205.70	0.95	195.00	136322.12	0.02996	43.14	2184	3.2	0.48	0.14	194.88	13095	-8464
7/24/20 13:30	0.80	19.60	675.00	210.00	0.97	204.54	138062.09	0.03034	43.69	2497	2.9	0.45	0.13	185.25	14468	-9511
8/4/20 13:35	1.00	17.30	152.60	226.83	0.95	216.52	33040.88	0.00726	10.46	2795	5.2	0.86	0.24	351.63	17421	-11872
8/21/2020 15:25	0.80	19.70	340.00	150.00	1.00	149.56	50850.00	0.01117	16.09	3022	2.8	0.32	0.09	130.78	21540	-14772
9/17/2020 8:10	0.80	19.50	320.00	200.00	0.96	191.74	61358.20	0.01348	19.42	3496	3	0.44	0.12	179.65	25684	-17864
9/29/2020 13:30	0.30	21.50	70.00	221.00	0.99	219.85	15389.80	0.00338	4.87	3644	1	0.17	0.05	68.66	27202	-18764
10/15/2020 10:30	0.70	19.80	801.00	169.00	0.92	155.02	124171.81	0.02729	39.29	3994	2.7	0.32	0.09	130.72	28784	-20012
10/30/2020 12:20	1.10	19.20	1346.00	230.43	0.85	195.01	262487.41	0.05768	83.06	4917	3.3	0.49	0.14	200.98	31285	-21962
11/4/2020 9:12	0.80	19.80	354.50	273.22	1.00	273.22	96856.49	0.02128	30.65	5194	2.7	0.56	0.16	230.39	32335	-22660
12/30/20 11:16	0.30	20.30	144.50	272.29	0.76	206.28	29807.73	0.00655	9.43	6318	2.2	0.35	0.10	141.73	42770	-28970
1/5/21 9:00	1.30	19.60	373.00	225.00	0.97	218.25	81407.25	0.01789	25.76	6422	2.9	0.48	0.14	197.67	43773	-29836
2/23/21 10:00	1.00	20.90	106.00	229.33	0.97	222.45	23579.71	0.00518	7.46	7236	1.6	0.27	0.08	111.16	51345	-32234
5/5/21 8:30	0.00	18.00	380.00	205.00	0.97	198.24	75329.30	0.01655	23.84	8346	4.5	0.68	0.19	278.60	65169	-40190
5/27/21 8:55	1.40	19.43	255.06	257.40	0.98	250.97	64011.04	0.01407	20.26	8832	3.1	0.59	0.17	241.00	70889	-45910
6/22/21 8:10	0.90	19.60	219.50	220.00	1.00	219.34	48145.13	0.01058	15.23	9292	2.9	0.49	0.14	198.66	76598	-48231
7/9/21 9:08	0.90	18.70	336.00	140.00	0.99	138.60	46569.60	0.01023	14.74	9548	3.8	0.40	0.11	164.49	79692	-50074
8/4/21 12:05	--	--	220.00	130.00	1.00	130.00	28600.00	0.00396	5.70	9815	--	--	--	--	81840	--
9/24/21 14:30	0.30	22.50	190.20	129.00	1.00	129.00	24535.80	0.00539	7.76	10159	0	0.00	0.00	0.00	86043	-54055
10/7/21 11:25	0.60	20.80	415.00	180.00	0.99	178.20	73953.00	0.01625	23.40	10359	1.7	0.23	0.07	94.61	86652	-54463
10/14/21 8:05		19.10	230.00	202.00	0.99	199.98	45995.40	0.01011	14.55	10490	3.4	0.52	0.15	212.35	87705	-55220
12/9/21 11:59	0.30	19.80	38.00	280.00	0.71	198.80	7554.40	0.00166	2.39	10965	2.7	0.41	0.12	167.63	98376	-65890
12/15/21 13:35	0.60	20.20	20.10	320.00	0.98	313.60	6303.36	0.00139	1.99	10979	2.3	0.55	0.16	225.26	99567	-66936
12/23/21 7:45	0.80	20.20	16.50	225.00	0.98	220.50	3638.25	0.00080	1.15	10991	2.3	0.39	0.11	158.39	101055	-67835
12/30/21 8:00	0.90	20.30	22.00	233.00	0.98	228.34	5023.48	0.00110	1.59	11001	2.2	0.38	0.11	156.89	102160	-68441

Appendix C. BS-02 Narrative and Operations Data
SFPP Norwalk Pump Station, Norwalk, California

Date	Biodegradation							Cumulative Mass Removed	Flow
	CO2			C14 Correction Applied					
	CO2 Production (scf/minute)	CO2 Production (lbs/minute)	C14 Correction Factor Based on BaCO3	Equivalent Mass Biodegraded by CO2 (lbs/minute) C14 Corrected	Equivalent Mass Biodegraded by CO2 (lbs/day) C14 Corrected	Cumulative Equivalent Mass Consumed by CO2 (lbs)	Total Biodegraded Mass (lbs) C14 Corrected	Cumulative Overall Mass Removal (lbs)	BS-02 Flow (scfm)
5/15/20 11:30	0.01	0.00	0.57	0.00	0.24	0	0	0	0
5/15/20 12:46	0.01	0.00	0.57	0.00	0.26	0	0	0	26
5/18/20 8:20	0.01	0.00	0.57	0.00	0.19	1	1	1	23
5/18/20 8:20	0.01	0.00	0.57	0.00	0.19	1	1	1	30
5/18/20 11:58	0.00	0.00	0.57	0.00	0.13	1	1	1	70
5/20/20 8:25	2.86	0.35	0.57	0.07	94.10	1	175	195	70
5/20/20 8:25	2.86	0.35	0.57	0.07	94.10	1	175	195	100
5/20/20 11:18	2.52	0.31	0.57	0.06	83.03	12	185	206	100
5/22/20 14:15	2.33	0.29	0.57	0.05	76.67	189	348	415	100
5/22/20 14:15	2.33	0.29	0.57	0.05	76.67	189	348	415	135
5/26/20 8:46	1.85	0.23	0.57	0.04	60.89	478	577	697	135
5/26/20 14:18	1.77	0.22	0.57	0.04	58.32	492	591	716	135
5/27/20 8:10	2.02	0.25	0.57	0.05	66.42	535	640	782	135
5/29/20 9:13	2.01	0.25	0.57	0.05	66.11	671	775	957	135
6/3/20 14:48	9.29	1.14	0.57	0.21	306.01	1017	2376	2770	135
6/4/20 10:08	1.44	0.18	0.57	0.03	47.44	1263	2415	2849	135
6/5/20 13:00	1.98	0.24	0.57	0.05	65.23	1317	2488	2985	135
6/5/20 13:00	1.98	0.24	0.57	0.05	65.23	1317	2488	2985	100
6/10/20 10:45	2.46	0.30	0.57	0.06	81.18	1637	2886	3566	100
6/23/20 10:30	3.69	0.45	0.57	0.08	121.68	2691	4467	5766	3
6/24/20 11:20	2.04	0.25	0.57	0.05	67.14	2817	4536	5868	70
6/26/20 7:45	2.74	0.34	0.57	0.06	90.26	2941	4703	6118	100
6/30/20 12:49	3.04	0.37	0.57	0.07	100.28	3321	5125	6715	100
7/6/20 11:34	2.30	0.28	0.57	0.05	75.75	3918	5576	7386	100
7/8/20 13:02	2.37	0.29	0.57	0.05	77.96	4074	5737	7592	105
7/10/20 14:30	1.79	0.22	0.57	0.04	58.94	4235	5858	7761	129
7/14/20 10:30	1.36	0.17	0.57	0.03	44.97	4533	6031	8031	160
7/17/20 8:13	1.36	0.17	0.57	0.03	44.97	4632	6161	8345	185
7/24/20 13:30	1.64	0.20	0.57	0.04	53.91	4956	6550	9047	180
8/4/20 13:35	2.17	0.27	0.57	0.05	71.34	5550	7335	10130	162
8/21/2020 15:25	1.20	0.15	0.57	0.03	39.42	6768	8008	11030	170
9/17/2020 8:10	1.53	0.19	0.57	0.04	50.54	7820	9358	12853	180
9/29/2020 13:30	0.66	0.08	0.55	0.01	21.08	8438	9615	13259	180
10/15/2020 10:30	1.09	0.13	0.58	0.03	36.52	8773	10195	14190	174
10/30/2020 12:20	2.15	0.26	0.58	0.05	72.19	9323	11284	16200	83
11/4/2020 9:12	2.19	0.27	0.58	0.05	73.56	9675	11642	16835	188
12/30/20 11:16	0.62	0.08	0.65	0.02	23.01	13801	12933	19250	170
1/5/21 9:00	2.84	0.35	0.65	0.07	105.52	13936	13556	19977	170
2/23/21 10:00	2.22	0.27	0.65	0.06	82.73	19111	17613	24849	170
5/5/21 8:30	0.00	0.00	0.65	0.00	0.00	24980	17613	25959	170
5/27/21 8:55	3.51	0.43	0.65	0.09	130.44	24980	20485	29316	170
6/22/21 8:10	1.97	0.24	0.65	0.05	73.41	28367	22391	31684	180
7/9/21 9:08	1.25	0.15	0.65	0.03	46.39	29618	23182	32730	160
8/4/21 12:05	--	--	0.65	--	--	--	--	--	170
9/24/21 14:30	0.39	0.05	0.70	0.01	15.62	31988	23980	34139	185
10/7/21 11:25	1.07	0.13	0.70	0.03	43.15	32189	24535	34895	180
10/14/21 8:05	0.00	0.00	0.70	0.00	0.00	32485	24535	35025	180
12/9/21 11:59	0.60	0.07	0.70	0.02	24.07	32485	25887	36852	160
12/15/21 13:35	1.88	0.23	0.70	0.05	75.93	32631	26347	37326	170
12/23/21 7:45	1.76	0.22	0.70	0.05	71.18	33220	26900	37890	165
12/30/21 8:00	2.06	0.25	0.70	0.06	82.93	33719	27481	38481	168

Appendix D
HSVE-01 and BS-03 Narrative and Operations Data

Appendix D.1. HSVE-01 Narrative and Operations Data

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Time	Biosparge Flow (scfm)	SVE VOC (ppmv)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	SVE Flow (scfm)	SVE Vacuum (in H2O)	Comment
HSVE-1	4/6/2021	12:25	0	381	13.4	6	1	323	28.3	Step 1
HSVE-1	4/6/2021	16:00	0	405	13.4	6.2	1.1	323	29.0	Step 1
HSVE-1	4/7/2021	7:35	0	406.6	15.5	5.6	0.8	323	24.3	Step 1
HSVE-1	4/7/2021	12:45	0	421.5	15.6	4.7	0.8	512	47.1	Step 2
HSVE-1	4/7/2021	15:25	0	418	16.2	4.4	0.8	512	48.1	Step 2
HSVE-1	4/8/2021	7:35	0	425	17.1	4	0.6	512	48.2	Step 2
HSVE-1	4/8/2021	11:00	0	401.1	17.5	3.4	0.6	512	48.2	Step 2
HSVE-1	4/8/2021	12:00	0	398.1	17	3.4	0.6	560	55.0	Step 3
HSVE-1	4/8/2021	15:00	0	414.2	17.9	3.3	0.6	560	55.0	Step 3
HSVE-1	4/15/2021	9:00	0	421	17.7	3.5	0.6	560	55.0	
HSVE-1	4/21/2021	13:00	0	408	17.5	3.4	0.5	560	55.0	
HSVE-1	4/28/2021	11:00	0	340	19.9	1.4	0.5	550	55.0	Step 3 continued
HSVE-1	5/5/2021	9:00	0	390	18.9	1.3	0.5	550	55.0	
HSVE-1	5/5/2021	15:45	0	418	18.9	1.3	0.5	550	55.0	
HSVE-1	5/11/2021	16:45	45	1200	20.1	0.8	0.5	560	56.0	
HSVE-1	5/12/2021	8:15	45	422	19.9	1.3	0.1	500	56.0	
HSVE-1	5/12/2021	15:00	100	2000	20.2	1	0.5	500	56.0	
HSVE-1	5/13/2021	9:00	100	431.8	19.8	1.3	1.1	457	54.0	
HSVE-1	5/13/2021	14:52	100	5000	19.8	1	1	457	55.0	
HSVE-1	5/14/2021	8:30	50	5000	19.9	1.1	0.4	457	55.0	
HSVE-1	5/14/2021	14:18	50	4852	19.8	0.2	0.8	457	55.0	
HSVE-1	5/18/2021	9:00	50	1410	17.4	1.9	1	500	55.0	
HSVE-1	5/18/2021	12:52	50	1900	18.7	1.2	0.5	500	55.0	
HSVE-1	5/18/2021	15:30	50	2650	19.5	1.2	0.5	500	55.0	
HSVE-1	5/19/2021	9:30	50	440	19.7	1.2	1.1	457	49.0	
HSVE-1	5/19/2021	13:10	100	4830	20	0.9	0.6	470	49.0	
HSVE-1	5/19/2021	16:15	100	390	19.9	0.8	0.6	485	49.0	
HSVE-1	5/20/2021	9:30	100	455	19.6	1.4	1.2	500	56.0	
HSVE-1	5/20/2021	11:49	100	475	19.5	0.9	0.8	500	56.0	
HSVE-1	5/26/2021	11:02	100	415	19.3	1.2	1.1	460	54.0	
HSVE-1	5/26/2021	12:15	150	395	18.9	1.1	1.2	460	54.0	
HSVE-1	5/26/2021	14:01	150	418	19.4	0.9	0.9	530	54.0	
HSVE-1	5/27/2021	7:48	150	374.2	19.5	1.2	1.3	600	56.0	
HSVE-1	5/27/2021	11:20	200	379.1	19.2	1	1	600	54.5	
HSVE-1	5/28/2021	10:15	100	335	18.5	1.3	1.1	510	53.5	
HSVE-1	5/28/2021	11:30	100	421	18.7	1	1.2	510	55.6	

Appendix D.1. HSVE-01 Narrative and Operations Data

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Time	Biosparge Flow (scfm)	SVE VOC (ppmv)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	SVE Flow (scfm)	SVE Vacuum (in H2O)	Comment
HSVE-1	6/1/2021	12:40	100	386.2	18.5	1.2	1	600	56.0	SVE flow was between 500-600.
HSVE-1	6/1/2021	14:45	100	360.1	18.8	1	0.5	600	56.0	SVE flow was between 500-600.
HSVE-1	6/10/2021	10:35	200	468.3	18	1.3	0.8	600	56.0	SVE flow was between 500-600.
HSVE-1	6/10/2021	12:58	200	472.5	18.1	1.4	0.8	600	55.0	SVE flow was between 500-600.
HSVE-1	6/10/2021	15:09	200	442.5	18.5	1	0.6	600	55.0	SVE flow was between 500-600.
HSVE-1	6/11/2021	7:55	300	441	19.4	1.4	1	600	56.0	SVE flow was between 500-600.
HSVE-1	6/11/2021	10:28	300	468	19.1	0.9	0.6	600	56.0	SVE flow was between 500-600.
HSVE-1	6/22/2021	7:55	200	344.9	18.8	1.3	0.4	600	56.0	SVE flow was between 500-600.
HSVE-1	6/25/2021	8:45	250	354	16.6	1.6	0.6	510	54.5	SVE flow was between 460-510.
HSVE-1	6/25/2021	11:02	250	405	19.2	1	0.5	550	55.1	SVE flow was between 450-550.
HSVE-1	6/28/2021	11:00	250	422	18.4	1.1	0.5	600	56.0	SVE flow was between 450-600.
HSVE-1	6/28/2021	11:10	250	424	18.3	1.1	0.5	600	56.0	SVE flow was between 450-600.
HSVE-1	6/28/2021	13:50	250	415	18.4	1	0.6	600	56.0	SVE flow was between 450-600.
HSVE-1	7/23/2021	8:00	130	421	19.7	1.3	0.3	600	56	SVE flow was between 500-600.
HSVE-1	7/23/2021	9:00	130	408	19.8	1.3	0.2	600	56	SVE flow was between 500-600.
HSVE-1	8/6/2021	9:25	275	365	19.1	--	--	555	56.45	SVE flow was between 470 and 555.
HSVE-1	8/31/2021	7:45	200	52.1	19.6	0.9	0.2	450	51.5	Check Drip Legs. Low VOCs.
HSVE-1	8/31/2021	10:45	250	408	18.4	1.1	0.4	500	51.5	Jame Dye Drained DLs for HSVE-1. BS-03 up to 250 scfm @ 8:30
HSVE-1	9/1/2021	7:45	250	195	19.5	1	0.2	450	51.4	DL could be full again, to be cleared Thursday (9/2)
HSVE-1	9/1/2021	8:00	250	202	19.5	1.1	0.1	450	51.5	
HSVE-1	9/9/2021	9:05	150	208	19.5	1.1	0.1	500	51.3	
HSVE-1	9/9/2021	12:45	150	215	19.4	1.1	0.1	500	51.5	
HSVE-1	9/16/2021	11:00	275	238.9	19.3	1.6	0.2	550	53.5	BS-03 Flow recovering from 250-300 scfm. Avg. 225 scfm
HSVE-1	9/21/2021	13:45	200	72.4	21	0.8	0	200	54.5	Variable flow (100-200;450-500). James Dye removed 12 gal (total) in 2 rounds of DL clearing. 6 gal total from DL #1
HSVE-1	9/21/2021	14:45	200	1100	19.4	0.8	0.1	500	54	Water in tedlar & sample line
HSVE-1	9/21/2021	14:55	200	1090	19.6	1.2	0.3	500	54.5	Water in tedlar & sample line
HSVE-1	9/30/2021	16:30	250	1312	20.1	0.6	0.05	400	52	400 scfm average flow (varied from 160-530 scfm)
HSVE-1	10/1/2021	8:55	250	1260	19.6	0.6	0.08	400	52.5	400 scfm average flow (varied from 0-510 scfm)
HSVE-1	10/7/2021	11:05	260	382	20.7	0.2	0	460	52.24	400 scfm average flow (varied from 0-510 scfm)
HSVE-1	10/14/2021	8:03	305	950	19.4	NM	0	328	50.5	Driplegs cleared 10/5 & 10/7. Water in tedlar bag. Cleared out pilot tube.
HSVE-1	10/19/2021	14:25	200	326	19.7	0.9	0.1	427	50.53	Methane LEL, Diff P = 0.5 in WC; water in sample line, and wate in DL 90 deg elbow

Appendix D.1. HSVE-01 Narrative and Operations Data

SFPP Norwalk Pump Station, Norwalk, California

Location	Date	Time	Biosparge Flow (scfm)	SVE VOC (ppmv)	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	SVE Flow (scfm)	SVE Vacuum (in H2O)	Comment
HSVE-1	11/10/2021	12:05	195	185	19.9	NM	NM	430	52.4	Drained drip lgs and restarted
HSVE-1	11/15/2021	14:07	192	337	19.5	0.9	0.1	400	53.32	BS-02 off
HSVE-1	12/2/2021	14:01	200	250	19.6	NM	NM	450	53.3	
HSVE-1	12/9/2021	12:52	280	153	19.2	0.6	0	395	51.6	
HSVE-1	12/15/2021	13:30	320	421	19.4	0.9	0	400	53.1	Flow measured at 9:00 was 395, 0.45 approx 700 with velocicalc. High moisture
HSVE-1	12/17/2021	14:30	250	102	19.9	0.5	0	450	49.3	
HSVE-1	12/23/2021	7:45	240	260	19.9	0.9	0	360	55	Collin Previously Drained 25 gallons from drip legs Jacobs drained manifold 83 gallons (EQ tank at 1600 approx 200_ from 12/16)
HSVE-1	12/30/2021	7:55	245	272	19.8	0.8	0	400	56	Drip legs + manifold had not been cleared @ time of monitoring

