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**SFPP Norwalk Pump Station  
Norwalk, California**

**Second Quarter 2022 Remediation Progress Report**

Final

July 15, 2022

**Kinder Morgan, Inc.**



## SFPP Norwalk Pump Station

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Eric Davis  
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July 15, 2022  
Date

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## Acronyms and Abbreviations

API	American Petroleum Institute
ASTM	ASTM International
Ba <sup>14</sup> CO <sub>3</sub>	barium carbonate
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
<sup>14</sup> C	Carbon-14 (radiocarbon)
CH2M	CH2M HILL, now part of Jacobs Engineering Group Inc.
CO <sub>2</sub>	carbon dioxide
COPC	contaminant(s) of potential concern
DFSP	Defense Fuel Support Point
DTSC	Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
EVS	Earth Volumetric Studio
ft	foot/feet
ft <sup>2</sup> /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
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

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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 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 second quarter 2022 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* (CH2M<sup>1</sup>, 2013 and 2018), as well as the recently published draft final *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 April 1, 2022, through June 30, 2022, 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).
- Continued preparation for horizontal biosparge treatment well BS-02 shutdown and transition to a passive remedy in the southeastern area of the site, pending approval of the draft final IRAP (Jacobs, 2022a) (Section 2.1.2).
- Monitoring well and soil vapor probe (SVP) destruction and other monitoring well modifications in the southeastern corner of the 15-acre parcel and at a private residential property south of the site (Section 2.2).
- Initiated preparation of a natural source zone depletion (NSZD) technical memorandum to summarize the continued evaluation of the NSZD performance monitoring pilot study (Section 3.2).
- Submission of the *First 2022 Semiannual Soil Vapor Monitoring Report* (Jacobs, 2022c) summarizing the revised soil vapor monitoring (SVM) program (Section 4.3).

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

- Remedial progress in the southeastern area associated with horizontal biosparge treatment well BS-02. Supplemental BS-02 monitoring data are in Appendix B.
- Remedial progress in the offsite/south-central area associated with horizontal biosparge treatment well BS-03 and horizontal soil vapor extraction (HSVE) well HSVE-01. Supplemental BS-03 monitoring data are in Appendix C.

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<sup>1</sup> CH2M HILL (CH2M) is now part of Jacobs Engineering Group Inc. (Jacobs).

As documented in previous quarterly remediation progress reports, the groundwater treatment system (GWTS), consisting of groundwater extraction (GWE) and TFE wells, has not been operated since February 2021. Therefore, this report focuses on treatment systems that are currently active. Soil vapor monitoring results were discussed in the *First 2022 Semiannual Soil Vapor Monitoring Report*, submitted to the Regional Board on June 21, 2022 (Jacobs 2022c). NSZD performance will be discussed in the forthcoming NSZD technical memorandum. A discussion of previous remedial system data related to the GWTS is provided in the draft final IRAP (Jacobs, 2022a).

## 2. Description of Remediation Systems

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

The objectives of the remediation systems are to reduce light nonaqueous phase liquid (LNAPL) saturation, 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
  - 15 TFE wells
  - 24 onsite vertical SVE wells
  - 1 horizontal biosparge well (BS-01)
- Currently active
  - 8 individual SVM probes used for NSZD monitoring

### Offsite/south-central Area

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

### Southeastern Area

- Currently inactive
  - 3 TFE wells (GMW-O-15, GMW-O-18, GMW-36)
  - 1 GWE well (GMW-SF-10)
- Currently active
  - 8 vertical SVE wells (two SVE wells are co-located with TFE wells, 1 inactive vertical SVE well [GMW-O-15])
  - 1 horizontal biosparge well (BS-02)
  - 9 individual SVM probes used for NSZD monitoring

A summary of remediation systems and their operational status at the end of the second quarter of 2022 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 remedial objectives are met. The south-central area transitioned from biosparging and SVE to NSZD in December 2019 after achieving the proposed remedial objectives established in the draft final IRAP. Details regarding the remedial objectives, metrics, and contingencies are provided in the draft final IRAP (Jacobs, 2022a). New NSZD data, including ongoing rate measurements, will be presented in the NSZD technical memorandum after the IRAP is finalized.

## **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 (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 second quarter of 2022 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. A summary of the performance of BS-01 is available in the *Biosparging Effectiveness Evaluation and Recommendations Report* (Jacobs 2019).

### **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.

On January 13, 2022, BS-02 was moved offline after damage to the southeastern SVE header was discovered. Repairs to the header were completed by a third-party subcontractor on March 1, 2022. BS-02 was returned to operation on March 3, 2022, after the repairs were complete.

During the second quarter of 2022, BS-02 had an average uptime of approximately 93 percent (2,013 hours) and operated within a flow range between 151 and 182 scfm.

### **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).

During the second quarter of 2022, BS-03 had an average uptime of approximately 93 percent (2,013 hours) and operated within a flow range between 150 and 284 scfm.

## 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 (CO<sub>2</sub>) 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 because the area has transitioned to an 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 (now inactive, see discussion in below paragraph), 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. The southeastern SVE system was temporarily offline between January 13, 2022, and March 3, 2022, to address structural damage to a drip leg in the SVE header. The damaged drip leg was repaired by another Kinder Morgan contractor (Northstar Environmental Remediation) on March 1, 2022, and the southeastern SVE system was restarted on March 3, 2020.

Southeastern well GMW-O-15 is currently obstructed by a lodged TFE pump despite several attempts at removal. A work plan for well destruction was submitted to the RWQCB on February 3, 2022 and is currently under review. The southeastern SVE system will continue to operate without extracting from GMW-O-15, although GMW-O-15 is effectively within the radius of capture of adjacent SVE wells GMW-36 and GMW-O-16.