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-02S	160	4/7/2021	12:33	20.1	0.7	0	0.1	21.1
SVM-03D	10	4/7/2021	12:40	20.9	0.3	0	0.2	21.1
SVM-03S	10	4/7/2021	12:41	20.9	0.3	0	0.3	21.1
SVM-05D	130	4/7/2021	12:51	20.8	0.1	0	0.1	21.1
SVM-05S	130	4/7/2021	12:50	20.9	0.1	0	0.2	21.1
SVM-06D	180	4/7/2021	13:42	20	0.1	0	4	21.1
SVM-06S	180	4/7/2021	13:45	19.7	0.1	0	2.4	21.1
SVM-07D	80	4/7/2021	13:25	19.9	0.2	0	5.3	21.1
SVM-07S	80	4/7/2021	13:28	19.1	0.5	0	4.1	21.1
SVM-08D	40	4/7/2021	12:56	20.9	0	0	0.1	21.1
SVM-08S	40	4/7/2021	12:55	20.8	0.2	0	0.2	21.1
SVM-10D	-20	4/7/2021	13:16	18.5	0.8	0	17.9	21.1
SVM-15D	250	4/7/2021	13:52	19	0.5	0	1.8	21.1
SVM-15M	250	4/7/2021	14:01	19.5	0.4	0	0.8	21.1
SVM-15S	250	4/7/2021	14:03	19.5	0.4	0	2	21.1
GMW-O-12	25	4/7/2021	14:23	20.9	0	0	36.5	21.1
GMW-O-21	40	4/7/2021	14:42	20.9	0	0	0.2	21.1
SVM-02S	160	4/8/2021	13:35	19.6	0.7	0	0.1	20.9
SVM-03D	10	4/8/2021	13:10	20.2	0.7	0	1.4	20.9
SVM-03S	10	4/8/2021	13:12	20.4	0.3	0	0.8	20.9
SVM-05D	130	4/8/2021	14:02	21.4	0	0	1.1	20.9
SVM-05S	130	4/8/2021	14:06	21.2	0	0	0.8	20.9
SVM-06D	180	4/8/2021	13:29	21.1	0.1	0	0.1	20.9
SVM-06S	180	4/8/2021	13:29	20.3	0.1	0	0.1	20.9
SVM-07D	80	4/8/2021	13:05	20.1	0.3	0	0.2	20.9
SVM-07S	80	4/8/2021	13:05	19.1	0.9	0	0	20.9
SVM-08D	40	4/8/2021	13:51	20.9	0.2	0	1.2	20.9
SVM-08S	40	4/8/2021	13:54	21	0	0	0.1	20.9
SVM-10D	-20	4/8/2021	12:55	16.1	2.7	1.1	0.4	20.9
SVM-15D	250	4/8/2021	14:00	19.9	0.3	0	0.1	20.9
SVM-15M	250	4/8/2021	14:05	19.7	0.5	0	0.1	20.9
SVM-15S	250	4/8/2021	14:13	19.8	0	0	0.1	20.9
SVM-16D	-20	4/8/2021	13:38	20.4	1.1	0	5.4	20.9
SVM-16M	-20	4/8/2021	13:42	20.4	0.7	0	2.1	20.9
SVM-16S	-20	4/8/2021	13:45	20.8	0.5	0	1.5	20.9
GMW-O-11	200	4/8/2021	14:20	20.9	0	0	0.5	20.9
GMW-O-12	25	4/8/2021	14:38	20.9	0.1	0	7.4	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-2	160	4/8/2021	13:28	20.4	0	0	5.8	20.9
GMW-O-3	-90	4/8/2021	14:12	21.5	0	0	0.9	20.9
GMW-O-5	-150	4/8/2021	12:48	20.4	0	0	4.9	20.9
MW-SF-9	130	4/8/2021	14:58	20.9	0	0	2.8	20.9
SVM-1D	230	4/15/2021	10:10	20.3	0.8	0	0	21.2
SVM-1S	230	4/15/2021	10:12	19.8	1.5	0	0	21.2
SVM-02S	160	4/15/2021	10:20	20.1	0.7	0	0	21.2
SVM-03S	10	4/15/2021	12:15	21.4	0.4	0	0	21.2
SVM-05D	130	4/15/2021	12:00	21.2	0	0	0	21.2
SVM-05S	130	4/15/2021	12:05	21.1	0.1	0	0	21.2
SVM-06D	180	4/15/2021	10:55	20.1	0.2	0	0.1	21.2
SVM-06S	180	4/15/2021	10:52	20.3	0.2	0	0.1	21.2
SVM-07D	80	4/15/2021	10:40	20.5	0.7	0	0	21.2
SVM-07S	80	4/15/2021	10:45	20.2	1.1	0	0	21.2
SVM-08D	40	4/15/2021	11:50	21.1	0	0	0	21.2
SVM-08S	40	4/15/2021	11:55	20.9	0.2	0	0	21.2
SVM-10D	-20	4/15/2021	10:30	20.2	1.7	0	0.2	21.2
SVM-15D	250	4/15/2021	10:59	19.6	0.6	0	0	21.2
SVM-15M	250	4/15/2021	11:08	19.7	0.6	0	0	21.2
SVM-15S	250	4/15/2021	11:10	19.7	0.6	0	0	21.2
SVM-16D	-20	4/15/2021	11:40	20.5	0.2	0	0	21.2
SVM-16M	-20	4/15/2021	11:45	20.5	0.6	0	0	21.2
SVM-16S	-20	4/15/2021	11:48	20.5	0.5	0	0	21.2
GMW-O-11	200	4/15/2021	11:10	20.7	0.1	0	0	21.2
GMW-O-12	25	4/15/2021	11:30	20.6	0.1	0	0.8	21.2
GMW-O-20	120	4/15/2021	11:20	20.6	0	0	0	21.2
GMW-O-21	40	4/15/2021	12:05	21.2	0	0	0	21.2
GMW-O-3	-90	4/15/2021	9:45	19.1	0.1	0	0	21.2
GMW-O-5	-150	4/15/2021	9:20	21	0.1	0	0	21.2
SVM-1D	230	4/21/2021	13:00	20	1	0	0.1	21.4
SVM-1S	230	4/21/2021	13:01	21.2	0.7	0	0	21.4
SVM-02S	160	4/21/2021	12:48	18.7	2	0	0	21.4
SVM-03D	10	4/21/2021	10:31	20.8	0.3	0	0.3	21.4
SVM-03S	10	4/21/2021	10:28	20.8	0.1	0	0.2	21.4
SVM-05D	130	4/21/2021	11:09	21.6	0.1	0	0	21.4
SVM-05S	130	4/21/2021	11:11	21.5	0.1	0	0.1	21.4
SVM-06D	180	4/21/2021	11:48	21.1	0.2	0	0.1	21.4

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-06S	180	4/21/2021	11:45	21.2	0.2	0	0.1	21.4
SVM-07D	80	4/21/2021	11:35	21.1	1.1	0	0	21.4
SVM-07S	80	4/21/2021	11:38	21.4	0.6	0	0.1	21.4
SVM-08D	40	4/21/2021	10:50	21.2	0.2	0	0.1	21.4
SVM-08S	40	4/21/2021	11:00	21	0.2	0	0.1	21.4
SVM-10D	-20	4/21/2021	11:28	21.1	2	0	0.1	21.4
SVM-15D	250	4/21/2021	11:55	20.5	0.7	0	0.1	21.4
SVM-15M	250	4/21/2021	11:58	20.8	0.6	0	0	21.4
SVM-15S	250	4/21/2021	12:01	20.8	0.7	0	0.1	21.4
SVM-16D	-20	4/21/2021	10:45	20.5	0.6	0	1.2	21.4
SVM-16M	-20	4/21/2021	10:51	20.9	0.3	0	0.2	21.4
SVM-16S	-20	4/21/2021	10:52	21	0.1	0	0.1	21.4
GMW-O-11	200	4/21/2021	13:07	21.9	0.1	0	0.1	21.4
GMW-O-12	25	4/21/2021	12:33	21.9	0.1	0	0.1	21.4
GMW-O-2	160	4/21/2021	12:25	21.9	0.1	0	0	21.4
GMW-O-20	120	4/21/2021	12:15	22	0	0	0	21.4
GMW-O-3	-90	4/21/2021	9:58	20.7	0.1	0	0.3	21.4
GMW-O-5	-150	4/21/2021	9:40	20.8	0.1	0	0	21.4
SVM-1D	230	4/28/2021	11:35	18.5	1.3	0	33	20.9
SVM-1S	230	4/28/2021	11:30	20.2	0.7	0	2.3	20.9
SVM-02	160	4/28/2021	11:40	18.6	1.6	0	1.1	20.9
SVM-03D	10	4/28/2021	14:35	20.6	0.1	0	0.2	20.9
SVM-03S	10	4/28/2021	14:38	20.6	0.1	0	0.1	20.9
SVM-06D	180	4/28/2021	13:00	21.1	0.1	0	0.4	20.9
SVM-06S	180	4/28/2021	12:55	21.1	0.2	0	0.6	20.9
SVM-07D	80	4/28/2021	13:17	21.1	0.9	0	0.4	20.9
SVM-07S	80	4/28/2021	13:20	20.9	0.8	0	0.4	20.9
SVM-08D	40	4/28/2021	14:00	20.6	0.1	0	0.2	20.9
SVM-08S	40	4/28/2021	14:05	20.9	0.1	0	0.2	20.9
SVM-10D	-20	4/28/2021	13:44	20.9	0.2	0	0.4	20.9
SVM-15D	250	4/28/2021	12:06	21.2	0.1	0	1.2	20.9
SVM-15M	250	4/28/2021	12:05	20.9	0.5	0	0.6	20.9
SVM-15S	250	4/28/2021	12:07	20.9	0.5	0	0.6	20.9
SVM-16D	-20	4/28/2021	14:19	20.9	0.1	0	0.2	20.9
SVM-16M	-20	4/28/2021	14:24	20.9	0.1	0	0.1	20.9
SVM-16S	-20	4/28/2021	14:26	20.9	0.1	0	0.1	20.9
GMW-O-20	120	4/28/2021	13:08	21.3	0.1	0	0.8	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-12	25	4/28/2021	13:30	20.9	0.1	0	2.5	20.9
GMW-O-2	160	4/28/2021	11:54	20	0.5	0	0.9	20.9
GMW-O-11	200	4/28/2021	12:28	21.4	0.1	0	1.2	20.9
GMW-O-21	40	4/28/2021	14:10	20.9	0.1	0	0.2	20.9
GMW-O-3	-90	4/28/2021	13:50	20.9	0.1	0	0.4	20.9
GMW-O-5	-150	4/28/2021	14:45	20.9	0	0	0	20.9
SVM-1D	230	5/5/2021	12:42	18.1	1.3	0	0	20.9
SVM-1S	230	5/5/2021	12:44	19.9	0.8	0	0	20.9
SVM-02D	160	5/5/2021	12:50	17.8	1.8	0	0	20.9
SVM-03D	10	5/5/2021	14:50	21.3	0.1	0	0.8	20.9
SVM-03S	10	5/5/2021	14:54	21.3	0	0	0.6	20.9
SVM-05D	130	5/5/2021	14:35	21.7	0	0	0.9	20.9
SVM-05S	130	5/5/2021	14:37	21.5	0	0	0.9	20.9
SVM-06D	180	5/5/2021	13:22	20.5	0.1	0	0.1	20.9
SVM-06S	180	5/5/2021	13:24	20.2	0.1	0	0	20.9
SVM-07D	80	5/5/2021	13:15	19.9	0.9	0	0	20.9
SVM-07S	80	5/5/2021	13:19	20.1	0.6	0	0	20.9
SVM-08D	40	5/5/2021	14:28	21.5	0	0	0.9	20.9
SVM-08S	40	5/5/2021	14:32	21.4	0.1	0	0.5	20.9
SVM-10D	-20	5/5/2021	n/a	20.3	0.2	0	0	20.9
SVM-15D	250	5/5/2021	13:30	19.7	0.4	0	4.7	20.9
SVM-15M	250	5/5/2021	13:33	20	0.5	0	0	20.9
SVM-15S	250	5/5/2021	13:37	20.3	0.5	0	0.3	20.9
SVM-16D	-20	5/5/2021	14:15	21.3	0.1	0	1.5	20.9
SVM-16M	-20	5/5/2021	14:18	21.3	0.2	0	1	20.9
SVM-16S	-20	5/5/2021	14:22	21.4	0.1	0	0.9	20.9
GMW-O-11	200	5/5/2021	13:40	21.2	0	0	3.8	20.9
GMW-O-12	25	5/5/2021	13:50	21.3	0	0	3.9	20.9
GMW-O-2	160	5/5/2021	13:05	20	0.1	0	0	20.9
GMW-O-20	120	5/5/2021	13:45	21.5	0	0	0.9	20.9
GMW-O-21	40	5/5/2021	14:43	21.7	0	0	0.9	20.9
GMW-O-3	-90	5/5/2021	14:06	21.5	0	0	1.5	20.9
GMW-O-5	-150	5/5/2021	15:00	21.6	0	0	0.5	20.9
SVM-1D	230	5/11/2021	14:50	18.6	1.2	0	0.1	21.7
SVM-1S	230	5/11/2021	14:50	20.3	0.7	0	0.5	21.7
SVM-02S	160	5/11/2021	14:55	18.4	1.7	0	0.1	21.7
SVM-03D	10	5/11/2021	16:16	21.6	0	0	0.3	21.7

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-03S	10	5/11/2021	16:17	21.5	0	0	0.3	21.7
SVM-05D	130	5/11/2021	16:05	22	0	0	0	21.7
SVM-05S	130	5/11/2021	16:06	21.6	0	0	0	21.7
SVM-06D	180	5/11/2021	15:22	20.5	0.1	0	0	21.7
SVM-06S	180	5/11/2021	15:23	20.6	0.1	0	0.1	21.7
SVM-07D	80	5/11/2021	15:13	20.3	0.8	0	0.1	21.7
SVM-07S	80	5/11/2021	15:14	20.4	0.6	0	0	21.7
SVM-08D	40	5/11/2021	15:37	21.5	0	0	0.1	21.7
SVM-08S	40	5/11/2021	15:39	21.5	0	0	0.1	21.7
SVM-10D	-20	5/11/2021	15:11	20.5	0.7	0	0.1	21.7
SVM-15D	250	5/11/2021	15:25	20.6	0.1	0	0	21.7
SVM-15M	250	5/11/2021	15:27	20.1	0.5	0	0.1	21.7
SVM-15S	250	5/11/2021	15:29	20.1	0.5	0	0	21.7
SVM-16D	-20	5/11/2021	15:51	21	0.1	0	0.1	21.7
SVM-16M	-20	5/11/2021	15:52	21.7	0.1	0	0.4	21.7
SVM-16S	-20	5/11/2021	15:53	21.3	0	0	0	21.7
GMW-O-11	200	5/11/2021	15:30	21	0.1	0	0	21.7
GMW-O-12	25	5/11/2021	15:43	21	0	0	0.1	21.7
GMW-O-2	160	5/11/2021	15:03	19.9	0.8	0	0.1	21.7
GMW-O-20	120	5/11/2021	15:37	21.7	0	0	0.1	21.7
GMW-O-21	40	5/11/2021	16:09	21.8	0	0	0	21.7
GMW-O-3	-90	5/11/2021	15:08	20.6	0.5	0	0.2	21.7
GMW-O-5	-150	5/11/2021	16:27	21.3	0.2	0	0	21.7
GMW-O-14	n/a	5/11/2021	16:21	21.9	0	0	0	21.7
SVM-1D	230	5/11/2021	11:23	18.5	1.5	0	0	21.3
SVM-1S	230	5/11/2021	11:21	20.5	9	0	0.2	21.3
SVM-02S	160	5/11/2021	11:28	18.9	1.3	0	0	21.3
SVM-03D	10	5/11/2021	13:36	20.9	0.1	0	0	21.3
SVM-03S	10	5/11/2021	13:35	20.4	0	0	0.2	21.3
SVM-05D	130	5/11/2021	13:25	21	0	0	0.2	21.3
SVM-05S	130	5/11/2021	13:27	20.1	0.1	0	0.4	21.3
SVM-06D	180	5/11/2021	12:20	19.6	0.2	0	0	21.3
SVM-06S	180	5/11/2021	12:30	20.5	0.4	0	0.3	21.3
SVM-07D	80	5/11/2021	12:10	19.5	0.9	0	0.2	21.3
SVM-07S	80	5/11/2021	12:12	19.5	0.7	0	0.2	21.3
SVM-08D	40	5/11/2021	13:20	21	0	0	0.7	21.3
SVM-08S	40	5/11/2021	13:21	20.2	0.1	0	0	21.3

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-10D	-20	5/11/2021	12:05	20.2	0.9	0	0.1	21.3
SVM-15D	250	5/11/2021	12:36	19.5	0.7	0	0	21.3
SVM-15M	250	5/11/2021	12:37	19.6	0.6	0	0.2	21.3
SVM-15S	250	5/11/2021	12:38	19.9	0.6	0	0	21.3
SVM-16D	-20	5/11/2021	13:05	20.6	0.1	0	1.1	21.3
SVM-16M	-20	5/11/2021	13:10	20.2	0.2	0	0	21.3
SVM-16S	-20	5/11/2021	13:15	20.8	0.1	0	0.1	21.3
GMW-O-11	200	5/11/2021	12:40	20.5	0.1	0	0.3	21.3
GMW-O-12	25	5/11/2021	12:55	20.2	0	0	0.1	21.3
GMW-O-2	160	5/11/2021	11:35	20.3	0.4	0	0.1	21.3
GMW-O-20	120	5/11/2021	12:40	20.5	0	0	0.3	21.3
GMW-O-21	40	5/11/2021	13:28	21	0	0	0	21.3
GMW-O-3	-90	5/11/2021	12:00	20.7	0.1	0	0.2	21.3
GMW-O-5	-150	5/11/2021	13:40	20.7	0	0	0	21.3
SVM-1D	230	5/12/2021	13:19	18.2	1	0	0.2	20.9
SVM-1S	230	5/12/2021	13:20	19.6	1	0	0	20.9
SVM-02S	160	5/12/2021	13:23	17.1	1.9	0	0.6	20.9
SVM-03D	10	5/12/2021	13:55	20.2	0.1	0	1	20.9
SVM-03S	10	5/12/2021	13:58	20.3	0.1	0	0.6	20.9
SVM-06D	180	5/12/2021	14:18	20.9	0.2	0	0	20.9
SVM-06S	180	5/12/2021	14:30	21	0.2	0	0	20.9
SVM-07D	80	5/12/2021	14:23	20.9	0.9	0	0.1	20.9
SVM-07S	80	5/12/2021	14:25	20.9	0.7	0	0	20.9
SVM-08D	40	5/12/2021	14:11	21.2	0.1	0	0.1	20.9
SVM-08S	40	5/12/2021	14:13	21.1	0.1	0	0	20.9
SVM-10D	-20	5/12/2021	14:21	20.9	1.1	0	0	20.9
SVM-15D	250	5/12/2021	14:34	20.2	0.6	0	0	20.9
SVM-15M	250	5/12/2021	14:36	20.6	0.5	0	0	20.9
SVM-15S	250	5/12/2021	14:38	20.6	0.6	0	0	20.9
SVM-16D	-20	5/12/2021	14:05	20.7	0.2	0	0.1	20.9
SVM-16M	-20	5/12/2021	14:07	20.9	0.1	0	0.1	20.9
SVM-16S	-20	5/12/2021	14:10	20.9	0	0	0	20.9
GMW-O-11	200	5/12/2021	14:40	21.6	0	0	0	20.9
GMW-O-12	25	5/12/2021	14:50	21.7	0	0	0.2	20.9
GMW-O-2	160	5/12/2021	13:32	19.5	0.1	0	0.2	20.9
GMW-O-20	120	5/12/2021	14:45	21.8	0	0	0.1	20.9
GMW-O-21	40	5/12/2021	14:16	21.4	0	0	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-3	-90	5/12/2021	13:38	19.7	0.1	0	1	20.9
GMW-O-5	-150	5/12/2021	13:45	18.9	0.9	0	0.1	20.9
GMW-O-14	n/a	5/12/2021	14:00	20.6	0	0	0.1	20.9
SVM-1D	230	5/12/2021	8:33	18.7	1.4	0	0.5	n/a
SVM-1S	230	5/12/2021	8:34	20.4	0.9	0	0.3	n/a
SVM-02S	160	5/12/2021	8:50	18.4	2	0	0.4	n/a
SVM-03D	10	5/12/2021	11:04	20.6	0	0	0.3	n/a
SVM-03S	10	5/12/2021	11:05	20.6	0	0	0.2	n/a
SVM-05D	130	5/12/2021	10:38	21.4	0	0	0	n/a
SVM-05S	130	5/12/2021	10:39	21.4	0	0	0	n/a
SVM-06D	180	5/12/2021	9:15	20.6	0.2	0	0.3	n/a
SVM-06S	180	5/12/2021	9:16	20.7	0.2	0	0.2	n/a
SVM-07D	80	5/12/2021	9:10	20.6	1.1	0	0.1	n/a
SVM-07S	80	5/12/2021	9:11	20.7	0.8	0	0.2	n/a
SVM-08D	40	5/12/2021	10:28	21.3	0.1	0	0	n/a
SVM-08S	40	5/12/2021	10:30	21.3	0	0	0	n/a
SVM-10D	-20	5/12/2021	9:00	20.7	1.6	0	0.3	n/a
SVM-15D	250	5/12/2021	9:27	19.8	0.7	0	0.2	n/a
SVM-15M	250	5/12/2021	9:28	20.5	0.4	0	0.1	n/a
SVM-15S	250	5/12/2021	9:30	20.2	0.6	0	0.2	n/a
SVM-16D	-20	5/12/2021	10:15	20.9	0.2	0	0.1	n/a
SVM-16M	-20	5/12/2021	10:17	21	0.2	0	0	n/a
SVM-16S	-20	5/12/2021	10:20	21.3	0	0	0	n/a
GMW-O-11	200	5/12/2021	9:37	20.8	0.2	0	0.3	n/a
GMW-O-12	25	5/12/2021	10:06	20.9	0	0	8.1	n/a
GMW-O-2	160	5/12/2021	8:45	21.2	0.1	0	0.2	n/a
GMW-O-20	120	5/12/2021	9:53	20.8	0.1	0	0.5	n/a
GMW-O-21	40	5/12/2021	10:51	21.4	0	0	0.7	n/a
GMW-O-3	-90	5/12/2021	8:55	20.9	0.2	0	1.2	n/a
GMW-O-5	-150	5/12/2021	11:15	20.1	0.2	0	0.2	n/a
SVM-1D	230	5/13/2021	9:31	19.1	1.2	0	0.6	20.9
SVM-1S	230	5/13/2021	9:37	20.5	0.7	0	0.1	20.9
SVM-02S	160	5/13/2021	12:05	18.9	1.8	0.1	0.2	20.9
SVM-03D	10	5/13/2021	10:18	20.9	0.1	0	6.1	20.9
SVM-03S	10	5/13/2021	10:16	21.4	0.1	0	0.1	20.9
SVM-05D	130	5/13/2021	10:47	21.6	0	0	2.7	20.9
SVM-05S	130	5/13/2021	10:50	21.6	0.1	0	0.1	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-06D	180	5/13/2021	11:16	21.2	0.2	0	0	20.9
SVM-06S	180	5/13/2021	11:18	21.3	0.2	0	0.4	20.9
SVM-07D	80	5/13/2021	11:09	21.3	0.8	0	0.1	20.9
SVM-07S	80	5/13/2021	11:11	21.3	0.7	0	0.5	20.9
SVM-08D	40	5/13/2021	10:54	21.6	0.1	0	0.1	20.9
SVM-08S	40	5/13/2021	10:55	21.5	0.1	0	1.6	20.9
SVM-10D	-20	5/13/2021	11:05	21.4	0.9	0	0.6	20.9
SVM-15D	250	5/13/2021	11:21	20.6	0.5	0	0.1	20.9
SVM-15M	250	5/13/2021	11:22	21.3	0.6	0	0.1	20.9
SVM-15S	250	5/13/2021	11:23	20.8	0.6	0	0.1	20.9
SVM-16D	-20	5/13/2021	10:34	21.4	0	0	0	20.9
SVM-16M	-20	5/13/2021	10:37	21.5	0.1	0	0.4	20.9
SVM-16S	-20	5/13/2021	10:30	21.5	0.1	0	0.3	20.9
GMW-O-11	200	5/13/2021	11:30	21.5	0.1	0	0.6	20.9
GMW-O-12	25	5/13/2021	11:45	15.5	1.6	58.9	5000	20.9
GMW-O-2	160	5/13/2021	9:41	21	0.2	0	0.4	20.9
GMW-O-20	120	5/13/2021	11:37	21.6	0	0	0.3	20.9
GMW-O-21	40	5/13/2021	10:59	21.6	0	0	0.9	20.9
GMW-O-3	-90	5/13/2021	9:59	21.3	0.1	0	1.1	20.9
GMW-O-5	-150	5/13/2021	10:10	19.1	1.8	0	0.7	20.9
HSVE-01	0	5/13/2021	9:00	19.8	1.3	1.1	431.8	20.9
GMW-014	10	5/13/2021	10:25	21.3	0.2	0	3.2	20.9
SVM-03D	10	5/13/2021	13:51	20.9	0.1	0	1.6	n/a
SVM-03S	10	5/13/2021	13:52	20.9	0.1	0	2.9	n/a
SVM-05D	130	5/13/2021	14:15	21.1	0	0	7.3	n/a
SVM-05S	130	5/13/2021	14:16	21	0	0	0.2	n/a
SVM-06D	180	5/13/2021	13:18	20.8	0.2	0	0.3	n/a
SVM-06S	180	5/13/2021	13:19	20.8	0.2	0	5.8	n/a
SVM-07D	80	5/13/2021	13:15	20.7	0.9	0	0.3	n/a
SVM-07S	80	5/13/2021	13:16	20.8	0.7	0	0	n/a
SVM-08D	40	5/13/2021	14:10	21.1	0	0	0.4	n/a
SVM-08S	40	5/13/2021	14:11	21.1	0	0	1.7	n/a
SVM-10D	-20	5/13/2021	13:10	20.9	1.2	0	0.5	n/a
SVM-16D	-20	5/13/2021	13:59	20.9	0.1	0	0.5	n/a
SVM-16M	-20	5/13/2021	14:01	21.0	0.1	0	0.4	n/a
SVM-16S	-20	5/13/2021	14:02	21.0	0	0	1.4	n/a
GMW-O-12	25	5/13/2021	14:36	14.8	1.6	82	5000	n/a

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-20	120	5/13/2021	13:30	21.2	0.1	0	4.4	n/a
GMW-O-21	40	5/13/2021	14:21	21.1	0	0	2.4	n/a
GMW-O-3	-90	5/13/2021	13:38	21.2	0	0	5.2	n/a
GMW-O-5	-150	5/13/2021	13:45	17.3	2.8	0	4.4	n/a
GMW-014	n/a	5/13/2021	13:55	21.1	0.1	0	4.9	n/a
SVM-1D	230	5/14/2021	11:37	18.4	1.3	0	0	21.3
SVM-1S	230	5/14/2021	11:39	20.2	0.7	0	0	21.3
SVM-02S	160	5/14/2021	11:43	17.9	1.8	0	0	21.3
SVM-03D	10	5/14/2021	13:15	21	0.1	0	0.3	21.3
SVM-03S	10	5/14/2021	13:16	21.1	0.1	0	0.2	21.3
SVM-05D	130	5/14/2021	13:06	21.1	0.1	0	1	21.3
SVM-05S	130	5/14/2021	13:08	21	0	0	0.3	21.3
SVM-06D	180	5/14/2021	12:17	19.6	0.1	0	0	21.3
SVM-06S	180	5/14/2021	12:19	19.6	0.1	0	0	21.3
SVM-07D	80	5/14/2021	12:08	19.5	0.8	0	0	21.3
SVM-07S	80	5/14/2021	12:09	19.7	0.6	0	0	21.3
SVM-08D	40	5/14/2021	13:00	21	0.1	0	0.1	21.3
SVM-08S	40	5/14/2021	13:01	21.1	0.1	0	0.4	21.3
SVM-10D	-20	5/14/2021	12:05	20	0.4	0	0.1	21.3
SVM-15D	250	5/14/2021	12:23	19	0.4	0	0	21.3
SVM-15M	250	5/14/2021	12:25	19	0.5	0	0	21.3
SVM-15S	250	5/14/2021	12:27	19.1	0.6	0	0	21.3
SVM-16D	-20	5/14/2021	12:55	20.9	0.1	0	0	21.3
SVM-16M	-20	5/14/2021	12:57	21	0.1	0	0.4	21.3
SVM-16S	-20	5/14/2021	12:59	21	0	0	0.2	21.3
GMW-O-11	200	5/14/2021	12:34	19.9	0.1	0	0.1	21.3
GMW-O-12	25	5/14/2021	12:50	13.9	1.3	9.9	5000	21.3
GMW-O-2	160	5/14/2021	11:48	20	0.3	0	0	21.3
GMW-O-20	120	5/14/2021	12:42	20.4	0	0	0	21.3
GMW-O-21	40	5/14/2021	13:11	21	0.3	0	2.3	21.3
GMW-O-3	-90	5/14/2021	11:57	20.1	0	0	0.1	21.3
GMW-O-5	-150	5/14/2021	13:28	18.1	2.2	0	0.9	21.3
SVM-1D	230	5/18/2021	15:20	18.9	0.8	0	0	20.9
SVM-1S	230	5/18/2021	15:22	20.1	0.4	0	0	20.9
SVM-03D	10	5/18/2021	13:47	21	0.1	0	0.2	20.9
SVM-03S	10	5/18/2021	13:49	21	0.1	0	0.1	20.9
SVM-05D	130	5/18/2021	14:12	21.1	0	0	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-05S	130	5/18/2021	14:15	20.9	0	0	0	20.9
SVM-06D	180	5/18/2021	14:28	19.8	0.1	0	0	20.9
SVM-06S	180	5/18/2021	14:30	19.9	0.1	0	0	20.9
SVM-07D	80	5/18/2021	14:23	20.7	0.1	0	0.1	20.9
SVM-07S	80	5/18/2021	14:25	20.7	0.1	0	0	20.9
SVM-08D	40	5/18/2021	14:05	21.1	0.1	0	0.2	20.9
SVM-08S	40	5/18/2021	14:07	20.9	0.1	0	0.1	20.9
SVM-10D	-20	5/18/2021	14:20	20.9	0.4	0	0.1	20.9
SVM-15D	250	5/18/2021	14:35	20.1	0.4	0	0.1	20.9
SVM-15M	250	5/18/2021	14:37	20.1	0.5	0	0.1	20.9
SVM-15S	250	5/18/2021	14:39	20.3	0.6	0	0	20.9
SVM-16D	-20	5/18/2021	13:55	21	0.1	0	0.4	20.9
SVM-16M	-20	5/18/2021	13:58	21.1	0	0	0.1	20.9
SVM-16S	-20	5/18/2021	14:00	21	0	0	0.1	20.9
GMW-O-11	200	5/18/2021	14:50	20.9	0	0	0.5	20.9
GMW-O-12	25	5/18/2021	15:05	20.9	0	0	3.6	20.9
GMW-O-2	160	5/18/2021	15:19	20.8	0	0	0	20.9
GMW-O-20	120	5/18/2021	14:55	20.9	0.1	0	0.2	20.9
GMW-O-21	40	5/18/2021	14:20	21.2	0.1	0	0.2	20.9
GMW-O-3	-90	5/18/2021	15:12	20.2	0.1	0	0	20.9
GMW-O-5	-150	5/18/2021	13:30	18.7	0.2	0	0.7	20.9
GMW-O-14	n/a	5/18/2021	13:43	21	0.3	0	1	20.9
SVM-1D	230	5/18/2021	12:23	18.8	1	0	0	20.9
SVM-1S	230	5/18/2021	12:26	20.1	0.6	0	0	20.9
SVM-02S	160	5/18/2021	12:28	19.8	0.5	0	0	20.9
SVM-03D	10	5/18/2021	10:25	20.7	0.2	0	0.3	20.9
SVM-03S	10	5/18/2021	10:27	20.8	0.1	0	0.1	20.9
SVM-05D	130	5/18/2021	10:52	20.7	0	0	0.1	20.9
SVM-05S	130	5/18/2021	10:54	20.7	0.1	0	0	20.9
SVM-06D	180	5/18/2021	11:41	19.6	0.2	0	0.1	20.9
SVM-06S	180	5/18/2021	11:43	19.7	0.2	0	0	20.9
SVM-07D	80	5/18/2021	11:35	20.3	0.8	0	0.1	20.9
SVM-07S	80	5/18/2021	11:37	20.1	0.8	0	0	20.9
SVM-08D	40	5/18/2021	10:47	20.7	0.1	0	0.2	20.9
SVM-08S	40	5/18/2021	10:49	20.7	0.1	0	0	20.9
SVM-10D	-20	5/18/2021	11:31	20.8	0.8	0	0.1	20.9
SVM-15D	250	5/18/2021	11:50	19.1	0.6	0	0.1	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-15M	250	5/18/2021	11:52	19.4	0.7	0	0	20.9
SVM-15S	250	5/18/2021	11:54	19.7	0.7	0	0	20.9
SVM-16D	-20	5/18/2021	10:39	20.4	0.3	0	0.4	20.9
SVM-16M	-20	5/18/2021	10:40	20.7	0.1	0	0.1	20.9
SVM-16S	-20	5/18/2021	10:41	20.7	0.1	0	0	20.9
GMW-O-11	200	5/18/2021	12:02	20.7	0.2	0	0.7	20.9
GMW-O-12	25	5/18/2021	12:20	20.8	0.1	0	3.5	20.9
GMW-O-2	160	5/18/2021	12:30	20.1	0	0	0	20.9
GMW-O-20	120	5/18/2021	12:10	20.9	0.1	0	0.6	20.9
GMW-O-21	40	5/18/2021	11:04	20.9	0	0	0.3	20.9
GMW-O-3	-90	5/18/2021	12:20	20.1	0	0	0	20.9
GMW-O-5	-150	5/18/2021	10:11	20.6	0.5	0	0.8	20.9
GMW-O-14	n/a	5/18/2021	10:31	21	0	0	1.8	20.9
SVM-03D	10	5/19/2021	14:05	20.8	0	0	0.1	21.5
SVM-03S	10	5/19/2021	14:07	21	0	0	0.1	21.5
SVM-05D	130	5/19/2021	14:39	21.8	0	0	0.1	21.5
SVM-05S	130	5/19/2021	14:42	21.7	0	0	0	21.5
SVM-06D	180	5/19/2021	15:40	21.4	0	0	0.2	21.5
SVM-06S	180	5/19/2021	15:45	21.2	0.1	0	0.1	21.5
SVM-07D	80	5/19/2021	14:12	21.3	0.6	0	0	21.5
SVM-07S	80	5/19/2021	14:15	21.2	0.6	0	0.5	21.5
SVM-08D	40	5/19/2021	14:30	21.6	0	0	0	21.5
SVM-08S	40	5/19/2021	14:35	21.7	0	0	0.1	21.5
SVM-10D	-20	5/19/2021	15:05	21.5	0.8	0	0.1	21.5
SVM-16D	-20	5/19/2021	14:17	21.4	0	0	0.1	21.5
SVM-16M	-20	5/19/2021	14:20	21.5	0	0	0.1	21.5
SVM-16S	-20	5/19/2021	14:23	21.4	0	0	0	21.5
GMW-O-12	25	5/19/2021	16:05	21.2	0	0	17.4	21.5
GMW-O-20	120	5/19/2021	15:50	21.5	0	0	0.4	21.5
GMW-O-21	40	5/19/2021	14:47	22	0	0	0.1	21.5
GMW-O-3	-90	5/19/2021	13:40	21.3	0	0	1.3	21.5
GMW-O-5	-150	5/19/2021	13:48	17.7	2.3	0	0.3	21.5
GMW-O-14	10	5/19/2021	14:00	20.9	0	0	0.2	21.5
SVM-03D	10	5/20/2021	10:23	20.9	0.1	0	0	21.5
SVM-03S	10	5/20/2021	10:25	20.8	0.1	0	0	21.5
SVM-05D	130	5/20/2021	11:03	20.3	0	0	0.1	21.5
SVM-05S	130	5/20/2021	11:05	20.2	0.1	0	0	21.5

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-06D	180	5/20/2021	11:17	20.2	0.1	0	0.2	21.5
SVM-06S	180	5/20/2021	11:19	20	0.2	0	0.3	21.5
SVM-07D	80	5/20/2021	11:13	20.2	0	0	0.2	21.5
SVM-07S	80	5/20/2021	11:15	20.1	0.6	0	0.3	21.5
SVM-08D	40	5/20/2021	11:00	20.2	0.1	0	0.4	21.5
SVM-08S	40	5/20/2021	11:02	20.1	0.1	0	0.1	21.5
SVM-10D	-20	5/20/2021	11:12	20.2	0	0	0.4	21.5
SVM-15D	250	5/20/2021	11:20	19.4	0	0	0.1	21.5
SVM-15M	250	5/20/2021	11:22	19.8	0.5	0	0.3	21.5
SVM-15S	250	5/20/2021	11:25	19.5	0.6	0	0.1	21.5
SVM-16D	-20	5/20/2021	10:53	20.1	0.2	0	0	21.5
SVM-16M	-20	5/20/2021	10:56	20.3	0	0	0.4	21.5
SVM-16S	-20	5/20/2021	10:59	20.1	0.1	0	0.1	21.5
GMW-O-11	200	5/20/2021	11:25	20.5	0	0	0.3	21.5
GMW-O-12	25	5/20/2021	11:35	15.5	1.9	49	681	21.5
GMW-O-20	120	5/20/2021	11:29	20.7	0	0	0.3	21.5
GMW-O-21	40	5/20/2021	11:06	20.5	0	0	0.3	21.5
GMW-O-3	-90	5/20/2021	10:47	20.2	0.2	0	0.3	21.5
GMW-O-5	-150	5/20/2021	10:39	17.9	2.5	0	0.1	21.5
GMW-O-14	10	5/20/2021	10:20	21.3	0.1	0	0	21.5
GMW-O-12(header)	25	5/20/2021	11:35	21.2	0.2	0	9.3	21.5
SVM-03D	10	5/26/2021	8:10	20.7	0.1	0	1.5	20.9
SVM-03S	10	5/26/2021	8:12	20.9	0	0	1.7	20.9
SVM-06D	180	5/26/2021	13:28	20.5	0.1	0	0.2	20.9
SVM-06S	180	5/26/2021	13:32	20.4	0.1	0	0.1	20.9
SVM-07D	80	5/26/2021	13:16	20.8	0.5	0	0.1	20.9
SVM-07S	80	5/26/2021	13:20	20.6	0	0	0.2	20.9
SVM-08D	40	5/26/2021	12:50	21.3	0	0	0	20.9
SVM-08S	40	5/26/2021	12:55	21.1	0	0	0	20.9
SVM-10D	-20	5/26/2021	13:24	20.7	0.7	0	0.2	20.9
SVM-16D	-20	5/26/2021	12:40	20.9	0	0	0	20.9
SVM-16M	-20	5/26/2021	12:42	20.7	0	0	0.5	20.9
SVM-16S	-20	5/26/2021	12:45	20.5	0	0	1.1	20.9
GMW-O-12	25	5/26/2021	13:40	18.4	0.9	8.9	550	20.9
GMW-O-3	-90	5/26/2021	13:05	21.5	0	0	0	20.9
SVM-03D	10	5/27/2021	10:05	20.8	0	0	0	21.5
SVM-03S	10	5/27/2021	10:06	20.6	0	0	0	21.5

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-05D	130	5/27/2021	10:25	21.1	0.1	0	0	21.5
SVM-05S	130	5/27/2021	10:28	21.3	0	0	0	21.5
SVM-06D	180	5/27/2021	10:46	21.2	0.1	0	0	21.5
SVM-06S	180	5/27/2021	10:49	21.2	0.1	0	0	21.5
SVM-07D	80	5/27/2021	10:38	21	0.7	0	0	21.5
SVM-07S	80	5/27/2021	10:40	21.1	0.5	0	0	21.5
SVM-08D	40	5/27/2021	10:19	21.1	0	0	0.6	21.5
SVM-08S	40	5/27/2021	10:24	21.1	0	0	0	21.5
SVM-10D	-20	5/27/2021	10:36	20.9	0	0	0	21.5
SVM-15D	250	5/27/2021	10:50	20.3	0.6	0.1	0	21.5
SVM-15M	250	5/27/2021	10:52	20.7	0.6	0.1	0	21.5
SVM-15S	250	5/27/2021	10:53	20.9	0.6	0.1	0	21.5
SVM-16D	-20	5/27/2021	10:13	20.7	0	0	0.8	21.5
SVM-16M	-20	5/27/2021	10:17	20.8	0.1	0	0	21.5
SVM-16S	-20	5/27/2021	10:20	20.8	0.1	0	1019	21.5
GMW-O-2	160	5/27/2021	9:45	20.9	0	0	0	21.5
GMW-O-3	-90	5/27/2021	9:48	20.8	0	0	0	21.5
GMW-O-5	-150	5/27/2021	9:55	17.4	4	0	0	21.5
GMW-O-11	200	5/27/2021	10:59	21.8	0	0.1	0	21.5
GMW-O-12	25	5/27/2021	11:10	18.5	1.3	10.6	535	21.5
GMW-O-14	10	5/27/2021	10:01	20.5	0.5	0	0	21.5
GMW-O-20	120	5/27/2021	11:04	3.5	8.2	9.1	405	21.5
GMW-O-21	40	5/27/2021	10:30	20.8	0	0	0	21.5
GMW-O-12 Manifold	25	5/28/2021	10:15	17.9	1.2	2	410	20.8
GMW-O-12	25	5/28/2021	11:15	17.6	1.2	1.8	454	20.8
GMW-O-12	25	5/28/2021	11:25	15.5	2.1	4.7	565	20.8
GMW-O-12 Manifold	25	5/28/2021	11:35	16.8	1.6	2.7	495	20.8
SVM-03D	10	6/1/2021	12:58	19.8	0	0	0	20.9
SVM-03S	10	6/1/2021	12:59	19.9	0	0	0	20.9
SVM-05D	130	6/1/2021	13:24	20.6	0.1	0	0	20.9
SVM-05S	130	6/1/2021	13:29	20.3	0	0	0	20.9
SVM-06D	180	6/1/2021	13:52	20.2	0.1	0	0.2	20.9
SVM-06S	180	6/1/2021	13:54	20.2	0	0	0.1	20.9
SVM-07D	80	6/1/2021	13:46	20.2	0.2	0	0.2	20.9
SVM-07S	80	6/1/2021	13:47	20.1	0	0	0.1	20.9
SVM-08D	40	6/1/2021	13:16	21.1	0	0	0	20.9
SVM-08S	40	6/1/2021	13:20	21	0	0	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-10D	-20	6/1/2021	13:42	20.1	0.9	0	0	20.9
SVM-15D	250	6/1/2021	14:00	20.3	0.4	0	0.2	20.9
SVM-15M	250	6/1/2021	14:04	20.2	0.2	0	0.1	20.9
SVM-15S	250	6/1/2021	14:06	20.1	0	0	0.1	20.9
SVM-16D	-20	6/1/2021	13:04	20.2	0.1	0	0	20.9
SVM-16M	-20	6/1/2021	13:08	20	0	0	0	20.9
SVM-16S	-20	6/1/2021	13:12	20	0	0	0	20.9
GMW-O-11	200	6/1/2021	14:15	15.7	2.4	0	30.25	20.9
GMW-O-12	25	6/1/2021	13:38	15.3	2.6	2.7	549.2	20.9
GMW-O-20	120	6/1/2021	14:22	21.1	0	0	0.9	20.9
GMW-O-21	40	6/1/2021	13:33	21.1	0.1	0	4.2	20.9
GMW-O-3	-90	6/1/2021	13:39	20.4	0.1	0	0.2	20.9
GMW-O-5	-150	6/1/2021	12:43	18.4	2.6	0	0.3	20.9
GMW-O-14	n/a	6/1/2021	12:52	20	0.3	0	0.8	20.9
SVM-03D	10	6/10/2021	12:48	19.9	0.2	0	0.3	21.1
SVM-03S	10	6/10/2021	12:52	19.7	0.1	0	0.2	21.1
SVM-05D	130	6/10/2021	12:42	20.1	0.2	0	0.2	21.1
SVM-05S	130	6/10/2021	12:42	19.9	0.1	0	0.1	21.1
SVM-06D	180	6/10/2021	10:58	18.8	0.1	0	0.1	21.1
SVM-06S	180	6/10/2021	11:00	19.2	0.1	0	0	21.1
SVM-07D	80	6/10/2021	10:52	18.9	0.6	0	0	21.1
SVM-07S	80	6/10/2021	10:54	19.1	0.5	0	0	21.1
SVM-08D	40	6/10/2021	12:25	20.1	0	0	0	21.1
SVM-08S	40	6/10/2021	12:30	20	0.1	0	0.1	21.1
SVM-10D	-20	6/10/2021	10:48	18.9	0.9	0	0.1	21.1
SVM-15D	250	6/10/2021	11:04	18.5	0.6	0	0.2	21.1
SVM-15M	250	6/10/2021	11:06	18.8	0.6	0	0.1	21.1
SVM-15S	250	6/10/2021	11:08	19.4	0.5	0	0	21.1
SVM-16D	-20	6/10/2021	12:15	20.7	0.2	0.1	13.5	21.1
SVM-16M	-20	6/10/2021	12:18	21	0	0	0	21.1
SVM-16S	-20	6/10/2021	12:20	21	0	0	0	21.1
GMW-O-11	200	6/10/2021	11:15	20.2	0	0	2.4	21.1
GMW-O-12	25	6/10/2021	11:25	20.1	0	0	0	21.1
SVM-03D	10	6/10/2021	15:16	20.1	0.1	0	0.2	20.5
SVM-03S	10	6/10/2021	15:18	19.9	0.1	0	0.1	20.5
SVM-05D	130	6/10/2021	14:52	20.2	0.3	0	0.2	20.5
SVM-05S	130	6/10/2021	14:54	20	0.2	0	0.2	20.5