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 feet bgs. The length of the HSVE-01 screen is 500 feet, and the total length of the well is 745 feet.

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 235 and 650 scfm, averaging 430 scfm during the reporting period for the second quarter of 2022. Additional details regarding the operation of HSVE-01 during the second quarter of 2022 are discussed in Section 3.1. Table 2 is a summary of extracted vapor analytical results.

## 2.3 Monitoring Well and Soil Vapor Probe Modifications

In preparation for redevelopment of the 15-acre parcel by the City of Norwalk, during May 2022, former remediation/monitoring wells GMW-SF-9, GMW-SF-10, PZ-7B, PZ-8B, and PZ-9B were destroyed using pressure grouting techniques and GMW-37, GMW-38, GMW-SF-7, PZ-7A, PZ-8A, and PZ-9A were destroyed using over-drilling techniques. In addition, four soil vapor probes (SVM-17, SVM-18, SVM-19, and SVM-20) were destroyed by hand-extracting sample tubing, removing manhole covers, and filling the shallow void from the manhole covers with grout. Also, an unused, above-ground conveyance line and old air compressor shed previously connecting wells GMW-SF-9 and GMW-SF-10 were demolished and removed. In addition, groundwater monitoring wells EXP-3, GMW-SF-8, and GMW-39 were modified from above-ground to flush mount completions. These three wells were re-surveyed in June 2022.

Similarly, due to planned construction at the private property (i.e., apartment complex) located at 12247 Cheshire Street, remediation well GMW-O-23 was destroyed via over drilling in May 2022. The Associated conveyance line connected to GMW-O-23 was capped and isolated. In addition, soil vapor probe SVM-15 was destroyed, as described above.

### 3. Remediation Progress and Optimization

Currently, remedial progress is being measured against the performance metrics defined in the draft final 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. While these metrics are important, the active mass removal rate relative to the NSZD mass removal rate is the most significant 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 capable of removing 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. This section focuses on remedial operation data evaluation and Section 4 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

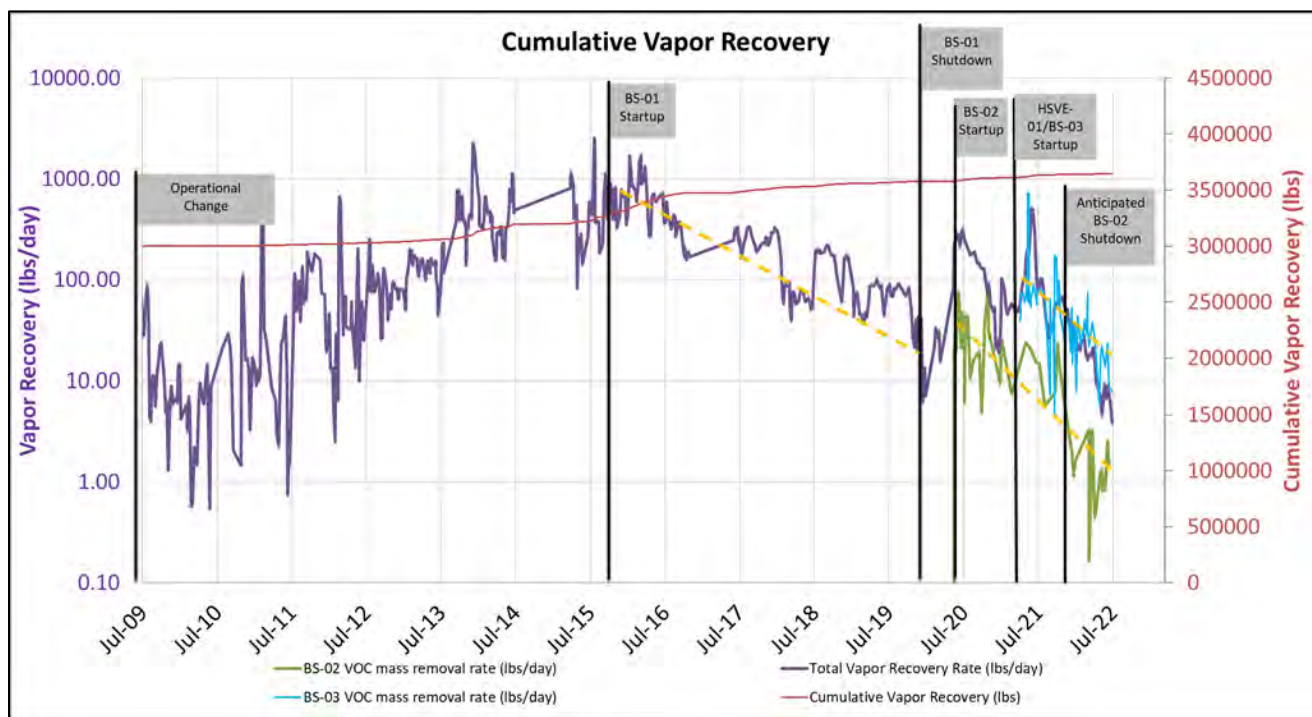
Exhibit 1, below, provides an overview of the VOC mass removal at the site collected weekly from the RTO combined header (i.e., it represents total SVE mass collected at the site as VOCs and may combine individual system data when biosparging systems overlap in operation). Narrative indicators are placed 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 draft final IRAP (Jacobs, 2022a). The overall removal rates of each biosparging system are 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 450 lbs/yr currently (actively operating)
- BS-03: Initially approximately 36,000 lbs/yr, and 6,000 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 draft final 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).