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-06D	180	6/10/2021	14:10	19	0	0	0	20.5
SVM-06S	180	6/10/2021	14:11	19.3	0.1	0	0	20.5
SVM-07D	80	6/10/2021	14:04	19.1	0.5	0	0	20.5
SVM-07S	80	6/10/2021	14:06	19	0.5	0	0	20.5
SVM-08D	40	6/10/2021	14:52	20.1	0	0	0.1	20.5
SVM-08S	40	6/10/2021	14:54	20	0.1	0	0.1	20.5
SVM-10D	-20	6/10/2021	14:00	18.8	1	0	0.1	20.5
SVM-15D	250	6/10/2021	14:14	18.9	0.5	0	0.2	20.5
SVM-15M	250	6/10/2021	14:18	19	0.6	0	0.1	20.5
SVM-15S	250	6/10/2021	14:21	19.4	0.5	0	0	20.5
SVM-16D	-20	6/10/2021	14:44	20.6	0.3	0.1	14.2	20.5
SVM-16M	-20	6/10/2021	14:46	20.8	0.1	0	0	20.5
SVM-16S	-20	6/10/2021	14:48	21	0	0	0	20.5
GMW-O-11	200	6/10/2021	14:27	20.4	0	0	3.1	20.5
GMW-O-12	25	6/10/2021	14:37	20.1	0	0	0	20.5
GMW-O-14	n/a	6/10/2021	15:20	20.1	0.1	0	0.9	20.5
SVM-03D	10	6/11/2021	9:57	20.8	0.1	0	0.4	21
SVM-05D	130	6/11/2021	9:23	21.1	0.1	0	0	21
SVM-05S	130	6/11/2021	9:25	21.3	0.1	0	0	21
SVM-06D	180	6/11/2021	8:52	20.4	0.1	0	0	21
SVM-06S	180	6/11/2021	8:53	20.3	0.2	0	0.1	21
SVM-07D	80	6/11/2021	8:48	20	0.8	0	0	21
SVM-07S	80	6/11/2021	8:49	20.2	0.6	0	0	21
SVM-08D	40	6/11/2021	9:45	21.2	0.1	0	0	21
SVM-08S	40	6/11/2021	9:49	21.2	0.1	0	0.6	21
SVM-10D	-20	6/11/2021	8:35	20.6	1.1	0	0	21
SVM-15D	250	6/11/2021	8:54	20.4	0.2	0	0	21
SVM-15M	250	6/11/2021	8:56	19.6	0.7	0	0	21
SVM-15S	250	6/11/2021	8:58	19.9	0.6	0	0.3	21
GMW-O-11	200	6/11/2021	9:04	20.6	0	0	0	21
GMW-O-20	120	6/11/2021	9:10	0	12.8	5.6	5.6	21
GMW-O-3	-90	6/11/2021	10:18	20.6	0	0	0	21
GMW-O-5	-150	6/11/2021	10:10	19.2	2	0	0	21
GMW-O-14	n/a	6/11/2021	10:05	20.8	0	0	0	21
SVM-03D	10	6/22/2021	10:00	20.5	0	0	0.3	21.4
SVM-03S	10	6/22/2021	10:03	20.4	0	0	0.1	21.4
SVM-05D	130	6/22/2021	9:39	20.8	0.2	0	0.3	21.4

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-05S	130	6/22/2021	9:41	21	0.1	0	0	21.4
SVM-06D	180	6/22/2021	8:40	19.8	0.3	0	0	21.4
SVM-06S	180	6/22/2021	8:42	20.1	0.3	0	0	21.4
SVM-07D	80	6/22/2021	9:15	19.6	0.9	0	7.5	21.4
SVM-07S	80	6/22/2021	9:17	20.2	0.7	0	0.6	21.4
SVM-08D	40	6/22/2021	9:30	20.8	0	0	0.6	21.4
SVM-08S	40	6/22/2021	9:32	20.9	0.1	0	0.2	21.4
SVM-10D	-20	6/22/2021	8:30	20.3	0.7	0	0.1	21.4
SVM-15D	250	6/22/2021	8:46	19.3	0.8	0	0	21.4
SVM-15M	250	6/22/2021	8:49	19.7	0.9	0	0	21.4
SVM-15S	250	6/22/2021	8:51	20	0.9	0	0	21.4
SVM-16D	-20	6/22/2021	9:22	20.4	0	0	8.7	21.4
SVM-16M	-20	6/22/2021	9:24	20.5	0.1	0	0.5	21.4
SVM-16S	-20	6/22/2021	9:26	20.6	0.1	0	0.2	21.4
GMW-O-3	-90	6/22/2021	10:20	20.4	0.4	0	0.5	21.4
GMW-O-5	-150	6/22/2021	10:08	19.2	0.9	0	30	21.4
GMW-O-11	200	6/22/2021	9:00	20.9	0.1	0	0.1	21.4
GMW-O-14	n/a	6/22/2021	9:55	20.6	0	0	0.3	21.4
GMW-O-21	40	6/22/2021	9:45	21.1	0	0	1.2	21.4
SVM-03D	10	6/25/2021	9:25	20	0.1	0	0.6	20.9
SVM-03S	10	6/25/2021	9:28	20	0.1	0	0.4	20.9
SVM-05D	130	6/25/2021	9:53	21	0.1	0	0	20.9
SVM-05S	130	6/25/2021	9:56	21.2	0.1	0	0	20.9
SVM-06D	180	6/25/2021	10:18	21.1	0	0	0	20.9
SVM-06S	180	6/25/2021	10:21	21	0.1	0	0	20.9
SVM-07D	80	6/25/2021	10:10	20.4	0.6	0	0.2	20.9
SVM-07S	80	6/25/2021	10:13	20.8	0.8	0	0.3	20.9
SVM-08D	40	6/25/2021	9:46	20.9	0	0	0.2	20.9
SVM-08S	40	6/25/2021	9:50	21	0	0	0.2	20.9
SVM-10D	-20	6/25/2021	10:03	21.2	0	0	0	20.9
SVM-15D	250	6/25/2021	10:28	20.2	0.5	0	0.2	20.9
SVM-15M	250	6/25/2021	10:31	20.3	0.7	0	0.1	20.9
SVM-15S	250	6/25/2021	10:34	20.5	0.7	0	0.1	20.9
SVM-16D	-20	6/25/2021	9:35	20.5	0	0	0.9	20.9
SVM-16M	-20	6/25/2021	9:38	20.6	0	0	0.5	20.9
SVM-16S	-20	6/25/2021	9:41	20.7	0	0	0.3	20.9
GMW-O-11	200	6/25/2021	10:40	21.7	0.1	0	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
GMW-O-3	-90	6/25/2021	10:50	21.4	0	0	0.2	20.9
GMW-O-5	-150	6/25/2021	9:15	17.9	0	0	2.9	20.9
GMW-O-14	n/a	6/25/2021	9:22	20	0	0	1.1	20.9
SVM-03D	10	6/28/2021	13:15	20.1	0	0.1	0.4	21.1
SVM-03S	10	6/28/2021	13:18	20.1	0.1	0	0.1	21.1
SVM-05D	130	6/28/2021	12:56	20	0.1	0	0.7	21.1
SVM-05S	130	6/28/2021	12:58	20.1	0	0	0.4	21.1
SVM-06D	180	6/28/2021	12:15	18.8	0.1	0	0.3	21.1
SVM-06S	180	6/28/2021	12:17	18.8	0.1	0	0.2	21.1
SVM-07D	80	6/28/2021	12:04	18.7	0.8	0	1.4	21.1
SVM-07S	80	6/28/2021	12:08	19.8	0.6	0	0.6	21.1
SVM-08D	40	6/28/2021	12:51	20.1	0.1	0	0.2	21.1
SVM-08S	40	6/28/2021	12:53	20	0.1	0	0.1	21.1
SVM-10D	-20	6/28/2021	11:58	20.3	0.7	0.1	0.8	21.1
SVM-15D	250	6/28/2021	12:21	18.4	0.6	0	0.4	21.1
SVM-15M	250	6/28/2021	12:23	18.8	0.6	0	0.1	21.1
SVM-15S	250	6/28/2021	12:25	18.9	0.7	0	0.2	21.1
SVM-16D	-20	6/28/2021	12:40	19.8	0.1	0	4.9	21.1
SVM-16M	-20	6/28/2021	12:42	20.1	0	0	0.1	21.1
SVM-16S	-20	6/28/2021	12:46	20.2	0.1	0	0.1	21.1
GMW-O-3	-90	6/28/2021	13:08	21.1	0.1	0	0.3	21.1
GMW-O-5	-150	6/28/2021	13:30	18.4	1.1	0	1.2	21.1
GMW-O-11	200	6/28/2021	12:30	21.1	0.1	0.1	0.4	21.1
GMW-O-14	n/a	6/28/2021	13:20	20	0	0	1	21.1
GMW-O-21	40	6/28/2021	12:59	20.4	0.1	0	1.3	21.1
SVM-07D	80	7/23/2021	8:43	19.9	0.5	0.1	0.1	21.1
SVM-06D	180	7/23/2021	8:50	20	0	0	0	21.1
SVM-06S	180	7/23/2021	8:51	20.1	0.1	0	0.1	21.1
SVM-10D	-20	7/23/2021	8:40	17.1	0.1	0.2	0.1	21.1
SVM-07S	80	7/23/2021	8:45	19.8	0.2	0	0.2	21.1
SVM-07D	80	8/6/2021	10:08	18.2	--	--	0.3	20.9
SVM-06D	180	8/6/2021	10:15	18.7	--	--	0.1	20.9
SVM-06S	180	8/6/2021	10:17	19.6	--	--	0	20.9
SVM-10D	-20	8/6/2021	10:06	20.9	--	--	0.1	20.9
SVM-15D	250	8/6/2021	10:21	20.9	--	--	0	20.9
SVM-15M	250	8/6/2021	10:23	19.4	--	--	0.2	20.9
SVM-15S	250	8/6/2021	10:25	19.7	--	--	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-16D	-20	8/6/2021	9:58	20.9	--	--	0	20.9
SVM-16M	-20	8/6/2021	10:00	20.9	--	--	0	20.9
SVM-16S	-20	8/6/2021	10:02	20.9	--	--	0	20.9
SVM-07S	80	8/6/2021	10:10	20.2	--	--	0.1	20.9
SVM-07D	80	8/31/2021	8:35	17.7	1	0	0	21.1
SVM-03D	10	8/31/2021	10:28	20	0.2	0	0.2	21.1
SVM-03S	10	8/31/2021	10:35	19.9	0.1	0	0	21.1
SVM-05D	130	8/31/2021	10:15	20.1	0.1	0	0	21.1
SVM-05S	130	8/31/2021	10:17	20.1	0.1	0	0	21.1
SVM-06D	180	8/31/2021	8:50	16.9	0.2	0	0	21.1
SVM-06S	180	8/31/2021	8:52	19.6	0.4	0	0	21.1
SVM-08D	40	8/31/2021	10:08	19.9	0.3	0	0	21.1
SVM-08S	40	8/31/2021	10:10	20.1	0.4	0	0	21.1
SVM-10D	-20	8/31/2021	8:30	20.8	0.6	0	0	21.1
SVM-15D	250	8/31/2021	9:12	19.1	1	0	0	21.1
SVM-15M	250	8/31/2021	9:10	19.6	1.2	0	0	21.1
SVM-15S	250	8/31/2021	9:08	19.9	1.1	0	0	21.1
SVM-16D	-20	8/31/2021	10:05	21.1	0.1	0	0.2	21.1
SVM-16M	-20	8/31/2021	9:59	21.2	0.2	0	1	21.1
SVM-07S	80	8/31/2021	8:40	19.4	0.7	0	0	21.1
SVM-07D	80	9/1/2021	9:00	18.3	1.1	0	0	21.1
SVM-16S	-20	9/1/2021	9:55	21.3	0.2	0	1.3	21.1
SVM-03D	10	9/1/2021	9:45	21.1	0.1	0	0.4	21.1
SVM-03S	10	9/1/2021	9:49	21	0.1	0	0.1	21.1
SVM-05D	130	9/1/2021	9:30	20.1	0	0	0	21.1
SVM-05S	130	9/1/2021	9:35	20.1	0	0	0	21.1
SVM-06D	180	9/1/2021	9:05	17.4	0.3	0	0	21.1
SVM-06S	180	9/1/2021	9:07	20.1	0.6	0	0	21.1
SVM-08D	40	9/1/2021	9:30	19.9	0.5	0	0	21.1
SVM-08S	40	9/1/2021	9:32	20	0.4	0	0	21.1
SVM-10D	-20	9/1/2021	8:40	20.9	0.5	0	0	21.1
SVM-15D	250	9/1/2021	9:18	19.3	1	0	0	21.1
SVM-15M	250	9/1/2021	9:15	19.8	1.1	0	0	21.1
SVM-15S	250	9/1/2021	9:12	19.9	1	0	0	21.1
SVM-16D	-20	9/1/2021	9:20	21.4	0.3	0.1	5.8	21.1
SVM-16M	-20	9/1/2021	9:22	21.2	0.1	0	2.1	21.1
SVM-16S	-20	9/1/2021	9:24	21.2	0.1	0	0.6	21.1

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-07S	80	9/1/2021	9:01	19.5	0.6	0	0	21.1
SVM-07D	80	9/9/2021	13:04	17.9	0.4	0	0	20.9
SVM-03D	10	9/9/2021	13:45	21	0	0	0.7	20.9
SVM-03S	10	9/9/2021	13:48	21.3	0.1	0	0.3	20.9
SVM-05D	130	9/9/2021	13:38	20.1	0	0	0	20.9
SVM-05S	130	9/9/2021	13:41	20	0	0	0	20.9
SVM-06D	180	9/9/2021	12:53	17.8	0.3	0	0	20.9
SVM-06S	180	9/9/2021	12:55	20.3	0.5	0	0	20.9
SVM-07S	80	9/9/2021	13:00	19.8	0.2	0	0	20.9
SVM-08D	40	9/9/2021	13:30	19.5	0.3	0	0	20.9
SVM-08S	40	9/9/2021	13:32	20.6	0.1	0	0	20.9
SVM-10D	-20	9/9/2021	9:10	21	0.1	0	0	20.9
SVM-15D	250	9/9/2021	13:07	19	0.3	0	0	20.9
SVM-15M	250	9/9/2021	13:09	19.5	0.2	0	0	20.9
SVM-15S	250	9/9/2021	13:12	20.1	0	0	0	20.9
SVM-16D	-20	9/9/2021	13:18	21.1	0.5	0.1	6.1	20.9
SVM-16M	-20	9/9/2021	13:21	21	0.2	0.1	1.2	20.9
SVM-16S	-20	9/9/2021	13:24	20.7	0.1	0	0.3	20.9
SVM-06D	180	9/16/2021	11:50	11	0.3	0	0.4	20.9
SVM-06S	180	9/16/2021	11:51	18.5	0.4	0	0	20.9
SVM-07D	80	9/16/2021	11:45	12.8	6.5	0	532.6	20.9
SVM-07S	80	9/16/2021	11:46	14.3	0.9	0	23.5	20.9
SVM-10D	-20	9/16/2021	11:40	20.3	0.7	0	0	20.9
SVM-15D	250	9/16/2021	12:15	19.2	0.1	0	0	20.9
SVM-15M	250	9/16/2021	12:20	19.4	0.1	0	0	20.9
SVM-15S	250	9/16/2021	12:22	19.5	0.2	0	0	20.9
SVM-06D	180	9/21/2021	14:34	16.9	0.1	0	0	21.2
SVM-06S	180	9/21/2021	14:36	17.2	0.1	0	0	21.2
SVM-07D	80	9/21/2021	14:30	16.3	2.9	0	50.1	21.2
SVM-07S	80	9/21/2021	14:32	16.6	0.8	0	0.4	21.2
SVM-10D	-20	9/21/2021	14:25	20.7	0.4	0	0	21.2
SVM-07D	80	9/30/2021	16:45	19.7	0.9	0.02	0	20.9
GMW-O-3	-90	10/1/2021	11:45	20.9	0	0	4.2	20.9
SVM-03S	10	10/1/2021	11:20	20.4	0	0.01	2.7	20.9
SVM-03D	10	10/1/2021	11:17	20.4	0	0	2.1	20.9
SVM-15D	250	10/1/2021	10:05	20.1	0.4	0.01	1.9	20.9
SVM-08D	40	10/1/2021	10:39	20.9	0	0.01	1.8	20.9
SVM-16D	-20	10/1/2021	10:45	20.2	0	0	1.6	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-05D	130	10/1/2021	10:35	21.2	0	0.01	1.5	20.9
GMW-O-14	10	10/1/2021	11:10	20.3	0	0	1.4	20.9
SVM-08S	40	10/1/2021	10:41	20.9	0	0.01	0.9	20.9
SVM-16M	-20	10/1/2021	10:48	20.3	0	0.01	0.8	20.9
GMW-O-12	25	10/1/2021	9:20	--	--	--	0.5	20.9
SVM-06D	180	10/1/2021	9:53	20.9	0	0	0.4	20.9
GMW-O-21	40	10/1/2021	10:56	20.5	0	0	0.4	20.9
SVM-07D	80	10/1/2021	9:35	20.6	0.9	0.01	0.3	20.9
SVM-15S	250	10/1/2021	10:11	20.4	0	0.01	0.3	20.9
GMW-O-20	120	10/1/2021	9:50	--	--	--	0.3	20.9
SVM-05S	130	10/1/2021	10:38	21.1	0	0	0.2	20.9
SVM-16S	-20	10/1/2021	10:51	20.3	0	0.01	0.2	20.9
SVM-06S	180	10/1/2021	9:55	20.9	0.1	0	0	20.9
SVM-07S	80	10/1/2021	9:38	20.7	0.4	0.01	0	20.9
SVM-10D	-20	10/1/2021	9:15	21.1	0	0	0	20.9
SVM-15M	250	10/1/2021	10:08	20.3	0.5	0	0	20.9
GMW-O-5	-150	10/1/2021	11:30	19.4	0.4	0.02	0	20.9
GMW-O-11	200	10/1/2021	10:13	--	--	--	0	20.9
SVM-03D	10	10/7/2021	10:42	20.3	0	0	0	20.9
SVM-03S	10	10/7/2021	10:45	20.1	0.1	0	0	20.9
SVM-06D	180	10/7/2021	9:53	19	0.1	0	0	20.9
SVM-06S	180	10/7/2021	9:56	19.4	0.3	0	0	20.9
SVM-07D	80	10/7/2021	9:45	19.9	0.5	0	0	20.9
SVM-07S	80	10/7/2021	9:47	20.6	0.2	0	0	20.9
SVM-10D	-20	10/7/2021	10:25	20.7	0.2	0	0	20.9
SVM-15D	250	10/7/2021	10:01	20.4	0.2	0	0	20.9
SVM-15M	250	10/7/2021	10:04	20.6	0.3	0	0	20.9
SVM-15S	250	10/7/2021	10:08	20	0.6	0	0	20.9
SVM-10D	-20	10/14/2021	8:39	20.9	NM	0	0.3	20.9
SVM-08D	40	10/14/2021	9:16	20.9	NM	0	0.1	20.9
SVM-03D	10	10/14/2021	9:45	20.9	NM	0	0	20.9
SVM-03S	10	10/14/2021	9:47	20.9	NM	0	0	20.9
SVM-05D	130	10/14/2021	9:08	20.9	NM	0	0	20.9
SVM-05S	130	10/14/2021	9:11	20.9	NM	0	0	20.9
SVM-06D	180	10/14/2021	8:52	10.1	NM	0	0	20.9
SVM-06S	180	10/14/2021	8:55	18.7	NM	0	0	20.9
SVM-07D	80	10/14/2021	8:45	11.5	NM	0	0	20.9
SVM-07S	80	10/14/2021	8:42	17.6	NM	0	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-08S	40	10/14/2021	9:18	20.9	NM	0	0	20.9
SVM-15D	250	10/14/2021	8:58	18.2	NM	0	0	20.9
SVM-15M	250	10/14/2021	9:00	19.2	NM	0	0	20.9
SVM-15S	250	10/14/2021	9:03	19.5	NM	0	0	20.9
SVM-16D	-20	10/14/2021	9:30	20.9	NM	0	0	20.9
SVM-16M	-20	10/14/2021	9:33	20.9	NM	0	0	20.9
SVM-16S	-20	10/14/2021	9:35	20.9	NM	0	0	20.9
GMW-O-3	-90	10/14/2021	10:05	20.9	NM	0	0	20.9
GMW-O-5	-150	10/14/2021	9:55	20.1	NM	0	0	20.9
GMW-O-14	10	10/14/2021	9:40	20.9	NM	0	0	20.9
GMW-O-21	40	10/14/2021	9:25	20.9	NM	0	0	20.9
GMW-O-11	200	10/19/2021	13:38	19.5	0.3	0	37.5	20.9
SVM-08D	40	10/19/2021	14:09	20.9	0	0	0	20.9
SVM-08S	40	10/19/2021	14:12	20.8	0	0	0	20.9
SVM-06D	180	10/19/2021	13:30	14.5	0.1	0	0	20.9
SVM-06S	180	10/19/2021	13:35	18.5	0.2	0	0	20.9
SVM-07D	80	10/19/2021	13:15	14.9	4.6	0	0	20.9
SVM-07S	80	10/19/2021	13:19	15.7	0.8	0	0	20.9
SVM-10D	-20	10/19/2021	13:25	20.3	0.3	0	0	20.9
SVM-15D	250	10/19/2021	13:41	20.7	0	0	0	20.9
SVM-15M	250	10/19/2021	13:44	18.9	0.8	0	0	20.9
SVM-15S	250	10/19/2021	13:48	19	0.8	0	0	20.9
GMW-O-2	160	10/19/2021	12:50	19.8	0.7	0	0	20.9
GMW-O-3	-90	10/19/2021	13:00	20.7	0	0	0	20.9
GMW-O-21	40	10/19/2021	14:01	20.9	0	0	0	20.9
GMW-O-11	200	11/10/2021	12:50	NM	NM	NM	NM	20.9
GMW-O-12	25	11/10/2021	12:52	NM	NM	NM	NM	20.9
GMW-O-20	120	11/10/2021	12:51	NM	NM	NM	NM	20.9
GMW-O-21	40	11/10/2021	13:57	NM	NM	NM	NM	20.9
SVM-15D	250	11/10/2021	12:43	18.1	NM	NM	272	20.9
SVM-15M	250	11/10/2021	12:46	18.6	NM	NM	16.5	20.9
SVM-15S	250	11/10/2021	12:49	17.5	NM	NM	8.8	20.9
SVM-05S	130	11/10/2021	13:33	20.9	NM	NM	1.2	20.9
SVM-06D	180	11/10/2021	13:38	5.8	NM	NM	0.2	20.9
SVM-03D	10	11/10/2021	13:20	20.9	NM	NM	0	20.9
SVM-03S	10	11/10/2021	13:26	20.8	NM	NM	0	20.9
SVM-05D	130	11/10/2021	13:30	20.9	NM	NM	0	20.9
SVM-06S	180	11/10/2021	12:42	17	NM	NM	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-07D	80	11/10/2021	12:34	12	NM	NM	0	20.9
SVM-07S	80	11/10/2021	12:30	18.6	NM	NM	0	20.9
SVM-08D	40	11/10/2021	13:40	20.9	NM	NM	0	20.9
SVM-08S	40	11/10/2021	13:44	20.9	NM	NM	0	20.9
SVM-10D	-20	11/10/2021	12:59	20.9	NM	NM	0	20.9
SVM-16D	-20	11/10/2021	13:47	20.9	NM	NM	0	20.9
SVM-16M	-20	11/10/2021	13:51	20.9	NM	NM	0	20.9
SVM-16S	-20	11/10/2021	13:55	20.9	NM	NM	0	20.9
GMW-O-3	-90	11/10/2021	14:02	20.9	NM	NM	0	20.9
GMW-O-11	200	11/15/2021	14:53	NM	NM	NM	48.5	20.9
SVM-15M	250	11/15/2021	14:58	18.6	0.9	0	2.2	20.9
SVM-05D	130	11/15/2021	15:23	20.5	0.1	0	2.1	20.9
SVM-15S	250	11/15/2021	15:00	18.6	1	0	1.4	20.9
SVM-15D	250	11/15/2021	14:56	17.1	1.3	0	1.1	20.9
SVM-16D	-20	11/15/2021	15:09	20.7	0	0	0.3	20.9
SVM-07D	80	11/15/2021	14:42	18.2	1.4	0	0.1	20.9
GMW-O-3	-90	11/15/2021	14:25	20.6	0	0	0.1	20.9
SVM-03D	10	11/15/2021	15:35	20.8	0	0	0	20.9
SVM-03S	10	11/15/2021	15:38	20.8	0	0	0	20.9
SVM-05S	130	11/15/2021	15:25	20.8	0	0	0	20.9
SVM-06D	180	11/15/2021	14:48	14.1	0.2	0	0	20.9
SVM-06S	180	11/15/2021	14:50	17.6	0.3	0	0	20.9
SVM-07S	80	11/15/2021	14:44	18.7	0.6	0	0	20.9
SVM-08D	40	11/15/2021	15:16	20.6	0	0	0	20.9
SVM-08S	40	11/15/2021	15:18	20.7	0	0	0	20.9
SVM-10D	-20	11/15/2021	14:37	20.3	0.4	0	0	20.9
SVM-16M	-20	11/15/2021	15:15	20.6	0	0	0	20.9
GMW-O-2	160	11/15/2021	14:31	20.5	0	0	0	20.9
GMW-O-5	-150	11/15/2021	14:13	18.3	0.7	0	0	20.9
GMW-O-12	25	11/15/2021	14:40	NM	NM	NM	0	20.9
GMW-O-20	120	11/15/2021	14:46	NM	NM	NM	0	20.9
SVM-06D	180	12/2/2021	14:39	10.9	NM	NM	0.1	20.9
SVM-06S	180	12/2/2021	14:42	20.2	NM	NM	0	20.9
SVM-07D	80	12/2/2021	14:21	19	NM	NM	0	20.9
SVM-07S	80	12/2/2021	14:23	19.9	NM	NM	0	20.9
SVM-10D	-20	12/2/2021	14:31	17.4	NM	NM	0	20.9
SVM-15D	250	12/2/2021	14:44	20.9	NM	NM	0	20.9
SVM-15M	250	12/2/2021	14:46	18.4	NM	NM	0	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-15S	250	12/2/2021	14:48	18.9	NM	NM	0	20.9
GMW-O-11	200	12/2/2021	14:36	20.9	NM	NM	0	20.9
GMW-O-12	25	12/2/2021	14:27	20.9	NM	NM	0	20.9
GMW-O-20	120	12/2/2021	14:34	20.9	NM	NM	0	20.9
SVM-05S	130	12/9/2021	10:52	20.9	0	0	0.4	20.9
SVM-16D	-20	12/9/2021	10:42	20.9	0	0	0.1	20.9
SVM-03D	10	12/9/2021	11:10	20.7	0	0	0	20.9
SVM-03S	10	12/9/2021	11:12	20.7	0	0	0	20.9
SVM-05D	130	12/9/2021	10:54	20.7	0	0	0	20.9
SVM-06D	180	12/9/2021	10:29	17.1	0.1	0	0	20.9
SVM-06S	180	12/9/2021	10:31	19	0.1	0	0	20.9
SVM-07D	80	12/9/2021	10:19	16.9	1.7	0	0	20.9
SVM-07S	80	12/9/2021	10:21	19.3	0.4	0	0	20.9
SVM-08D	40	12/9/2021	10:58	20.9	0	0	0	20.9
SVM-08S	40	12/9/2021	11:00	20.9	0	0	0	20.9
SVM-10D	-20	12/9/2021	10:10	20.9	0	0	0	20.9
SVM-15D	250	12/9/2021	10:33	18.3	0.8	0	0	20.9
SVM-15M	250	12/9/2021	10:35	19	0.8	0	0	20.9
SVM-15S	250	12/9/2021	10:36	19.1	0.7	0	0	20.9
SVM-16M	-20	12/9/2021	10:44	20.9	0	0	0	20.9
SVM-16S	-20	12/9/2021	10:46	20.9	0	0	0	20.9
GMW-O-11	200	12/9/2021	10:33	20.9	0	0	0	20.9
GMW-O-12	25	12/9/2021	10:17	20.9	0	0	0	20.9
GMW-O-14	10	12/9/2021	11:03	20.9	0	0	0	20.9
GMW-O-20	120	12/9/2021	10:27	20.9	0	0	0	20.9
SVM-06D	180	12/15/2021	14:34	1	2	7	5000	20.9
SVM-07D	80	12/15/2021	14:05	17.2	1	0	17.8	20.9
SVM-06S	180	12/15/2021	14:32	18.3	0	0	7.9	20.9
GMW-O-20	120	12/15/2021	--	20.9	0	0	0.8	20.9
SVM-07S	80	12/15/2021	14:08	18	2	0	0.3	20.9
SVM-10D	-20	12/15/2021	14:13	20.9	0	0	0	20.9
SVM-15D	250	12/15/2021	14:23	14.3	1.3	0	0	20.9
SVM-15M	250	12/15/2021	14:24	18.3	2	0	0	20.9
SVM-15S	250	12/15/2021	14:26	19	0.7	0	0	20.9
GMW-O-11	200	12/15/2021	--	20.9	0	0	0	20.9
GMW-O-12	25	12/15/2021	--	20.9	0	0	0	20.9
SVM-06D	180	12/17/2021	15:03	0.6	1.7	7	5000	20.9
SVM-06S	180	12/17/2021	15:05	13.7	0.3	1	24.4	20.9