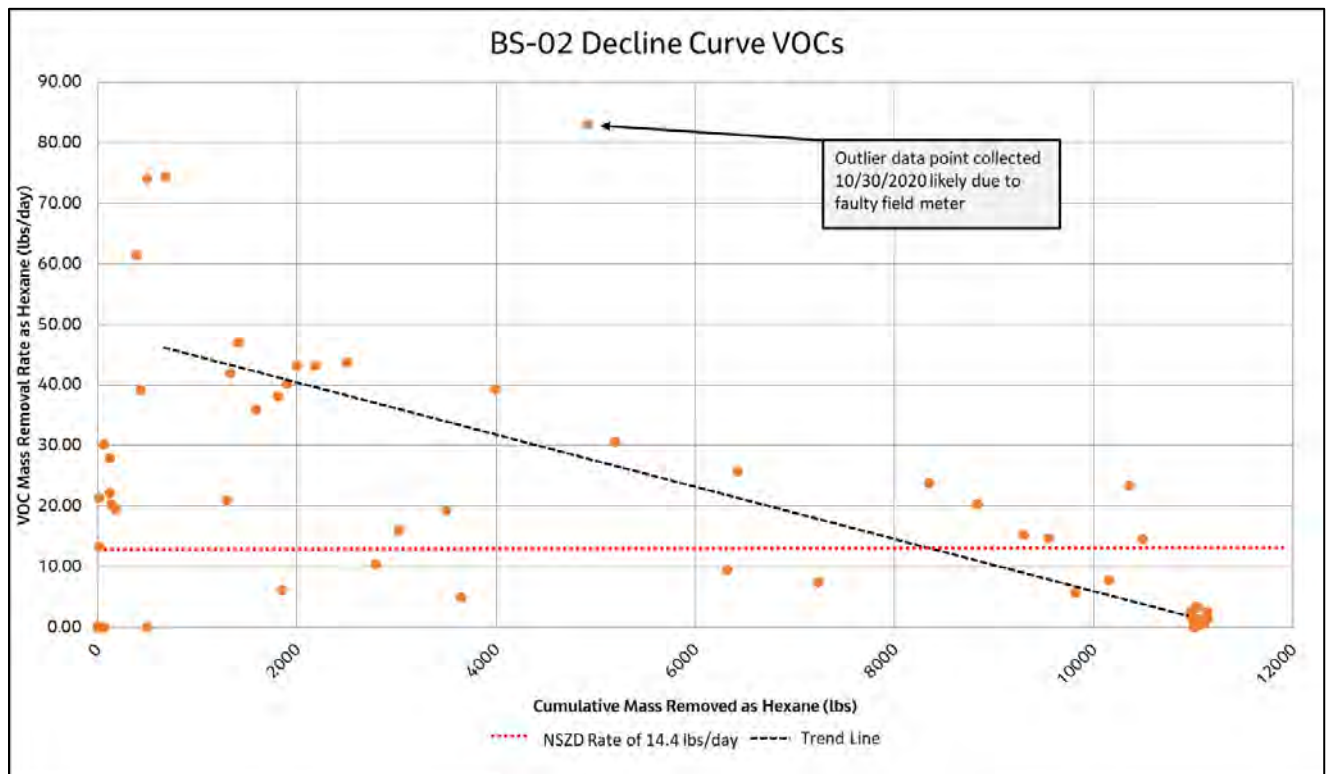


**Exhibit 1. Vapor Mass Recovery Rate Over Time**

**Biosparge (BS-02)**

The southeastern biosparge system (BS-02) operated for 2,013 hours with 93 percent uptime during the second quarter of 2022 (Table 3). A detailed narrative of the southeastern biosparge system is provided in the BS-02 supplemental data in Appendix B. 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.

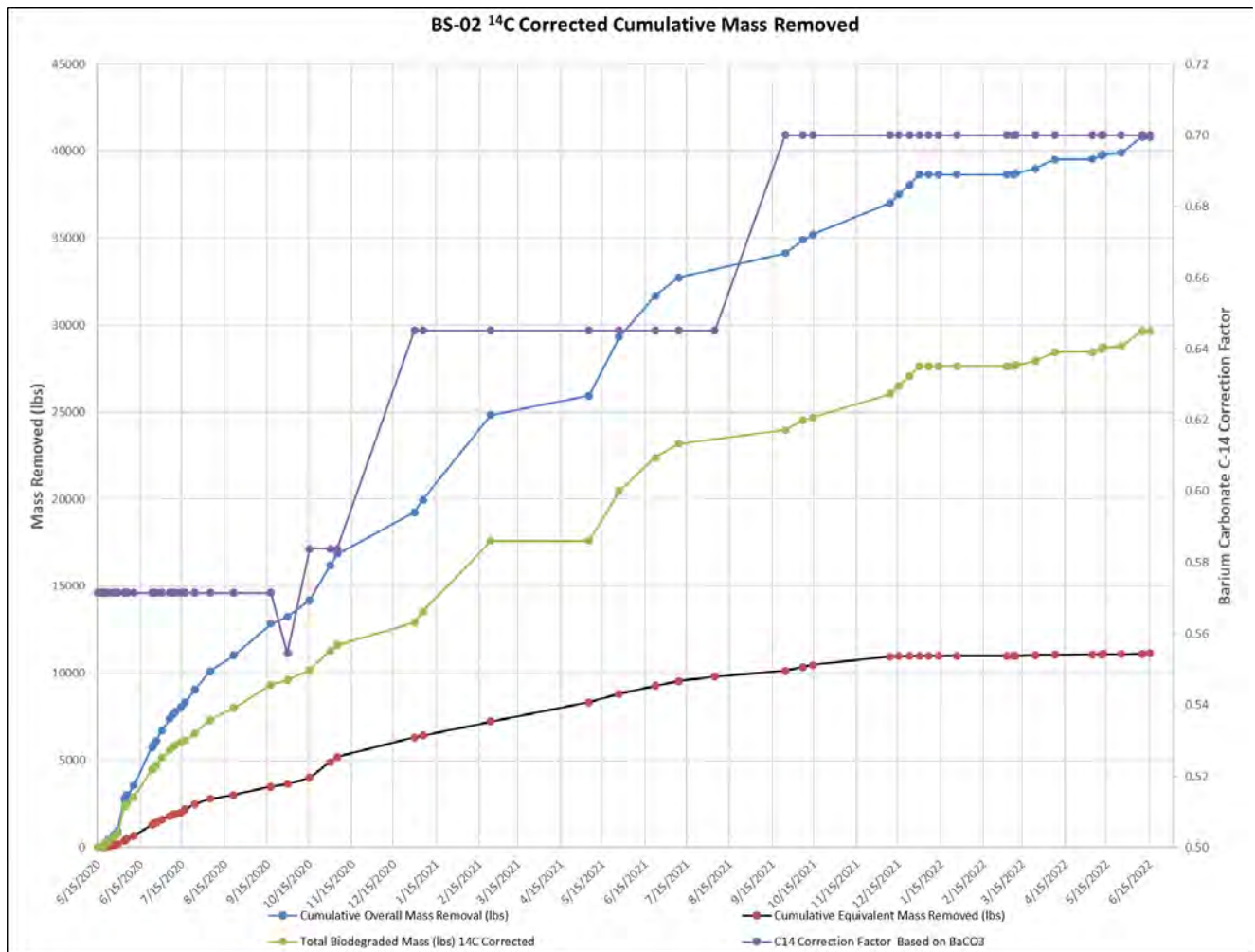




**Exhibit 2. BS-02 Decline Curve VOCs versus Cumulative Mass Removed**

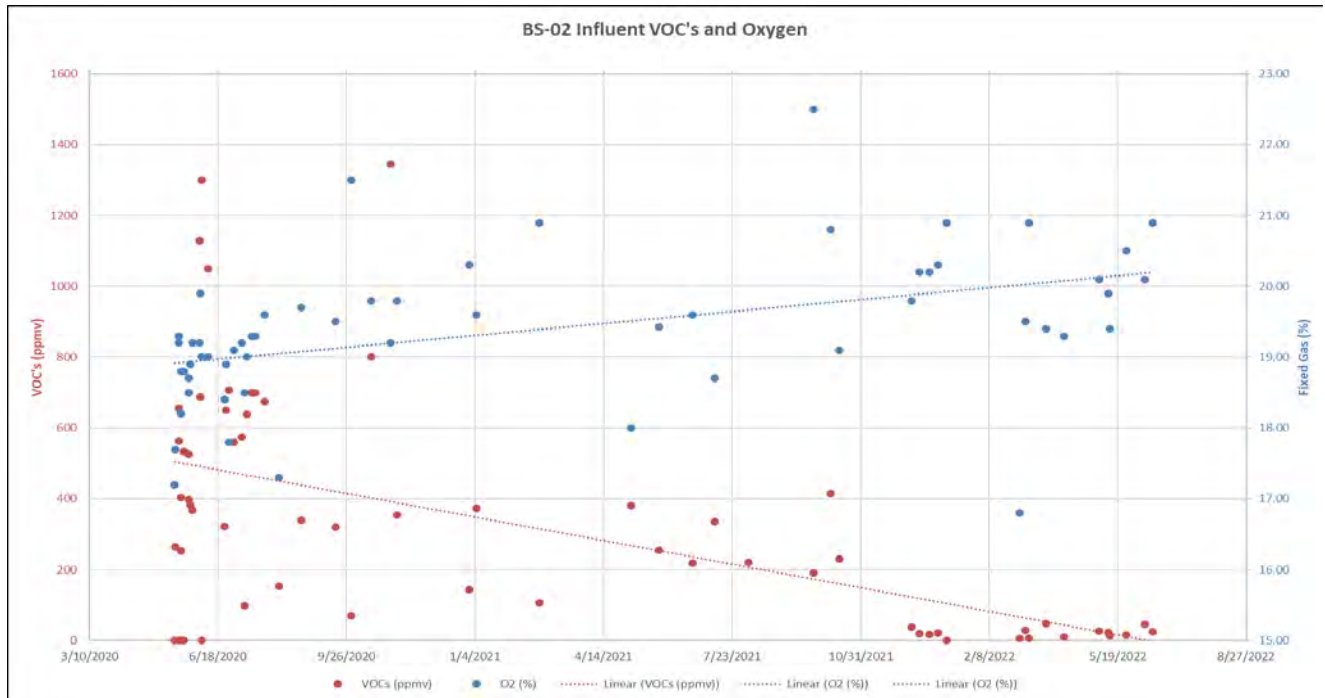
In addition to total VOC mass removed, supplemental carbon-14 (<sup>14</sup>C) data allows for the estimation of mass removed specifically due to biodegradation. Although <sup>14</sup>C sampling is typically part of the NSZD monitoring program, it is also used to monitor SVE gases to account for modern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