Appendix D.2. Soil Vapor Field Monitoring Data

SFPP Norwalk Pump Station, Norwalk, California

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-07D	80	12/17/2021	14:55	18.2	1.2	0	1.7	20.9
SVM-15D	250	12/17/2021	15:15	15.1	1.1	0	0.5	20.9
SVM-03D	10	12/17/2021	15:51	20.9	0.1	0	0.2	20.9
SVM-08S	40	12/17/2021	15:42	20.9	0	0	0.2	20.9
SVM-15M	250	12/17/2021	15:17	18.7	0.8	0	0.1	20.9
SVM-15S	250	12/17/2021	15:19	18.8	0.7	0	0.1	20.9
SVM-03S	10	12/17/2021	15:48	20.9	0	0	0	20.9
SVM-07S	80	12/17/2021	14:58	20.9	0.3	0	0	20.9
SVM-08D	40	12/17/2021	15:39	20.9	0	0	0	20.9
SVM-10D	-20	12/17/2021	15:28	20.9	0	0	0	20.9
GMW-O-11	200	12/17/2021	15:22	20.9	--	--	0	20.9
GMW-O-12	25	12/17/2021	15:24	20.9	--	--	0	20.9
GMW-O-20	120	12/17/2021	15:23	20.9	--	--	0	20.9
SVM-06D	180	12/23/2021	8:25	16.4	0.9	0.6	5000	20.9
SVM-06S	180	12/23/2021	8:27	18.1	0.2	0	112	20.9
SVM-15S	250	12/23/2021	8:45	19.6	1	0	3.7	20.9
SVM-05S	130	12/23/2021	8:57	20.9	0	0	0.1	20.9
SVM-08D	40	12/23/2021	9:01	20.8	0	0	0	20.9
SVM-08S	40	12/23/2021	9:04	20.9	0	0	0	20.9
SVM-05D	130	12/23/2021	8:55	20.8	0.1	0	0	20.9
SVM-07D	80	12/23/2021	8:10	16.1	3.3	0	0	20.9
SVM-07S	80	12/23/2021	8:08	18.8	1	0	0	20.9
SVM-03D	10	12/23/2021	9:32	20.8	0	0	0	20.9
SVM-03S	10	12/23/2021	9:34	20.9	0	0	0	20.9
SVM-10D	-20	12/23/2021	8:12	21.1	0.3	0	0	20.9
SVM-15D	250	12/23/2021	8:40	18.1	1.4	0	0	20.9
SVM-15M	250	12/23/2021	8:42	19.5	0.9	0	0	20.9
SVM-16M	-20	12/23/2021	9:12	20.8	0.1	0	0	20.9
SVM-16S	-20	12/23/2021	9:14	20.9	0	0	0	20.9
SVM-16D	-20	12/23/2021	9:10	--	--	--	--	20.9
SVM-03D	10	12/30/2021	9:33	21	0	0	0	21
SVM-03S	10	12/30/2021	9:36	20.9	0	0	0	21
SVM-05D	130	12/30/2021	9:22	21	0.1	0	0	21
SVM-05S	130	12/30/2021	9:24	21	0.1	0	0	21
SVM-06D	180	12/30/2021	8:30	17.1	0.8	0.4	4210	21
SVM-06S	180	12/30/2021	8:33	18.3	0.1	0	98	21
SVM-07D	80	12/30/2021	8:39	16.5	3.1	0	0	21
SVM-07S	80	12/30/2021	8:43	19.1	1	0	0	21

Appendix D.2. Soil Vapor Field Monitoring Data*SFPP Norwalk Pump Station, Norwalk, California*

Well/ Location	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Oxygen (%)	Carbon Dioxide (%)	Methane (%)	VOC's (ppmv)	Ambient Oxygen (%)
SVM-08D	40	12/30/2021	9:15	21	0	0	0	21
SVM-08S	40	12/30/2021	9:18	20.9	0	0	0	21
SVM-10D	-20	12/30/2021	8:15	21	0.2	0	0	21
SVM-15D	250	12/30/2021	8:52	18.3	1.6	0	0	21
SVM-15M	250	12/30/2021	8:54	19.7	1	0	0	21
SVM-15S	250	12/30/2021	8:56	19.7	1	0	2.9	21
SVM-16D	-20	12/30/2021	9:05	20.9	0.1	0	0.1	21
SVM-16M	-20	12/30/2021	9:08	21	0.1	0	0.1	21
SVM-16S	-20	12/30/2021	9:10	21	0	0	0	21

Appendix D.3. ROI Data

SFPP Norwalk Pump Station, Norwalk, California

Date	Start Time	End Time	HSVE-1 Date and Flow (SCFM)	HSVE-1 Vacuum (in of H2O)	Comment	Higher Priority Vacuum Monitoring Locations (Vacuum [in of H2O])																	Lower Priority Vacuum Monitoring Locations (Vacuum [in of H2O])										HSVE-1 Flow (SCFM)				
						Approximate Distance to HSVE-01 (ft) (negative upgradient)																	Monitoring ID														
						20	20	20	20	20	10	10	25	40	40	40	80	80	90	120	130	130	130	150	160	160	160	180	180	200	230	230		250	250	250	10
4/6/2021	11:40	13:40	4/6/21 323	28.30	Left Running Overnight	0	1.3	10.4	6	0	NM	NM	0	2.4	0	NM	0	0	NM	NM	1.4	0	NM	NM	NM	NM	0	0	0	NM	NM	0	0	0	NM	323	
4/7/2021	11:40	13:40	4/7/21 323	24.30	50% Flow of Day 2	0.4	NM	10.1	5.8	0	2.5	0	0	2.1	0	1.9	0	0	0	NM	1.3	0	0	0	0	0	0	NM	NM	0	0	0	0	0	NM	323	
4/7/2021	11:40	13:40	4/7/21 512	47.10	75% Flow day 1 left running overnight	1.4	NM	16.1	9.3	0	4.5	0.6	0	2.9	0	4.9	0	0	NM	NM	1.9	0	NM	NM	0	0	NM	NM	0	0	0	0	0	0	NM	512	
4/8/2021	11:15	13:15	4/8/21 512	48.20	75% flow day 2	1.6	NM	14.5	8.1	0	3.6	0	0	3.5	0	4.5	0	0	0	NM	1.9	0	0	0	0	0	0	NM	NM	0	0	0	0	0	0	NM	512
4/8/2021	11:45	13:45	4/8/21 560	55.00	100% flow	1.5	NM	16.6	9.4	0	4.1	0	0	4.2	0.6	4.1	0	0	0.4	0	1.9	0	0	0	0	0	NM	NM	0	0	0	0	0	0	NM	560	
4/15/2021	11:45	13:45	4/15/21 560	55.00	100%flow	1.3	NM	16.7	9.7	0	4.8	0.7	0	4.6	0.8	4.4	0	0	0.5	0	1.9	0	NM	0.7	NM	0	NM	0.5	0	0	0	0	0	0	0	NM	560
4/21/2021	11:15	13:15	4/21/21 560	55.00	100%flow	0.9	NM	11.8	6.7	0	4	0.4	0.1	3.1	0.4	NM	0.3	0.1	0.4	0.3	1.9	0	NM	0	NM	0	0	0.8	0	-0.3	0	0	0.2	0	0	15.1	560
4/28/2021	11:15	13:15	4/28/21 560	55.00	100% flow	1.2	NM	13.1	7.6	0.32	4.2	0.41	0.01	3.41	0.46	0.32	0.14	0.02	0.39	0.25	1.9	NM	NM	-0.3	NM	0	0	0.22	0	0.2	0	0.02	0.18	0	-0.04	NM	560
5/5/2021	11:40	13:40	5/5/21 560	55.00	100% flow	1.57	NM	18	11.2	0.4	6.8	0.65	0	5	0.5	5.2	0.1	0.5	0.59	0.27	1.9	0	NM	0	NM	0	0	0.3	0	0.23	0	0.06	0.25	0	0	NM	560
5/11/2021	11:20	13:40	5/11/21 560	56.00	BS-03 50cfm	1.53	NM	18.9	16.1	0.44	6.01	0.58	0	4.9	0.68	5.43	0.25	0.26	0.62	0.55	1.9	0.22	NM	0	NM	0	0	0.2	0	0.14	0	0	0.45	0	0	NM	560
5/11/2021	14:50	16:30	5/11/21 560	56.00	BS-03 50cfm	1.53	NM	19.06	10.7	0.45	4.18	0.52	0.14	4.8	0.7	5.37	0.42	0.06	0.61	0.44	1.9	0.27	NM	0	NM	0	0	0.14	0	0.14	0	0	0.24	0	0	NM	560
5/12/2021	8:20	22:23	5/12/21 500	56.00	BS-03 50cfm	1.54	NM	18.66	10.99	0.41	6.05	0.64	0.46	4.34	0.71	6.66	0.24	0.05	0.65	0.77	1.9	0.21	NM	0	NM	0	0	0.31	0	0.14	0	0	0.25	0	0	NM	500
5/12/2021	13:15	15:00	5/12/21 500	56.00	BS-03 100cfm	1.51	NM	18.4	10.56	0.4	5.99	0.61	0.02	4.69	0.67	6.94	0.21	0.05	0.62	0.22	1.9	NM	NM	-0.21	NM	0	0	0.25	0.01	0.11	0	0	0.25	0.01	0	23	500
5/13/2021	9:00	12:13	5/13/21 457	54.00	BS-03 100cfm	1.4	NM	16.7	9.83	0.37	3.78	0.46	-12.2	4.4	0.62	4.75	0.14	0	0.6	1.17	1.9	0.19	NM	-0.28	NM	NM	0	0.25	0.33	0.4	0	0	0.28	0	0	19.24	457
5/13/2021	13:09	14:50	5/13/21 457	55.00	BS-03 100cfm	1.41	NM	16.65	9.74	0.35	5.53	0.51	-6.24	4.31	0.6	4.58	0.13	0	0.46	NM	1.9	1.7	NM	-0.34	NM	NM	NM	0	0.18	NM	NM	NM	NM	NM	NM	14.1	457
5/14/2021	11:20	13:30	5/14/21 500	56.00	BS-03 50cfm	1.34	NM	16.61	9.91	0.34	4.55	0.49	NM	4.4	0.59	5.31	0.18	0	8.58	0.58	1.9	0.14	NM	-0.26	NM	0	0	0.17	0	1.26	0	0	0.21	0	0	18.2	500
5/18/2021	9:00	12:50	5/18/21 500	56.00	BS-03 50cfm	1.59	NM	18.76	10.9	0.48	6.32	0.63	0.1	4.97	0.73	7.27	0.25	0.07	0.61	0.57	1.9	0.23	NM	-0.02	NM	0	0	0.27	0	0.1	0	0	0.2	0	0	23.5	500
5/18/2021	13:30	15:30	5/18/21 500	56.00	BS-03 50cfm	1.6	NM	18.91	11.13	0.42	6.53	0.7	0.1	4.99	0.7	6.28	0.24	0.05	0.6	0.58	1.9	0.17	NM	-0.12	NM	0	0	0.26	0	0.11	0	0	0.21	0	0	23.86	500
5/19/2021	9:35	11:55	5/19/21 457	49.00	BS-03 50cfm	1.58	NM	17.8	10.5	0.4	6.12	0.57	0.15	4.75	0.67	5.38	0.3	0.1	0.6	0.8	1.9	0.22	NM	-0.19	NM	NM	NM	0.31	0.06	NM	NM	NM	NM	NM	NM	21.7	457
5/19/2021	13:40	16:05	5/19/21 470	49.00	BS-03 100cfm	1.5	NM	17.6	10.4	0.5	6.3	0.66	-0.66	4.78	0.75	5.98	0.27	0.12	0.76	0.7	1.9	0.3	NM	0	NM	NM	NM	0.34	0.08	NM	NM	NM	NM	NM	NM	22	470
5/20/2021	10:20	11:35	5/20/21 500	56.00	BS-03 100cfm	1.43	NM	17.01	9.9	0.41	5.7	0.5	-10.7	4.37	0.65	5.29	0.17	0.06	0.52	0.28	1.9	0.21	NM	-0.15	NM	NM	NM	0.26	0	0.11	NM	NM	0.28	0	0	21.83	500
5/26/2021	11:02	14:01	5/26/21 460	54.00	BS-03 150cfm	1.48	NM	18.16	10.39	0.37	0.1	0.03	-13	4.46	0.66	NM	0.07	0	0.61	NM	1.9	NM	NM	NM	NM	NM	0.18	0	NM	NM	NM	NM	NM	NM	NM	460	
5/27/2021	7:48	11:20	5/27/21 600	54.00	BS-03 200cfm	1.32	NM	16.33	9.28	0.33	5.66	0.51	-19.4	3.78	0.4	3.42	-0.03	0	0.49	-0.97	1.9	0.19	NM	-0.21	NM	NM	0	0	0	0.03	NM	NM	0.17	0	0	20.52	600
5/28/2021	10:15	11:35	5/28/21 510	53.50	BS-03 100cfm turned down because of elevated VOCs in GMW-O-12, field sheets contained additional vacuum readings from well head and manifold	NM	NM	NM	NM	NM	NM	NM	27.2	NM	NM	NM	NM	NM	NM	NM	1.9	NM	NM	54.1	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	510
6/1/2021	12:40	14:45	6/1/21 600	56.00	BS-03 restarted at 100cfm at 12:00pm after compressor service.	1.41	NM	12.57	7.04	0.27	4.2	0.44	53.4	3.14	0.42	4.48	0.12	0.03	0.51	NM	1.9	0.13	NM	-0.18	NM	NM	NM	0	0.14	0.21	NM	NM	0.24	0.04	0.04	14.22	600
6/10/2021	10:35	12:58	6/10/21 600	56.00	Variable vacuum for GMW-O-11, and vacuum was -0.1 to -0.25. Packer in well GMW-O-20, well vault VOC 9.0 ppm.	1.13	NM	10.9	6.04	0.1	4.11	0.41	54.5	4.1	0.38	NM	0.01	0	NM	NM	1.9	0.12	NM	NM	NM	NM	-0.02	0	0.1	NM	NM	0.15	0	0	NM	600	
6/10/2021	15:09	17:09	6/10/21 600	55.00	No end time for HSVE-1 on this field form. Vacuum continues to fluctuate on GMW-O-11. Packer installed, well vault VOC: 9.1ppmv for GMW-O-20 temporarily with well cap off. Vacuum was 0.05 to 0.51 for GMW-O-11	0.95	NM	11.1	6.21	0.14	4.21	0.42	54	4.12	0.4	NM	0.02	0	0	NM	1.9	0.12	NM	0	NM	NM	NM	0.02	0	0.51	NM	NM	0.33	0.03	0	18.1	600
6/11/2021	7:55	10:28	6/11/21 600	56.00	No Access Vehicle parked on SVM-16D,M,S. Packer well for GMW-O-12. Additional vacuum readings for GMW-O-14 and GMW-O-11.	0.85	NM	NM	NM	NM	2.75	0.34	NM	2.27	0.33	1.14	-0.1	-0.02	0.29	-1.35	1.9	0.29	NM	-0.65	NM	NM	NM	-0.04	0	0.2	NM	NM	0.15	0	0	2.3	600
6/22/2021	7:55	9:55	6/22/21 600	56.00	No end time for HSVE-1. Bumped BS-03 to 250 @ 10:58. Positive pressure no VOCs in vault for GMW-o-5. Checked packer sitting in good condition for GMW-O-12. Pneumatic packer damage for GMW-o-20, replaced with mechanical packer.	1.4	NM	12.68	7.04	0.27	4.04	0.43	NM	3.15	0.44	4.41	0.1	0.02	0.43	NM	1.9	0.11	NM	-0.6	NM	NM	NM	0.2	0.02	0.11	NM	NM	0.23	0.32	0.08	11.86	600
6/25/2021	8:45	11:02	6/25/21 550	55.10	Inside vaults = 0ppm VOC.	-0.94	NM	11.45	6.44	0.25	3.17	0.31	NM	2.67	0.38	NM	-0.01	0	0.34	NM	1.9	0.11	NM	-0.73	NM	NM	NM	-0.01	-0.01	0.12	NM	NM	0.19	0.01	0.15	7.03	550
6/28/2021	11:00	13:50	6/28/21 600	56.00	Vault VOCs = 0.0 for GMW-O-12 and GMW-O-20, Packers installed Vacuum for GMW-O-11 was between 0.3 and 0.21.	0.88	NM	11.47	6.51	0.24	3.11	0.21	NM	2.71	0.41	4.21	0.02	0.02	0.41	NM	1.9	0.1	NM	-0.64	NM	NM	NM	0.06	0.01	0.3	NM	NM	0.18	0.01	0.06	NM	600