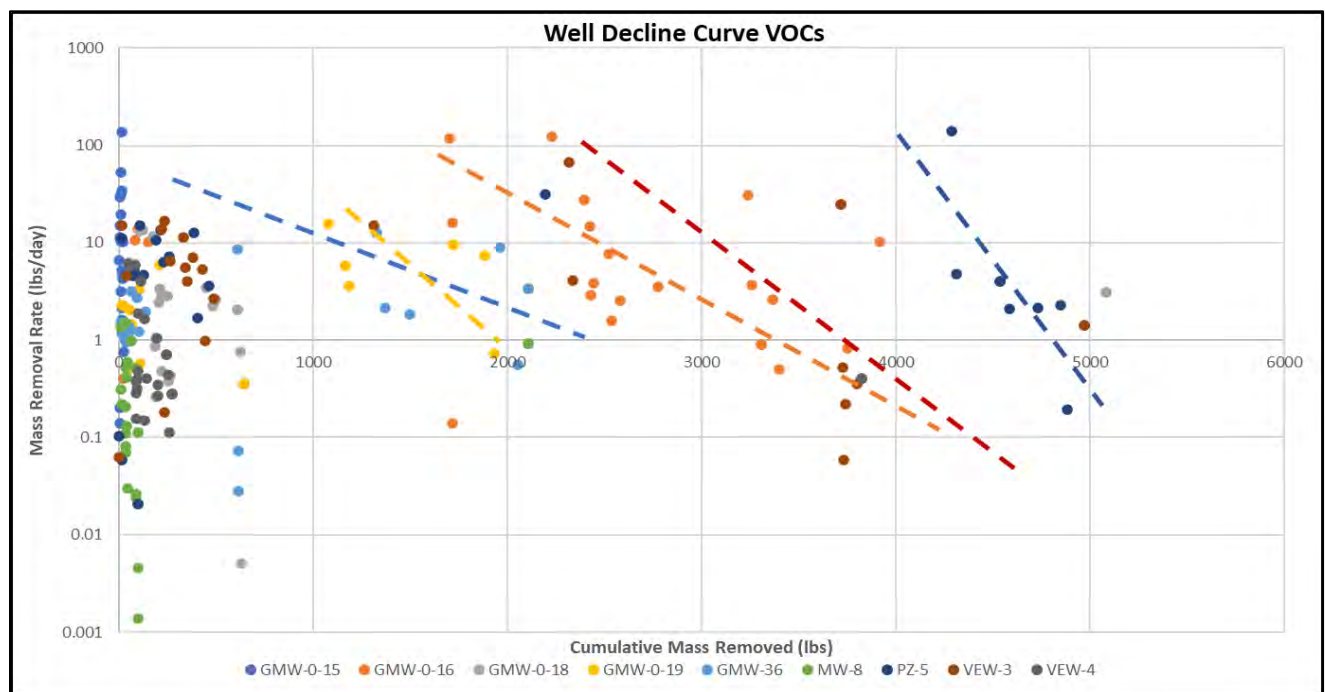
**Exhibit 3. BS-02 <sup>14</sup>C Corrected Cumulative Mass Removed**

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 50 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:

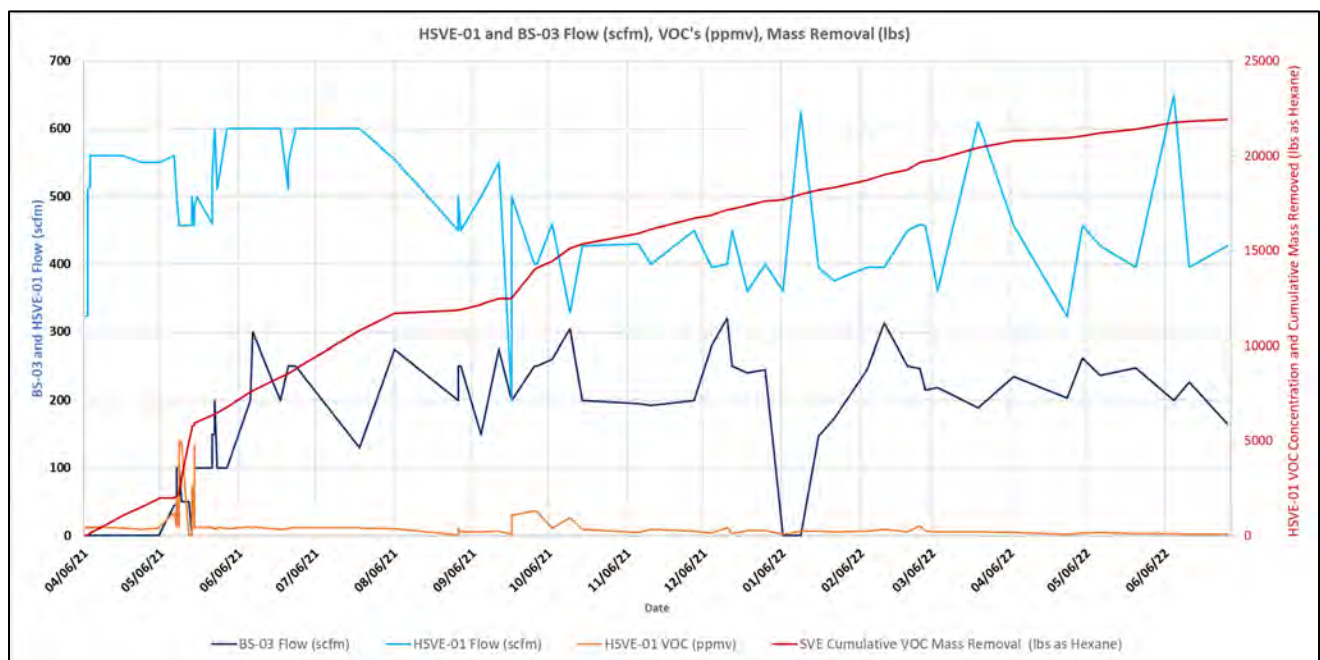
- LNAPL mass has been recovered to the maximum hydraulic extent practicable.
- Active LNAPL removal rate (e.g., through biosparging/SVE) is below or of similar magnitude to the ambient NSZD degradation rate (discussed further in Section 3.2).
- The ratio of more volatile to less volatile vapor-phase 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 second quarter of 2022.

During the second quarter of 2022, HSVE-01 flow was on average 430 scfm and BS-03 operated at a flow ranging from 235-650 scfm. The flow rates, VOC mass removal, and VOC concentrations observed during operation of HSVE-01 during the second quarter of 2022 are illustrated on Exhibit 6. Variation 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 condensate 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 2,013 hours with 93 percent uptime during the second quarter. The biosparge system flow (air injection) rate ranged from approximately 165-262 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). A detailed data narrative for the offsite/south-central biosparge system is provided in Appendix C.



**Exhibit 6. HSVE-01 and BS-03 Flow-scfm and VOCs-ppmv from April 2021 through June 2022**

Groundwater elevations and LNAPL thicknesses were evaluated in the field during startup of HSVE-01 and BS-03 and Table 4 provides updated elevations and thicknesses from the second quarter 2022.

Monthly vapor samples from the SVE system (influent, influent post-dilution, and effluent) were collected in April, May, and June 2022. The vapor samples were delivered to Air Technology Laboratories in City of Industry, California, for the following analyses:

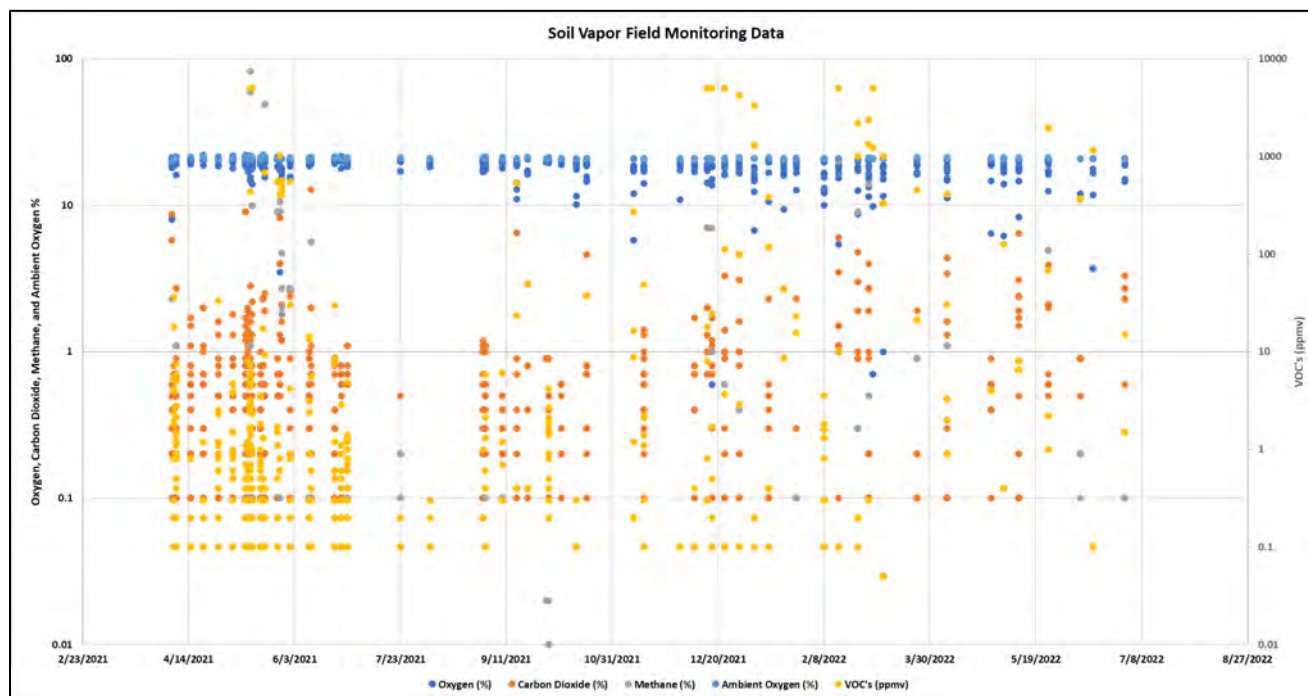
- Fixed gases (methane, CO<sub>2</sub>, oxygen, and argon) using ASTM International (ASTM) D1946
- VOCs using U.S. Environmental Protection Agency (EPA) Method TO-15
- Total VOCs using EPA Method TO-3

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 595 pounds during the second quarter of 2022. 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 3,643,888 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.

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.



**Exhibit 7. Soil Vapor Monitoring Field Screening Data (oxygen-%, carbon dioxide-%, methane-%, ambient oxygen-%, and VOCs-ppmv) from April 2021 through June 2022**

During the second quarter 2022 operation of HSVE-01 and BS-03, soil vapor field monitoring data (VOCs) were slightly elevated (>50 ppmv) at the following locations, SVM-06D (multiple times throughout the quarter) and GMW-O-11 (May 25, 2022, field screening event). While elevated VOCs were observed at SVM-06D during multiple field screening events in the second quarter, including as recently as June 30, 2022, VOCs have since decreased to approximately 1.5 ppmv. These temporary increases in VOCs at SVM-06D were likely due to an increase in the flow at BS-03, coupled with precipitation events that can temporarily disrupt airflow in the formation. Similarly, transient increases in VOCs were also observed at GMW-O-11 during the second quarter, likely due to fluctuations in BS-03 flow. All other monitoring locations during the second quarter of 2022 were observed to be below 50 ppmv for VOCs. Field screening events will continue on a bi-weekly to monthly basis to monitor VOC concentrations, and the system will continue to be adjusted to optimize performance.