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Manual Measurements		Sheen/Odor	Field Calculations	PID
				Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-11	200	4/6/2021	14:00	32	31.9	y	0.1	0.5
GMW-O-12	25	4/6/2021	14:15	31.19	32.02	y	1	36.4
GMW-O-20	120	4/6/2021	14:10	31.78	n/a	n	0	n/a
GMW-O-11	200	4/7/2021	9:34	32.1	32	y	0.1	1.1
GMW-O-12	25	4/7/2021	9:40	32.25	31.87	y	<1.0	6.3
GMW-O-20	120	4/7/2021	9:43	31.78	n/a	n	0	n/a
GMW-O-3	-90	4/7/2021	10:45	31.35	n/a	n	0	9.3
GMW-O-5	-150	4/7/2021	10:56	31.42	n/a	n	0	0.3
MW-SF-9	130	4/7/2021	11:05	n/a	n/a	n/a	n/a	n/a
GMW-O-11	200	4/7/2021	14:36	32.05	n/a	y	0.1	n/a
GMW-O-12	25	4/7/2021	14:20	31.28	31.97	y	<1.0	n/a
GMW-O-20	120	4/7/2021	14:32	31.85	n/a	n	0	n/a
GMW-O-3	-90	4/7/2021	14:47	31.37	n/a	n	0	n/a
GMW-O-5	-150	4/7/2021	14:55	31.38	n/a	n	0	n/a
MW-SF-9	130	4/7/2021	15:05	n/a	n/a	n/a	n/a	n/a
GMW-O-11	200	4/8/2021	14:00	32.05	n/a	n	n/a	0.5
GMW-O-12	25	4/8/2021	14:38	31.28	31.95	y	0.71	7.4
GMW-O-20	120	4/8/2021	14:20	31.85	n/a	n	0	n/a
GMW-O-3	-90	4/8/2021	14:12	31.37	n/a	n	0	0.9
GMW-O-5	-150	4/8/2021	12:50	31.38	n/a	n	0	4.9
GMW-O-11	200	4/15/2021	11:15	32.1	n/a	n	n/a	0
GMW-O-12	25	4/15/2021	11:30	32.04	n/a	n	n/a	0.8
GMW-O-2	160	4/15/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	4/15/2021	11:25	31.95	n/a	n	0	0
GMW-O-21	40	4/15/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-3	-90	4/15/2021	9:40	31.9	n/a	y	0	0
GMW-O-5	-150	4/15/2021	9:20	31.56	n/a	n	n/a	0
MW-SF-9	130	4/15/2021	12:05	32.53	n/a	n	0	n/a
GMW-O-11	200	4/21/2021	12:10	31.95	n/a	n	n/a	0.1
GMW-O-12	25	4/21/2021	12:33	31.63	n/a	n	n/a	0.1
GMW-O-2	160	4/21/2021	12:26	31.07	n/a	n	n/a	0.9

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Manual Measurements		Sheen/Odor	Field Calculations	PID
				Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-20	120	4/21/2021	12:18	31.65	n/a	n	n/a	0
GMW-O-21	40	4/21/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-3	-90	4/21/2021	10:00	31.5	n/a	n	0	0.3
GMW-O-5	-150	4/21/2021	9:45	31.5	n/a	n	0	0
MW-SF-9	130	4/21/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-11	200	4/28/2021	12:40	n/a	NA	N	NA	1.2
GMW-O-12	25	4/28/2021	n/a	n/a	n/a	n/a	n/a	2.5
GMW-O-2	160	4/28/2021	11:59	31.66	n/a	n	NA	0.9
GMW-O-20	120	4/28/2021	n/a	n/a	n/a	n/a	n/a	0.8
GMW-O-21	40	4/28/2021	n/a	n/a	n/a	n/a	n/a	0.2
GMW-O-3	-90	4/28/2021	n/a	n/a	n/a	n/a	n/a	0.4
GMW-O-5	-150	4/28/2021	n/a	n/a	n/a	n/a	n/a	0
GMW-O-11	200	5/5/2021	13:40	31.9	n/a	n/a	n/a	3.8
GMW-O-12	25	5/5/2021	13:50	31.06	n/a	n/a	n/a	3.9
GMW-O-2	160	5/5/2021	13:01	31.69	n/a	n/a	n/a	0
GMW-O-20	120	5/5/2021	13:45	31.37	n/a	n/a	n/a	0.9
GMW-O-21	40	5/5/2021	14:43	31.13	n/a	n/a	n/a	0.9
GMW-O-3	-90	5/5/2021	14:06	31.3	n/a	n/a	n/a	1.5
GMW-O-5	-150	5/5/2021	15:00	31.22	n/a	n/a	n/a	0.5
MW-SF-9	130	5/5/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-14	n/a	5/5/2021	n/a	23.9	n/a	n/a	n/a	n/a
GMW-O-11	200	5/11/2021	12:40	30.85	n/a	n/a	0	0.3
GMW-O-12	25	5/11/2021	12:55	28.47	n/a	n/a	0	0.1
GMW-O-2	160	5/11/2021	11:35	31.35	n/a	n/a	0	0.1
GMW-O-20	120	5/11/2021	12:48	29.52	n/a	n/a	0	0.3
GMW-O-21	40	5/11/2021	13:28	29.05	n/a	n/a	0	0
GMW-O-3	-90	5/11/2021	11:50	29.45	n/a	n/a	0	0.2
GMW-O-5	-150	5/11/2021	13:40	29.09	n/a	n/a	0	n/a
GMW-O-11	200	5/11/2021	15:30	30.79	n/a	n/a	0	0
GMW-O-12	25	5/11/2021	15:43	29.74	n/a	n/a	0	0.1
GMW-O-2	160	5/11/2021	15:03	31.03	n/a	n/a	0	0.1

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Manual Measurements		Sheen/Odor	Field Calculations	PID
				Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-20	120	5/11/2021	15:37	30.03	n/a	n/a	0	0.1
GMW-O-21	40	5/11/2021	16:09	30.04	n/a	n/a	0	0
GMW-O-3	-90	5/11/2021	15:08	29.53	n/a	n/a	0	0.2
GMW-O-5	-150	5/11/2021	16:27	29.5	n/a	n/a	0	0
GMW-O-11	200	5/12/2021	14:40	30.35	n/a	n/a	0	0
GMW-O-12	25	5/12/2021	14:50	27.65	n/a	n/a	0	0.2
GMW-O-2	160	5/12/2021	13:32	31.25	n/a	n/a	0	0.2
GMW-O-20	120	5/12/2021	14:45	28.74	n/a	n/a	0	0.1
GMW-O-21	40	5/12/2021	14:16	27.54	n/a	n/a	0	0
GMW-O-3	-90	5/12/2021	13:38	28.65	n/a	n/a	0	1
GMW-O-5	-150	5/12/2021	13:46	28.82	n/a	n/a	0	n/a
GMW-O-11	200	5/12/2021	9:43	30.69	n/a	n/a	0	0.3
GMW-O-12	25	5/12/2021	10:00	32.09	n/a	n/a	0	8.1
GMW-O-2	160	5/12/2021	8:45	31.55	n/a	n/a	0	0.2
GMW-O-20	120	5/12/2021	9:48	31.5	n/a	n/a	0	0.5
GMW-O-21	40	5/12/2021	10:48	31.75	n/a	n/a	0	0.7
GMW-O-3	-90	5/12/2021	9:00	30.82	n/a	n/a	0	1.2
GMW-O-5	-150	5/12/2021	11:15	29.55	n/a	n/a	0	0.1
GMW-O-11	200	5/13/2021	11:30	30.38	n/a	n/a	n/a	0.6
GMW-O-12	25	5/13/2021	11:45	29.75	n/a	n/a	n/a	5000
GMW-O-2	160	5/13/2021	9:41	30.87	n/a	n/a	n/a	0.4
GMW-O-20	120	5/13/2021	11:37	29.73	n/a	n/a	n/a	0.3
GMW-O-21	40	5/13/2021	10:59	29.66	n/a	n/a	n/a	0.9
GMW-O-3	-90	5/13/2021	9:56	29.05	n/a	n/a	n/a	1.1
GMW-O-5	-150	5/13/2021	10:05	29.33	n/a	n/a	n/a	0.7
GMW-O-14	n/a	5/13/2021	10:18	28.7	n/a	n/a	n/a	3.2
GMW-O-11	200	5/13/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-12	25	5/13/2021	14:37	n/a	n/a	n/a	n/a	5000
GMW-O-2	160	5/13/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	5/13/2021	13:31	29.87	n/a	n/a	n/a	n/a
GMW-O-21	40	5/13/2021	14:22	29.83	n/a	n/a	n/a	2.4

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Manual Measurements		Sheen/Odor	Field Calculations	PID
				Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-3	-90	5/13/2021	13:38	29.28	n/a	n/a	n/a	5.2
GMW-O-5	-150	5/13/2021	13:45	29.5	n/a	n/a	n/a	n/a
GMW-O-14	n/a	5/13/2021	13:57	28.75	n/a	n/a	n/a	4.9
GMW-O-11	200	5/18/2021	12:02	31.55	n/a	n	n/a	0.7
GMW-O-12	25	5/18/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-2	160	5/18/2021	12:30	31.4	n/a	n	n/a	0
GMW-O-20	120	5/18/2021	12:10	31.11	n/a	n	n/a	0.6
GMW-O-21	40	5/18/2021	11:04	30.4	n/a	n	n/a	0.3
GMW-O-3	-90	5/18/2021	12:20	31.71	n/a	n	n/a	0
GMW-O-5	-150	5/18/2021	10:11	31.3	n/a	n	n/a	0.8
GMW-O-11	200	5/18/2021	14:50	31.52	n/a	n	n/a	0.1
GMW-O-12	25	5/18/2021	15:05	31.52	n/a	n	n/a	3.6
GMW-O-2	160	5/18/2021	15:19	31.41	n/a	n	n/a	0
GMW-O-20	120	5/18/2021	14:55	30.46	n/a	n	n/a	0.2
GMW-O-21	40	5/18/2021	14:20	30.85	n/a	n	n/a	0.2
GMW-O-3	-90	5/18/2021	15:12	31.88	n/a	n	n/a	0
GMW-O-5	-150	5/18/2021	13:30	31.31	n/a	n	n/a	0.7
GMW-O-11	200	5/14/2021	12:34	31.97	n/a	n	n/a	0.1
GMW-O-12	25	5/14/2021	12:50	n/a	n/a	n	n/a	0
GMW-O-2	160	5/14/2021	11:48	31.69	n/a	n	n/a	5000
GMW-O-20	120	5/14/2021	12:42	31.95	n/a	n	n/a	0
GMW-O-21	40	5/14/2021	13:11	30.15	n/a	n	n/a	2.3
GMW-O-3	-90	5/14/2021	11:57	31.36	n/a	n	n/a	0
GMW-O-5	-150	5/14/2021	13:28	30.11	n/a	n	n/a	0
GMW-O-11	200	5/19/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-12	25	5/19/2021	11:55	31.91	n/a	n/a	n/a	11
GMW-O-2	160	5/19/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	5/19/2021	11:45	31.36	n/a	n/a	n/a	0.4
GMW-O-21	40	5/19/2021	11:09	31.71	n/a	n/a	n/a	0.7
GMW-O-3	-90	5/19/2021	9:50	30.83	n/a	n/a	n/a	5.4
GMW-O-5	-150	5/19/2021	10:02	31.18	n/a	n/a	n/a	0.2

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Manual Measurements		Sheen/Odor	Field Calculations	PID
				Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-11	200	5/19/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-12	25	5/19/2021	16:05	29.58	n/a	n/a	n/a	n/a
GMW-O-2	160	5/19/2021	n/a	n/a	n/a	n/a	n/a	17.4
GMW-O-20	120	5/19/2021	15:50	29.49	n/a	n/a	n/a	0.4
GMW-O-21	40	5/19/2021	14:47	29.05	n/a	n/a	n/a	0.1
GMW-O-3	-90	5/19/2021	13:40	29.71	n/a	n/a	n/a	1.3
GMW-O-5	-150	5/19/2021	13:48	30.59	n/a	n/a	n/a	0.3
GMW-O-11	200	5/20/2021	11:25	30.49	n/a	n/a	n/a	0.3
GMW-O-12	25	5/20/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-2	160	5/20/2021	n/a	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	5/20/2021	11:38	29.92	n/a	n/a	n/a	0.3
GMW-O-21	40	5/20/2021	11:06	29.93	n/a	n/a	n/a	0.3
GMW-O-3	-90	5/20/2021	10:47	29.98	n/a	n/a	n/a	0.3
GMW-O-5	-150	5/20/2021	10:38	30.65	n/a	n/a	n/a	0.1
GMW-O-2	160	5/25/2021	9:48	31.05	n/a	n/a	n/a	n/a
GMW-O-3	-90	5/25/2021	9:45	29.36	n/a	n/a	n/a	n/a
GMW-O-11	200	5/25/2021	9:28	30.95	n/a	n/a	n/a	n/a
GMW-O-12	25	5/25/2021	9:40	31.34	n/a	n/a	n/a	n/a
GMW-O-20	120	5/25/2021	9:32	29.89	n/a	n/a	n/a	n/a
GMW-O-21	40	5/25/2021	10:12	29.11	n/a	n/a	n/a	n/a
GMW-O-2	160	5/25/2021	14:39	31.11	n/a	n/a	n/a	n/a
GMW-O-3	-90	5/25/2021	14:29	29.74	n/a	n/a	n/a	n/a
GMW-O-5	-150	5/25/2021	13:10	32.94	n/a	n/a	n/a	n/a
GMW-O-11	200	5/25/2021	13:56	31.15	n/a	n/a	n/a	n/a
GMW-O-12	25	5/25/2021	14:20	31.44	n/a	n/a	n/a	n/a
GMW-O-20	120	5/25/2021	14:06	30.15	n/a	n/a	n/a	n/a
GMW-O-21	40	5/25/2021	13:31	30.85	n/a	n/a	n/a	n/a
GMW-O-3	-90	5/26/2021	13:05	29.69	n/a	n/a	n/a	0
GMW-O-2	160	5/27/2021	9:45	30.81	n/a	n/a	n/a	0
GMW-O-3	-90	5/27/2021	9:48	28.95	n/a	n/a	n/a	0
GMW-O-5	-150	5/27/2021	9:55	30.05	n/a	n/a	n/a	0

Appendix D.4. GWE Data

SFPP Norwalk Pump Station, Norwalk, California

Well	Approximate Distance to HSVE-01 (ft) (negative upgradient)	Date	Time	Manual Measurements		Sheen/Odor	Field Calculations	PID
				Depth to Water (ft. BTOC)	Depth to Product (ft. BTOC)	Yes/No	Apparent Product Thickness (ft)	VOC's (ppm)
GMW-O-11	200	5/27/2021	10:59	29.98	n/a	n/a	n/a	0
GMW-O-12	25	5/27/2021	11:10	n/a	n/a	n/a	n/a	535
GMW-O-14	10	5/27/2021	10:01	n/a	n/a	n/a	n/a	0
GMW-O-20	120	5/27/2021	11:04	n/a	n/a	n/a	n/a	405
GMW-O-21	40	5/27/2021	10:30	28.74	n/a	n/a	n/a	0
GMW-O-3	-90	6/1/2021	13:39	30.44	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/1/2021	12:43	31.15	n/a	n/a	n/a	n/a
GMW-O-11	200	6/1/2021	14:15	30.25	n/a	n/a	n/a	n/a
GMW-O-12	25	6/1/2021	13:38	37.75	n/a	n/a	n/a	n/a
GMW-O-14	10	6/1/2021	12:52	n/a	n/a	n/a	n/a	n/a
GMW-O-20	120	6/1/2021	14:22	30.17	n/a	n/a	n/a	n/a
GMW-O-21	40	6/1/2021	13:33	30.66	n/a	n/a	n/a	n/a
GMW-O-11	200	6/10/2021	11:15	30.72	n/a	n/a	n/a	n/a
GMW-O-12	25	6/10/2021	11:25	28	n/a	n/a	n/a	n/a
GMW-O-11	200	6/10/2021	14:27	30.63	n/a	n/a	n/a	n/a
GMW-O-12	25	6/10/2021	14:37	27.95	n/a	n/a	n/a	n/a
GMW-O-3	-90	6/11/2021	10:18	28.03	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/11/2021	10:10	29.23	n/a	n/a	n/a	n/a
GMW-O-11	200	6/11/2021	9:04	30.25	n/a	n/a	n/a	n/a
GMW-O-20	120	6/11/2021	9:10	28.61	n/a	n/a	n/a	n/a
GMW-O-21	40	6/11/2021	9:50	28.45	n/a	n/a	n/a	n/a
GMW-O-3	-90	6/22/2021	10:20	30.49	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/22/2021	10:08	30.36	n/a	n/a	n/a	n/a
GMW-O-21	40	6/22/2021	9:45	31.34	n/a	n/a	n/a	n/a
GMW-O-3	-90	6/28/2021	13:08	30.55	n/a	n/a	n/a	n/a
GMW-O-5	-150	6/28/2021	13:30	30.45	n/a	n/a	n/a	n/a
GMW-O-11	200	6/28/2021	12:30	30.59	n/a	n/a	n/a	n/a
GMW-O-21	40	6/28/2021	12:59	30.91	n/a	n/a	n/a	n/a