Cumulative VOCs captured by HSVE-01 from startup (April 2021) through June 2022, were calculated using the same method used for previous SVE mass removal estimates and were observed to be approximately 19,300 pounds, averaging 16 lbs/day over the 90-day operation period. With biodegradation included, HSVE-01 has removed approximately 83,400 pounds of mass in this area. See Appendix C for a detailed data and operations narrative.

Overall, the combination of limited SVM probes with VOC detections 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 draft final 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 the *First Quarter 2022 Remediation Progress Report* (Jacobs, 2022c). That progress report explains in detail the NSZD monitoring methodology used at the site. Additional NSZD evaluations are ongoing and recent Ba<sup>14</sup>CO<sub>3</sub> sample results, received January 28, 2022, are being incorporated into the forthcoming *Natural Source Zone Depletion Final Results* technical memorandum (Jacobs, 2022d; in press).

The comparative analysis of E-Flux trap and Ba<sup>14</sup>CO<sub>3</sub> sampling techniques for the analysis of the <sup>14</sup>C signature of CO<sub>2</sub> efflux showed that both methods produce comparable results. Going forward, only Ba<sup>14</sup>CO<sub>3</sub> 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 Ba<sup>14</sup>CO<sub>3</sub> 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.

Additional NSZD analysis update will be provided in the third quarter remediation report pending Water Board comments on the IRAP (Jacobs, 2022a). 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 because of ongoing remedial activities, including active treatment systems and natural biodegradation. Currently, supplemental groundwater sampling is performed during the first and third quarter of each year by Jacobs as part of active remedial operations monitoring. 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. This most recent sitewide report and data will be presented in the *First Semiannual 2022 Groundwater Monitoring and Sampling Report, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Norwalk, California (in press, SGI, 2022a)*, to be submitted to the Regional Board in July 2022.

### 4.1 Groundwater Stability Trend Analysis and LNAPL Observations

As discussed in the draft final 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 (Figure 5).

A statistical analysis of site groundwater data collected through June 2022 was conducted for total petroleum hydrocarbons quantified as gasoline (TPH-g) and benzene (Appendix E). 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 sitewide (second semiannual) groundwater monitoring data is presented under separate cover by SGI in the standalone *Second Semiannual 2021 Groundwater Monitoring and Sampling Report (SGI, 2022b)*.

To summarize, the statistical groundwater analysis for TPH-g shows that most wells at the site (215 of 218 analyzed, or 98 percent) have either nondetect, decreasing, or stable trends (i.e., no trend) for TPH-g when evaluated in the context of the entire dataset (Appendix E). A subset of wells listed in Appendix E are noted as 'not stable', with no trend, for TPH-g simply due to a coefficient of variation (CV) greater than one, that is, these wells demonstrate outliers (historically) compared to other wells at the site.

The exceptions to these trends list above are wells GMW-O-18 and PZ-5 (both located in the southeastern area), and MW-15/R (located in the south-central area), which, in the context of the entire dataset, have exhibited increasing or statistically unstable concentrations over time at a 0.05 significance level in the mann-kendall analysis. However, a more in-depth statistical analysis, evaluating discrete time periods based on treatment implementations at the site, indicates that since 2016 these three wells conform to more recent remedial operations influence, whereby the TPH-g concentrations in MW-15/R has been stable, and the TPH-g concentration in GMW-O-18 and PZ-5 have been decreasing. Moreover, the TPH-g concentrations in these three wells have all decreased by approximately 99 percent from their respective historical high concentrations.

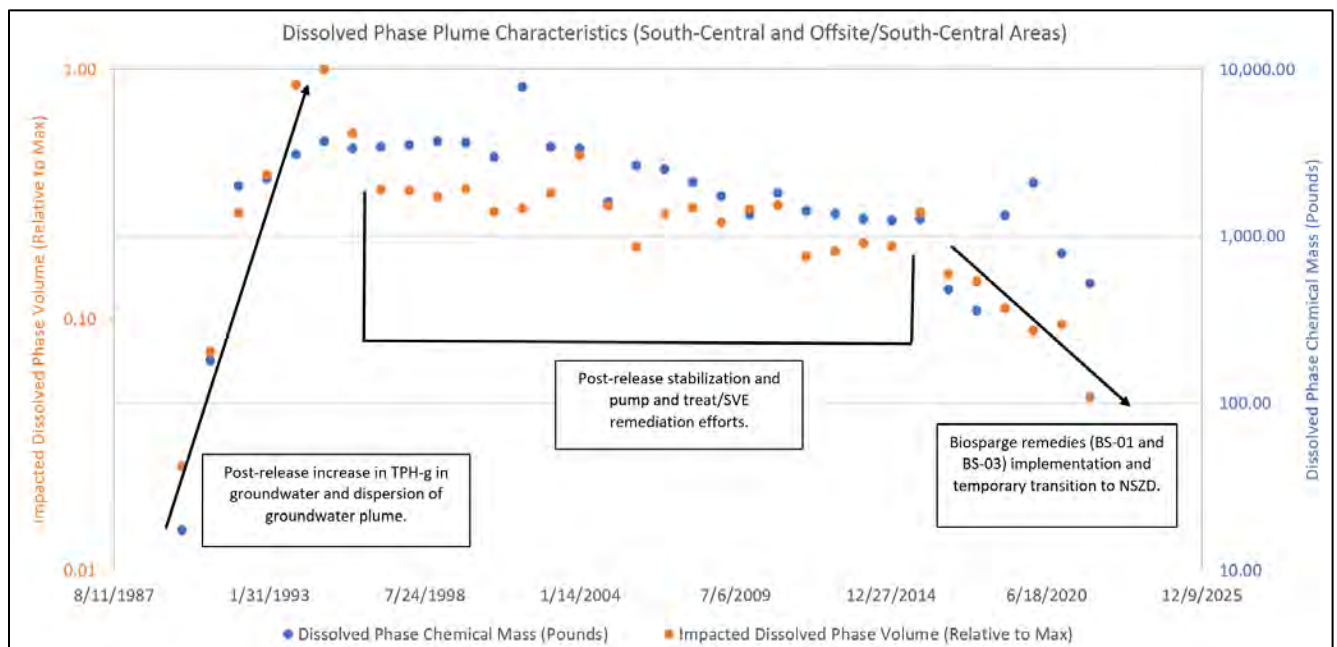
In review of the more in-depth statistical analysis from 2016 to present, two wells indicate a statistically significant increasing trend, GMW-47 – outside of the remediation treatment area (part of the DLA area) described in this report and GMW-O-11 – offsite/south-central area. GMW-O-11 will continue to be monitored going forward to understand the repeatability of the observed trend and help determine whether or not this is an outlier result most recently as of May 2022 (290 µg/L for TPH-g). GMW-O-11 was <100 µg/L for TPH-g in September 2021.