Appendix D.5. HSVE-01 Cumulative Mass Removed

SFPP Norwalk Pump Station, Norwalk, California

Date	Operational Data						VOC Mass Removal				O2 Calculations					
	SVE Influent Max of CO2 (%)	SVE Influent Max of O2 (%)	SVE Influent Max of VOCs (ppmv)	Max of SVE Influent Flow (scfm)	Operational Efficiency	Corrected SVE Flow (scfm)	Removal Rate (VOC ppm/ft3/minute)	VOC Mass Removal Rate (lb/minute)	VOC Mass Removal Rate (lb/day)	Cumulative Equivalent Mass Removed (lbs)	O2 Depletion (%)	O2 Depletion (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/day)	Cumulative Equivalent Mass Consumed by O2 (lbs)	Difference O2 vs CO2
4/6/21 12:25	6	13.4	381	323	1.00	323	0	0	0	0	7.6	1.88	0.53	766.66	0	0
4/6/21 16:00	6.2	13.4	405	323	1.00	323	130815.00	0.02875	41.39	6	7.6	1.88	0.53	766.66	114	-6
4/7/21 7:35	5.6	15.5	406.6	323	1.00	323	131331.80	0.02886	41.56	33	5.5	1.36	0.39	554.82	612	-17
4/7/21 12:45	4.7	15.6	421.5	512	1.00	512	215808.00	0.04742	68.29	48	5.4	2.12	0.60	863.47	732	10
4/7/21 15:25	4.4	16.2	418	512	1.00	512	214016.00	0.04703	67.72	55	4.8	1.88	0.53	767.53	828	14
4/8/21 7:35	4	17.1	425	512	1.00	512	217600.00	0.04782	68.86	102	3.9	1.53	0.43	623.62	1345	66
4/8/21 11:00	3.4	17.5	401.1	512	1.00	512	205363.20	0.04513	64.98	111	3.5	1.37	0.39	559.66	1433	86
4/8/21 12:00	3.4	17	398.1	560	1.00	560	222936.00	0.04899	70.54	114	4.0	1.71	0.49	699.57	1457	90
4/8/21 15:00	3.3	17.9	414.2	560	1.00	560	231952.00	0.05097	73.40	123	3.1	1.33	0.38	542.17	1544	92
4/15/21 9:00	3.5	17.7	421	560	1.00	560	235760.00	0.05181	74.60	627	3.3	1.41	0.40	577.15	5204	1106
4/21/21 13:00	3.4	17.5	408	560	0.73	408.8	166790.40	0.03665	52.78	952	3.5	1.09	0.31	446.85	8763	2076
4/28/21 11:00	1.4	19.9	340	550	1.00	550	187000.00	0.04109	59.17	1361	1.1	0.46	0.13	188.95	11854	2588
5/5/21 9:00	1.3	18.9	390	550	1.00	550	214500.00	0.04714	67.88	1831	2.1	0.88	0.25	360.72	13161	3276
5/5/21 15:45	1.3	18.9	418	550	1.00	550	229900.00	0.05052	72.75	1851	2.1	0.88	0.25	360.72	13262	3250
5/11/21 16:45	0.8	20.1	1200	560	0.98	548.8	658560.00	0.14472	208.39	3110	0.9	0.38	0.11	154.26	15441	2690
5/12/21 8:15	1.3	19.9	422	500	0.98	490	206780.00	0.04544	65.43	3153	1.1	0.41	0.12	168.33	15541	2696
5/12/21 15:00	1	20.2	2000	500	0.98	490	980000.00	0.21535	310.11	3240	0.8	0.30	0.09	122.42	15588	2716
5/13/21 9:00	1.3	19.8	431.8	457	0.98	447.86	193385.95	0.04250	61.19	3286	1.2	0.41	0.12	167.84	15680	2762
5/13/21 14:52	1	19.8	5000	457	0.98	447.86	2239300.00	0.49208	708.59	3459	1.2	0.41	0.12	167.84	15721	2774
5/14/21 8:30	1.1	19.9	5000	457	0.98	447.86	2239300.00	0.49208	708.59	3980	1.1	0.38	0.11	153.86	15844	2774
5/14/21 14:18	0.2	19.8	4852	457	0.98	447.86	2173016.72	0.47751	687.62	4146	1.2	0.41	0.12	167.84	15882	2782
5/18/21 9:00	1.9	17.4	1410	500	0.98	490	690900.00	0.15182	218.62	4972	3.6	1.35	0.38	550.91	16516	2274
5/18/21 12:52	1.2	18.7	1900	500	0.98	490	931000.00	0.20458	294.60	5019	2.3	0.86	0.24	351.97	16605	2242
5/18/21 15:30	1.2	19.5	2650	500	0.98	490	1298500.00	0.28534	410.89	5065	1.5	0.56	0.16	229.55	16643	2227
5/19/21 9:30	1.2	19.7	440	457	0.98	447.86	197058.40	0.04330	62.36	5111	1.3	0.45	0.13	181.83	16815	2220
5/19/21 13:10	0.9	20	4830	470	0.98	460.6	2224698.00	0.48887	703.97	5219	1.0	0.35	0.10	143.85	16843	2223
5/19/21 16:15	0.8	19.9	390	485	0.98	475.3	185367.00	0.04073	58.66	5226	1.1	0.40	0.11	163.28	16862	2225
5/20/21 9:30	1.4	19.6	455	500	0.98	490	222950.00	0.04899	70.55	5277	1.4	0.52	0.15	214.24	16979	2210
5/20/21 11:49	0.9	19.5	475	500	0.98	490	232750.00	0.05115	73.65	5284	1.5	0.56	0.16	229.55	17000	2214
5/26/21 11:02	1.2	19.3	415	460	0.93	427.8	177537.00	0.03901	56.18	5619	1.7	0.56	0.16	227.13	18370	1830
5/26/21 12:15	1.1	18.9	395	460	0.93	427.8	168981.00	0.03713	53.47	5622	2.1	0.69	0.19	280.57	18381	1828
5/26/21 14:01	0.9	19.4	418	530	0.93	492.9	206032.20	0.04527	65.20	5627	1.6	0.60	0.17	246.30	18402	1821
5/27/21 7:48	1.2	19.5	374.2	600	0.93	558	208803.60	0.04588	66.07	5676	1.5	0.64	0.18	261.40	18584	1761
5/27/21 11:20	1	19.2	379.1	600	0.93	558	211537.80	0.04648	66.94	5686	1.8	0.77	0.22	313.68	18623	1760
5/28/21 10:15	1.3	18.5	335	510	0.93	474.3	158890.50	0.03492	50.28	5734	2.5	0.91	0.26	370.32	18922	1660
5/28/21 11:30	1	18.7	421	510	0.93	474.3	199680.30	0.04388	63.19	5737	2.3	0.83	0.24	340.69	18942	1653
6/1/21 12:40	1.2	18.5	386.2	600	0.99	594	229402.80	0.05041	72.59	6031	2.5	1.14	0.32	463.78	20321	993
6/1/21 14:45	1	18.8	360.1	600	0.99	594	213899.40	0.04700	67.69	6037	2.2	1.00	0.28	408.12	20361	976
6/10/21 10:35	1.3	18	468.3	600	1.00	600	280980.00	0.06174	88.91	6822	3.0	1.38	0.39	562.16	23963	-662
6/10/21 12:58	1.4	18.1	472.5	600	1.00	600	283500.00	0.06230	89.71	6831	2.9	1.33	0.38	543.42	24019	-689
6/10/21 15:09	1	18.5	442.5	600	1.00	600	265500.00	0.05834	84.01	6838	2.5	1.15	0.33	468.46	24069	-710
6/11/21 7:55	1.4	19.4	441	600	1.00	600	264600.00	0.05814	83.73	6897	1.6	0.73	0.21	299.82	24396	-880
6/11/21 10:28	0.9	19.1	468	600	1.00	600	280800.00	0.06170	88.85	6906	1.9	0.87	0.25	356.03	24428	-878
6/22/21 7:55	1.3	18.8	344.9	600	0.99	594	204870.60	0.04502	64.83	7612	2.2	1.00	0.28	408.12	28306	-2552
6/25/21 8:45	1.6	16.6	354	510	0.99	504.9	178734.60	0.03928	56.56	7784	4.4	1.70	0.48	693.81	29545	-2913
6/25/21 11:02	1	19.2	405	550	0.99	544.5	220522.50	0.04846	69.78	7791	1.8	0.75	0.21	306.09	29611	-2950
6/28/21 11:00	1.1	18.4	422	600	0.99	594	250668.00	0.05508	79.32	8028	2.6	1.18	0.33	482.33	30529	-3256
6/28/21 11:10	1.1	18.3	424	600	0.99	594	251856.00	0.05534	79.70	8029	2.7	1.23	0.35	500.88	30532	-3258
6/28/21 13:50	1	18.4	415	600	0.99	594	246510.00	0.05417	78.00	8038	2.6	1.18	0.33	482.33	30588	-3286
7/23/21 8:00	1.3	19.7	421	600	0.74	444	186924.00	0.04108	59.15	9502	1.3	0.44	0.13	180.26	42529	-9717
7/23/21 9:00	1.3	19.8	408	600	0.74	444	181152.00	0.03981	57.32	9504	1.2	0.41	0.12	166.40	42536	-9716
8/6/21 9:25		19.1	365	555	1.00	555	202575.00	0.04452	64.10	10403	1.9	0.81	0.23	329.33	44869	-9016
8/31/21 7:45	0.9	19.6	52.1	450	0.70	315	16411.50	0.00361	5.19	10532	1.4	0.34	0.10	137.73	53079	-17227
8/31/21 10:45	1.1	18.4	408	500	0.70	350	142800.00	0.03138	45.19	10538	2.6	0.70	0.20	284.20	53096	-17231

Appendix D.5. HSVE-01 Cumulative Mass Removed

SFPP Norwalk Pump Station, Norwalk, California

Date	Operational Data						VOC Mass Removal				O2 Calculations					
	SVE Influent Max of CO2 (%)	SVE Influent Max of O2 (%)	SVE Influent Max of VOCs (ppmv)	Max of SVE Influent Flow (scfm)	Operational Efficiency	Corrected SVE Flow (scfm)	Removal Rate (VOC ppm/ft3/minute)	VOC Mass Removal Rate (lb/minute)	VOC Mass Removal Rate (lb/day)	Cumulative Equivalent Mass Removed (lbs)	O2 Depletion (%)	O2 Depletion (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/minute)	Equivalent Mass Consumed by O2 (lbs/day)	Cumulative Equivalent Mass Consumed by O2 (lbs)	Difference O2 vs CO2
9/1/21 7:45	1	19.5	195	450	0.68	306	59670.00	0.01311	18.88	10555	1.5	0.35	0.10	143.35	53345	-17353
9/1/21 8:00	1.1	19.5	202	450	0.68	306	61812.00	0.01358	19.56	10555	1.5	0.35	0.10	143.35	53346	-17353
9/9/21 9:05	1.1	19.5	208	500	0.69	345	71760.00	0.01577	22.71	10737	1.5	0.40	0.11	161.62	54500	-17492
9/9/21 12:45	1.1	19.4	215	500	0.69	345	74175.00	0.01630	23.47	10741	1.6	0.42	0.12	172.39	54524	-17495
9/16/21 11:00	1.6	19.3	238.9	550	1.00	550	131395.00	0.02887	41.58	11029	1.7	0.72	0.20	292.01	55719	-17704
9/21/21 13:45	0.8	21	72.4	200	1.00	200	14480.00	0.00318	4.58	11053	0.0	0.00	0.00	0.00	57212	-17511
9/21/21 14:45	0.8	19.4	1100	500	1.00	500	550000.00	0.12086	174.04	11060	1.6	0.61	0.17	249.85	57212	-17509
9/21/21 14:55	1.2	19.6	1090	500	1.00	500	545000.00	0.11976	172.46	11061	1.4	0.54	0.15	218.62	57214	-17509
9/30/21 16:30	0.6	20.1	1312	400	1.00	400	524800.00	0.11532	166.06	12567	0.9	0.28	0.08	112.43	59196	-17453
10/1/21 8:55	0.6	19.6	1260	400	0.98	400	504000.00	0.11075	159.48	12676	1.4	0.43	0.12	174.89	59273	-17468
10/7/21 11:05	0.2	20.7	382	460	0.98	460	175720.00	0.03861	55.60	13014	0.3	0.11	0.03	43.10	60338	-17986
10/19/21 9:15	0.5	20.1	102	395	0.98	395	40290.00	0.00885	12.75	13166	0.9	0.27	0.08	111.03	60852	-18089
10/19/21 14:25	0.9	19.7	326	427	0.98	427	139202.00	0.03059	44.05	13176	1.3	0.42	0.12	173.36	60876	-18097
11/15/21 14:07	0.9	19.5	337	400	0.61	400	134800.00	0.02962	42.66	14327	1.5	0.46	0.13	187.39	65554	-18889
12/9/21 11:52	0.6	19.2	153	395	0.96	395	60435.00	0.01328	19.12	14784	1.8	0.54	0.15	222.05	70034	-20144
12/15/21 13:30	0.9	19.4	421	400	0.92	400	168400.00	0.03701	53.29	15107	1.6	0.49	0.14	199.88	71381	-20953
12/17/21 14:30	0.5	19.9	102	450	0.92	450	45900.00	0.01009	14.52	15137	1.1	0.38	0.11	154.59	71789	-21085
12/23/21 7:45	0.9	19.9	260	360	0.97	360	93600.00	0.02057	29.62	15306	1.1	0.30	0.09	123.67	72674	-21487
12/30/21 7:55	0.8	19.8	272	400	1.00	400	108800.00	0.02391	34.43	15548	1.2	0.37	0.10	149.91	73540	-21503

Appendix D.5. HSVE-01 Cumulative Mass Removed

SFPP Norwalk Pump Station, Norwalk, California

Date	Biodegradation							Cumulative Mass Removed (lbs)	Flow (scfm)
	CO2			C14 Correction Applied					
	CO2 Production (scf/minute)	CO2 Production (lbs/minute)	C14 Correction Factor Based on BaCO3	Equivalent Mass Biodegraded by CO2 (lbs/minute C14 Corrected)	Equivalent Mass Biodegraded by CO2 (lbs/day C14 Corrected)	Cumulative Equivalent Mass Consumed by CO2 (lbs)	Total Biodegraded Mass (lbs) C14 Corrected		
4/6/21 12:25	19.38	2.38	0.65	0.50	726.18	0	0	0	0
4/6/21 16:00	20.03	2.46	0.65	0.52	750.38	108	112	118	0
4/7/21 7:35	18.09	2.22	0.65	0.47	677.77	596	552	585	0
4/7/21 12:45	24.06	2.95	0.65	0.63	901.69	742	746	794	0
4/7/21 15:25	22.53	2.76	0.65	0.59	844.13	842	840	895	0
4/8/21 7:35	20.48	2.51	0.65	0.53	767.40	1410	1357	1459	0
4/8/21 11:00	17.41	2.14	0.65	0.45	652.29	1520	1450	1561	0
4/8/21 12:00	19.04	2.34	0.65	0.50	713.44	1547	1480	1593	0
4/8/21 15:00	18.48	2.27	0.65	0.48	692.45	1636	1566	1689	0
4/15/21 9:00	19.60	2.40	0.65	0.51	734.42	6310	6523	7150	0
4/21/21 13:00	13.90	1.70	0.65	0.36	520.81	10839	9735	10687	0
4/28/21 11:00	7.70	0.94	0.65	0.20	288.52	14441	11731	13092	0
5/5/21 9:00	7.15	0.88	0.65	0.19	267.91	16437	13584	15415	0
5/5/21 15:45	7.15	0.88	0.65	0.19	267.91	16512	13659	15511	0
5/11/21 16:45	4.39	0.54	0.65	0.11	164.51	18131	14653	17763	45
5/12/21 8:15	6.37	0.78	0.65	0.17	238.69	18237	14807	17960	45
5/12/21 15:00	4.90	0.60	0.65	0.13	183.61	18304	14859	18099	100
5/13/21 9:00	5.82	0.71	0.65	0.15	218.16	18442	15022	18308	100
5/13/21 14:52	4.48	0.55	0.65	0.12	167.82	18495	15063	18522	100
5/14/21 8:30	4.93	0.60	0.65	0.13	184.60	18619	15199	19179	50
5/14/21 14:18	0.90	0.11	0.65	0.02	33.56	18663	15207	19353	50
5/18/21 9:00	9.31	1.14	0.65	0.24	348.85	18790	16526	21498	50
5/18/21 12:52	5.88	0.72	0.65	0.15	220.33	18846	16561	21581	50
5/18/21 15:30	5.88	0.72	0.65	0.15	220.33	18870	16585	21650	50
5/19/21 9:30	5.37	0.66	0.65	0.14	201.38	19036	16736	21848	50
5/19/21 13:10	4.15	0.51	0.65	0.11	155.33	19066	16760	21979	100
5/19/21 16:15	3.80	0.47	0.65	0.10	142.48	19086	16778	22005	100
5/20/21 9:30	6.86	0.84	0.65	0.18	257.05	19189	16963	22240	100
5/20/21 11:49	4.41	0.54	0.65	0.11	165.24	19214	16979	22263	100
5/26/21 11:02	5.13	0.63	0.65	0.13	192.36	20200	18127	23746	100
5/26/21 12:15	4.71	0.58	0.65	0.12	176.33	20209	18136	23758	150
5/26/21 14:01	4.44	0.54	0.65	0.12	166.22	20222	18148	23775	150
5/27/21 7:48	6.70	0.82	0.65	0.17	250.90	20346	18334	24010	150
5/27/21 11:20	5.58	0.68	0.65	0.15	209.09	20382	18365	24051	200
5/28/21 10:15	6.17	0.76	0.65	0.16	231.04	20582	18585	24319	100
5/28/21 11:30	4.74	0.58	0.65	0.12	177.72	20594	18595	24332	100
6/1/21 12:40	7.13	0.87	0.65	0.19	267.09	21314	19676	25707	100
6/1/21 14:45	5.94	0.73	0.65	0.15	222.57	21337	19695	25732	100
6/10/21 10:35	7.80	0.96	0.65	0.20	292.27	23301	22275	29097	200
6/10/21 12:58	8.40	1.03	0.65	0.22	314.75	23330	22306	29137	200
6/10/21 15:09	6.00	0.74	0.65	0.16	224.82	23359	22327	29165	200
6/11/21 7:55	8.40	1.03	0.65	0.22	314.75	23516	22547	29443	300
6/11/21 10:28	5.40	0.66	0.65	0.14	202.34	23550	22568	29474	300
6/22/21 7:55	7.72	0.95	0.65	0.20	289.35	25754	25720	33332	200
6/25/21 8:45	8.08	0.99	0.65	0.21	302.70	26632	26639	34423	250
6/25/21 11:02	5.45	0.67	0.65	0.14	204.03	26661	26658	34449	250
6/28/21 11:00	6.53	0.80	0.65	0.17	244.83	27273	27392	35421	250
6/28/21 11:10	6.53	0.80	0.65	0.17	244.83	27274	27394	35423	250
6/28/21 13:50	5.94	0.73	0.65	0.15	222.57	27301	27419	35456	250
7/23/21 8:00	5.77	0.71	0.65	0.15	216.28	32812	32773	42275	130
7/23/21 9:00	5.77	0.71	0.65	0.15	216.28	32821	32782	42287	130
8/6/21 9:25	0.00	0.00	0.65	0.00	0.00	35852	32782	43185	275
8/31/21 7:45	2.84	0.35	0.65	0.07	106.23	35852	35431	45963	200
8/31/21 10:45	3.85	0.47	0.65	0.10	144.26	35866	35449	45987	250

Appendix D.5. HSVE-01 Cumulative Mass Removed

SFPP Norwalk Pump Station, Norwalk, California

Date	Biodegradation							Cumulative Mass Removed (lbs)	Flow (scfm)
	CO2			C14 Correction Applied					
	CO2 Production (scf/minute)	CO2 Production (lbs/minute)	C14 Correction Factor Based on BaCO3	Equivalent Mass Biodegraded by CO2 (lbs/minute C14 Corrected)	Equivalent Mass Biodegraded by CO2 (lbs/day C14 Corrected)	Cumulative Equivalent Mass Consumed by CO2 (lbs)	Total Biodegraded Mass (lbs) C14 Corrected		
9/1/21 7:45	3.06	0.38	0.65	0.08	114.66	35992	35549	46104	250
9/1/21 8:00	3.37	0.41	0.65	0.09	126.13	35993	35550	46105	250
9/9/21 9:05	3.80	0.47	0.65	0.10	142.20	37008	36694	47432	150
9/9/21 12:45	3.80	0.47	0.65	0.10	142.20	37029	36716	47457	150
9/16/21 11:00	8.80	1.08	0.65	0.23	329.74	38015	39000	50029	275
9/21/21 13:45	1.60	0.20	0.65	0.04	59.95	39701	39307	50359	200
9/21/21 14:45	4.00	0.49	0.65	0.10	149.88	39703	39313	50373	200
9/21/21 14:55	6.00	0.74	0.65	0.16	224.82	39705	39315	50376	200
9/30/21 16:30	2.40	0.29	0.65	0.06	89.93	41743	40130	52696	250
10/1/21 8:55	2.40	0.29	0.65	0.06	89.93	41804	40191	52867	250
10/7/21 11:05	0.92	0.11	0.65	0.02	34.47	42352	40401	53416	260
10/19/21 9:15	1.98	0.24	0.65	0.05	74.00	42763	41284	54450	300
10/19/21 14:25	3.84	0.47	0.65	0.10	144.00	42779	41315	54490	200
11/15/21 14:07	3.60	0.44	0.65	0.09	134.89	46665	44955	59282	192
12/9/21 11:52	2.37	0.29	0.65	0.06	88.81	49890	47078	61862	280
12/15/21 13:30	3.60	0.44	0.65	0.09	134.89	50429	47897	63004	320
12/17/21 14:30	2.25	0.28	0.65	0.06	84.31	50704	48069	63206	250
12/23/21 7:45	3.24	0.40	0.65	0.08	121.40	51186	48763	64070	240
12/30/21 7:55	3.20	0.39	0.65	0.08	119.91	52037	49603	65151	245

Appendix E
API Workbook (GMW-23)

API LNAPL Transmissivity Workbook
Calculation of LNAPL Transmissivity from Baildown Test Data

STEP 1: RESET OUTPUT SUMMARY

STEP 2: ENTER DATA & VIEW FIGURES

STEP 3: CHOOSE WELL CONDITIONS

STEP 4: LNAPL TRANSMISSIVITY SUMMARY

Mean LNAPL Transmissivity (ft²/d)

0.01

Standard Deviation (ft²/d)

0.00

Coefficient of Variation

0.62

Well Designation: GMW-23 Beckett and Lyverse (2002)
 Date: 31-Aug-21

Ground Surface Elev (ft msl)	0.0	Enter These Data	r _{e1}	Drawdown Adjustment (ft)	0
Top of Casing Elev (ft msl)	0.0				
Well Casing Radius, r _c (ft):	0.167				
Well Radius, r _w (ft):	0.500	Calculated Parameters	8.80	6.00	
LNAPL Specific Yield, S _y :	0.175				
LNAPL Density Ratio, ρ _r :	0.780				
Top of Screen (ft bgs):	25.0				
Bottom of Screen (ft bgs):	60.0				
LNAPL Baildown Vol. (gal.):	6.00				
Effective Radius, r _{e3} (ft):	0.258				
Effective Radius, r _{e2} (ft):	0.238				
Initial Casing LNAPL Vol. (gal.):	3.67				
Initial Filter LNAPL Vol. (gal.):	5.14				

Submerged Screen	No
Radius of Influence Ratio	30.00
Theim Transmissivity (ft ² /day)	NA
Constant Discharge (ft ³ /day)	NA
Constant Confined Drawdown (ft)	NA
LNAPL Behavior (Perched, Unconfined, or Confined)	unconfined
Confining Layer Depth (ft bgs)	NA
Perched Confining Layer Depth (ft bgs)	NA
Formation Thickness (ft)	4.00

borehole recharge

LNAPL Transmissivity (ft ² /day)			
B&R Method	C&J Method	CB&P	Theim Method
0.006	0.010	0.008	NA

Recovery Rate Estimates	
Average Transmissivity (ft ² /day)	0.008
Skimming Systems	
Maximum Skimming Drawdown (ft)	0.88
Estimated Skimming Recovery Rate (gpd)	0.10
Enhanced Skimming System	
Drawdown Enhancement (Vacuum or Water) (ft)	1.00
Estimated Enhanced Skimming Recovery Rate (gpd)	0.24

Initial Fluid Levels:	Enter Data Here					Water Table Depth (ft)	LNAPL Drawdown s _n (ft)
	Time (min)	DTP (ft btoc)	DTW (ft btoc)	DTP (ft bgs)	DTW (ft bgs)		
8/31/2021 10:00:00	0	33.270	38.890	33.270	38.890	34.51	

LNAPL				
Average Time (min)	Discharge Q _n (ft ³ /d)	s _n (ft)	b _n (ft)	r _e (ft)
			5.62	

8/31/2021 11:30:00	30.00	41.26	41.41	41.26	41.41	41.293	7.990			0.15		
9/1/2021 9:15:00	1335.00	33.98	34.87	33.98	34.87	34.176	1.041	682.5	0.1710	4.52	0.89	0.258
9/9/2021 14:20:00	13160.00	34.35	36.03	34.35	36.03	34.720	0.867	7247.5	0.0201	0.95	1.68	0.258
9/16/2021 10:10:00	22990.00	33.33	35.48	33.33	35.48	33.803	0.763	18075.0	0.0144	0.82	2.15	0.258
9/23/2021 13:00:00	33240.00	34.12	36.33	34.12	36.33	34.606	0.750	28115.0	0.0018	0.76	2.21	0.258
10/7/2021 11:55	53335.00	33.70	36.41	33.70	36.41	34.296	0.640	43287.5	0.0075	0.70	2.71	0.258
11/1/2021 9:48:00	89208.00	34.74	38.57	34.74	38.57	35.583	0.394	71271.5	0.0094	0.52	3.83	0.258
12/9/2021 8:30:00	143850.00	33.53	38.21	33.53	38.21	34.560	0.207	116529.0	0.0047	0.30	4.68	0.258
1/6/2022 11:45:00	184365.00	34.49	39.81	34.49	39.81	35.660	0.066	164107.5	0.0048	0.14	5.32	0.258

Figure 1

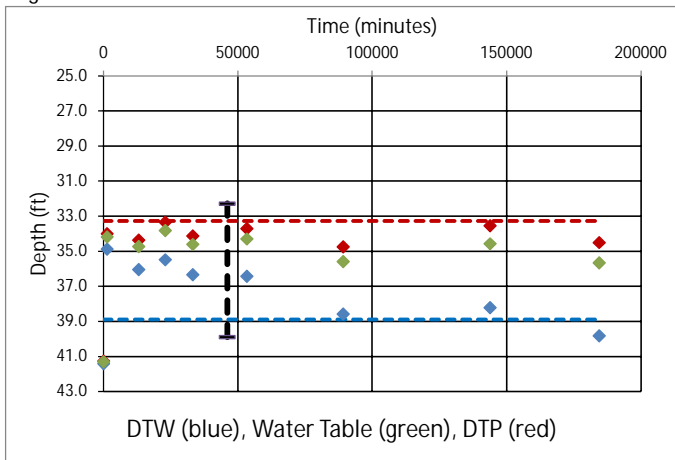
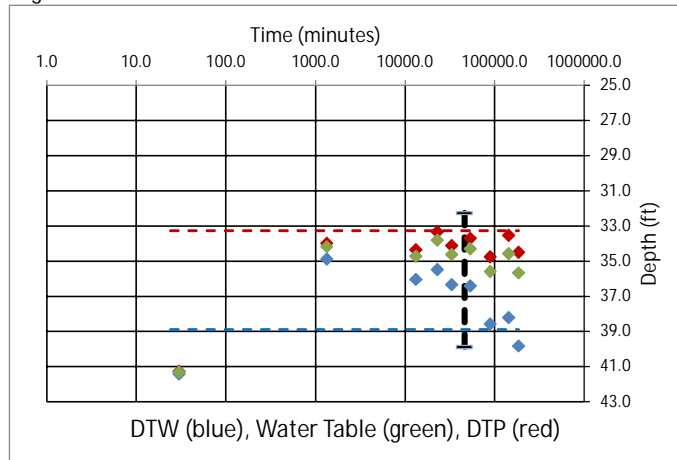


Figure 2



24.0	33.27
184365	33.27
24.0	38.89
184365	38.89

46091.3	32.27
46091.3	39.9

Figure 3

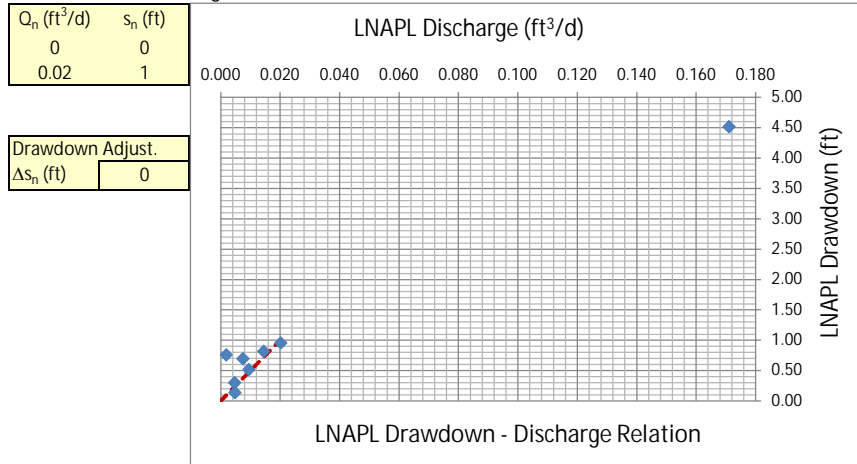


Figure 4

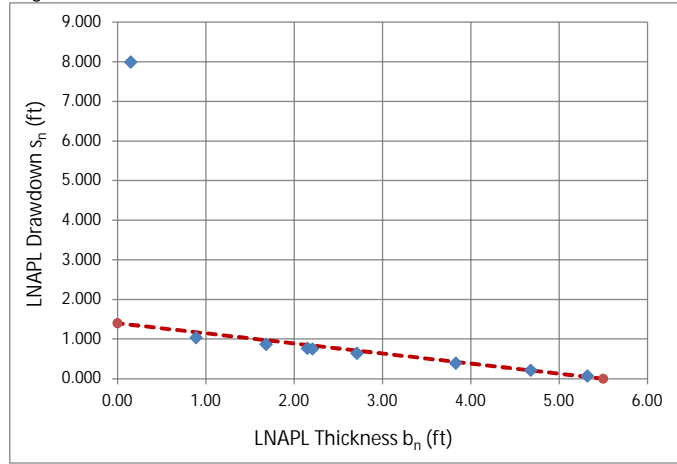


Figure 5

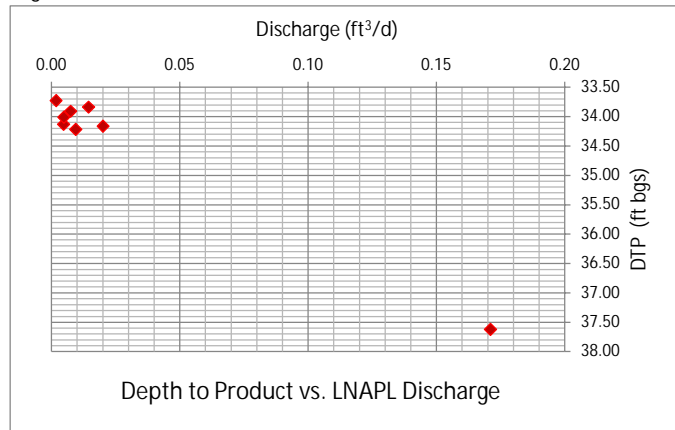


Figure 6

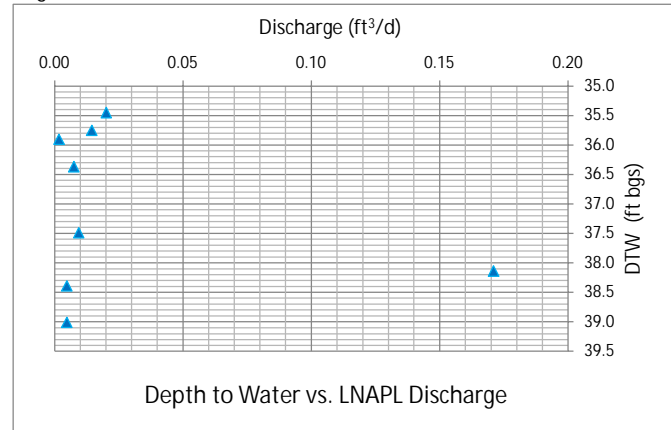


Figure 7

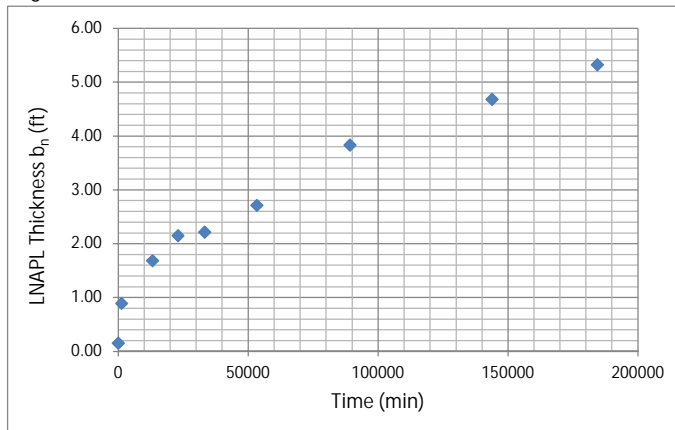


Figure 8

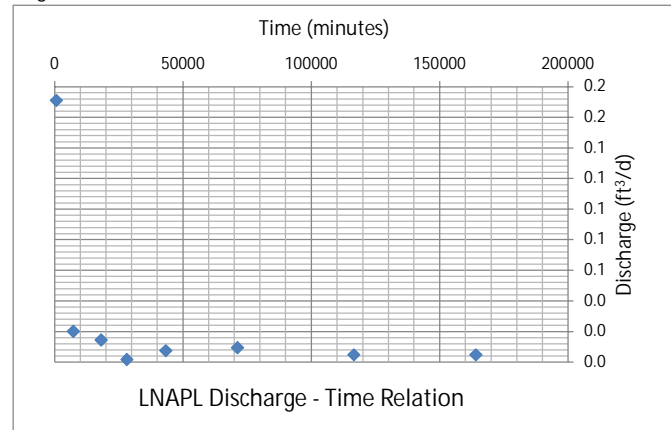


Figure 9

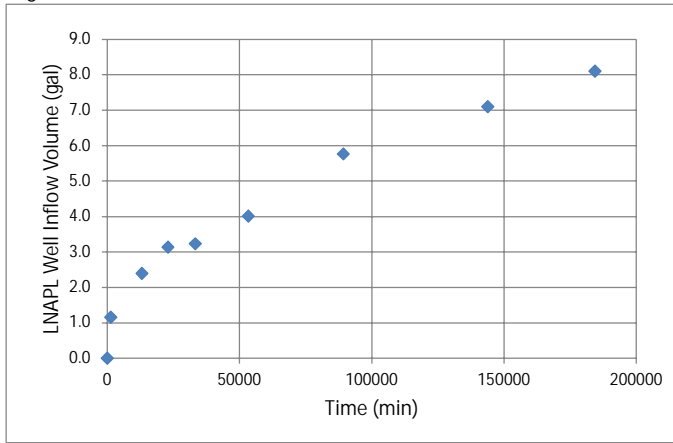
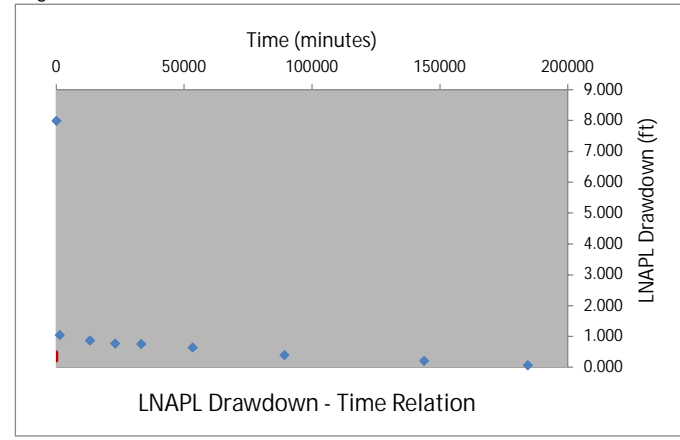


Figure 10



t (min)	s _n (ft)
10	0.48
10	0

Generalized Bouwer and Rice (1976)

Well Designation:	GMW-23
Date:	31-Aug-21

$$T_n = \frac{r_e^2 \ln(R/r_e) \ln(s_n(t_1)/s_n(t))}{2(-J)(t-t_1)}$$

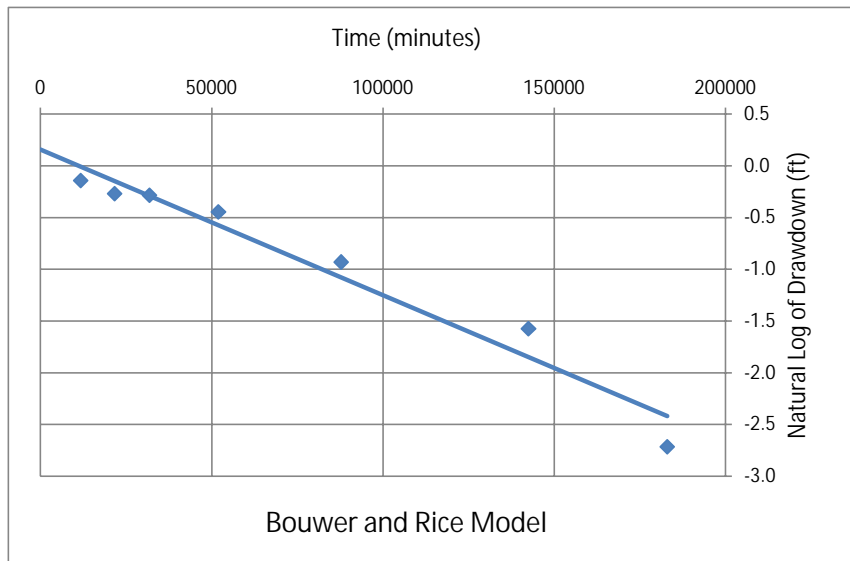
Enter early time cut-off for least-squares model fit

Time_{cut} <- Enter or change value here

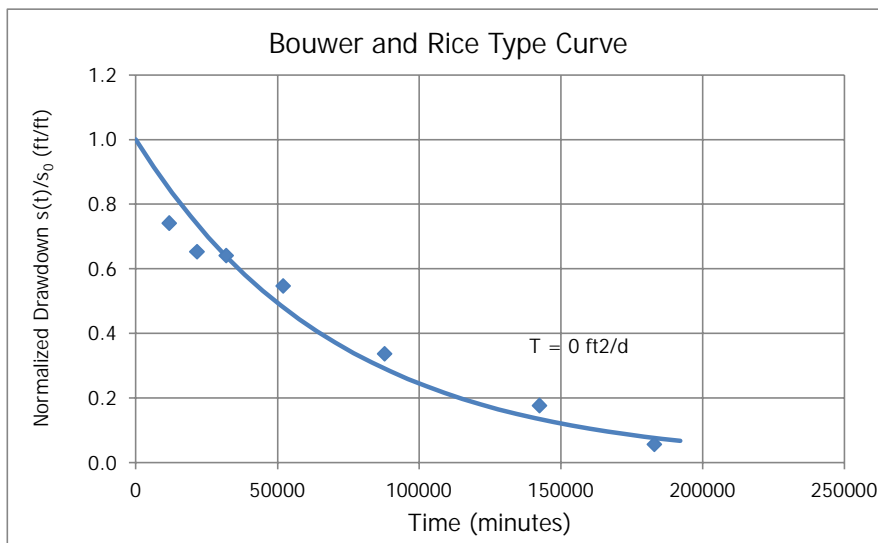
Model Results: T_n (ft²/d) = +/- ft²/d

L_e/r_e	21.8
C	1.66
R/r_e	10.05
J-Ratio	-0.255

Coef. Of Variation	0.10
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C coefficient calculated from Eq. 6.5(c) of Butler, The Design, Performance, and Analysis of Slug Tests, CRC Press, 2000.



Cooper and Jacob (1946)

Well Designation:	GMW-23
Date:	31-Aug-21

$$V_n(t_i) = \sum_j^i \frac{4\pi T_n s_j}{\ln\left(\frac{2.25 T_n t_j}{r_e^2 S_n}\right)} \Delta t_j$$

Enter early time cut-off for least-squares model fit

Time _{cut} (min):	1400	<- Enter or change values here
Time Adjustment (min):	1300	

Trial S_n: <- Enter d for default or enter S_n value

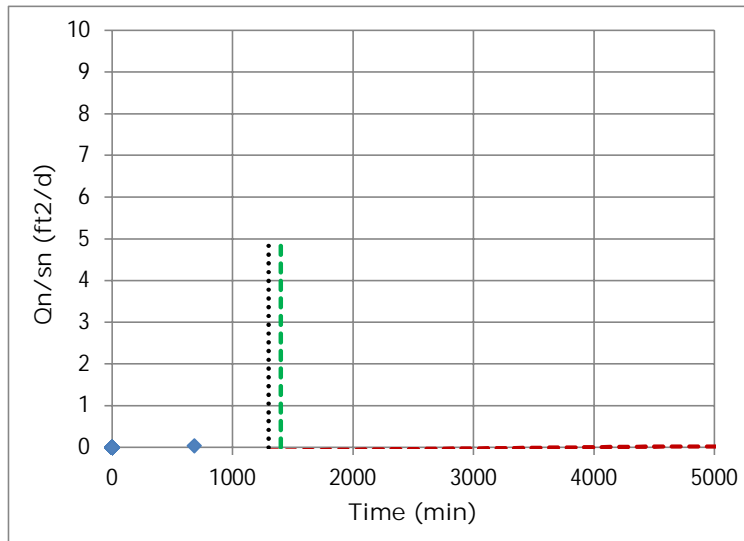
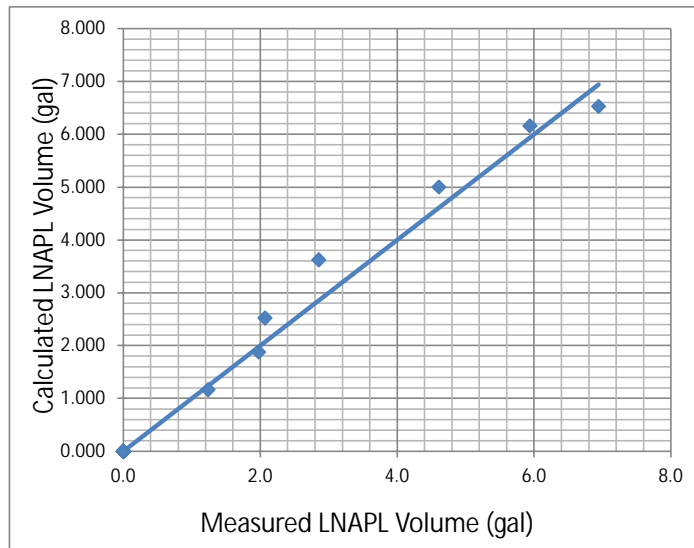
Root-Mean-Square Error: <- Minimize this using "Solver"

<- Working S_n

Trial T_n (ft²/d): <- By changing T_n through "Solver"

Add constraint T_n > 0.00001

Model Result:



Height
5

Cooper, Bredehoeft and Papadopoulos (1967)

Well Designation:	GMW-23
Date:	31-Aug-21

Enter early time cut-off for least-squares model fit

Time _{cut} (min):	1400	<- Enter or change values here
Initial Drawdown s _n (ft):	1.0406	

Trial S_n: d <- Enter d for default

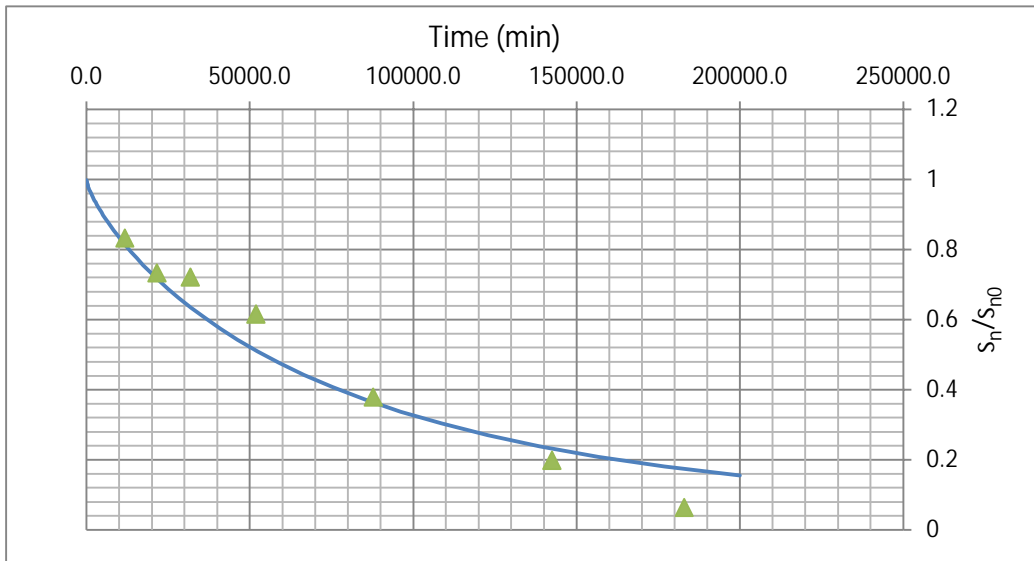
Root-Mean-Square Error: 0.179 <- Minimize this using "Solver"

Trial T_n (ft²/d): 0.008 <- By changing T_n through "Solver"

0.002 <- Working S_n Add constraint T_n > 0.00001

Model Result: T_n (ft²/d) = 0.01

T _{min}	1
T _{max}	200000



J-Ratio
-0.255

Bouwer and Rice Short Term LNAPL Mobility Test Type Curves

B&R Type Curves: Casing Rad. (ft) = 0.166666666666667 ; Borehole Rad. (ft) = 0.5

Enter these values

Type Curve ID	Type Curve Name	Notes	Max Time (min)	Transmissivity (ft ² /day)
1	T=0.025 ft ² /day		200000	0.025
2	T=0.0125 ft ² /day		200000	0.0125
3	T=0.00625 ft ² /day		200000	0.00625
4	T=0.003125 ft ² /day		200000	0.003125
5	T=0.0015625 ft ² /day		200000	0.0015625
6	T= ft ² /day			
7	T= ft ² /day			

J-Ratio	
-0.255	<- If uncertain use
	-0.22

B&R Type Curves: Casing Rad. (ft) = 0.166666666666667 ; Borehole Rad. (ft) = 0.5