Overall, these statistical analyses and compilation of the TPH-g trends demonstrate that the dissolved-phase plumes are stable and decreasing, have been stable and decreasing, and will continue decreasing across the site because of ongoing remedial operations and NSZD processes. In addition, since the discontinued operation of BS-01 in December 2019, all downgradient contingencies wells in the south-central area have remained stable or decreasing in trend.

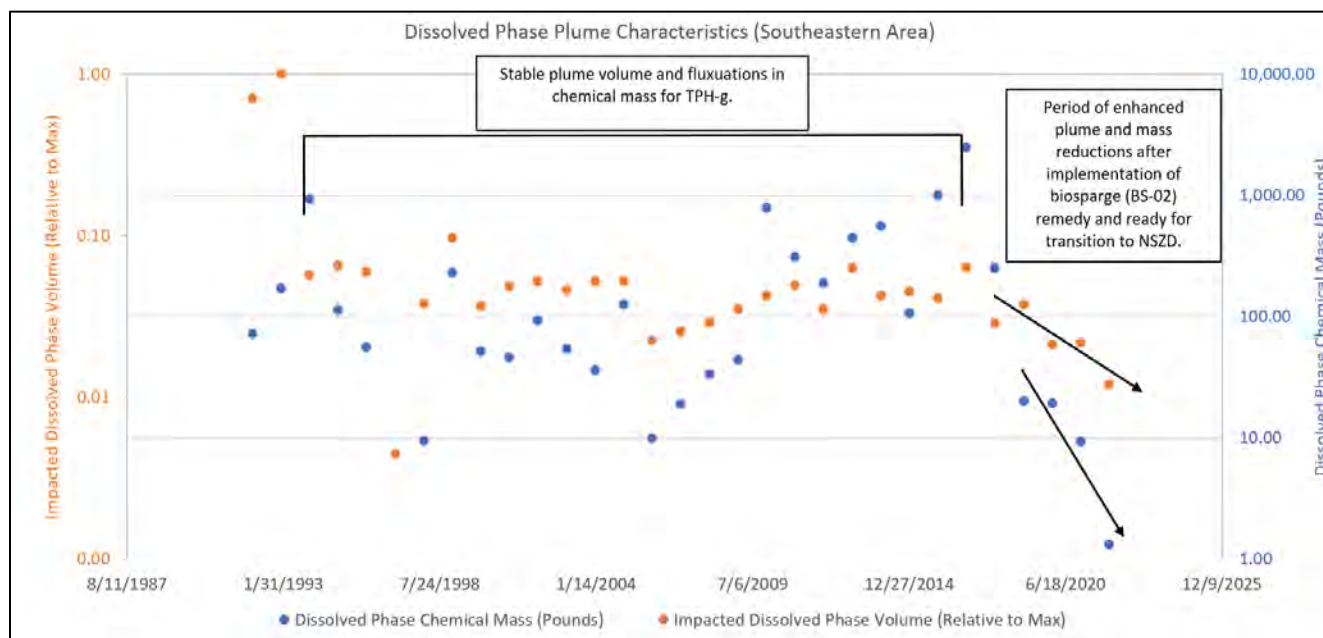
To support the understanding of stable and decreasing trends over time, a plume-scale spatial analysis was conducted using TPH-g data historically collected at the site, developed for the south-central area (including the offsite/south-central area) and the southeastern area. Analysis was performed using CTech’s Earth Volumetric Studio (EVS) to determine average normalized (relative to max) detectable dissolved volumes and dissolved phase chemical masses (pounds) over time. Groundwater data were interpolated (kriged) in 1-year increments using the average annual chemical concentrations for individual wells, including nondetect data. In cases where chemical concentrations were not available for a given well for the modeled period, the previous or most recent known concentration was used to estimate the likely concentration at a location during that time. Volumetrics were output from an iso-concentration threshold set at >100 µg/L within the saturated zone.

Exhibit 8 illustrates the dissolved phase volume and dissolved phase chemical mass of TPH-g within the south-central area of the site. Prior to remediation, increases in TPH-g were due to the expansion of the well network at the site during initial characterization. As remediation was implemented over time, the TPH-g groundwater plume stabilized and slowly began to decrease in extent and overall mass. More recent remediation (biosparging well BS-01 and BS-03 in this area, along with the transition to NSZD) of groundwater has resulted in the observed, more rapidly declining dissolved phase trends in recent years.



**Exhibit 8. Dissolved Phase Plume Characteristics for TPH-g (south-central and offsite/south-central areas) over time, set at an iso-concentration value of >100 µg/L, representative of saturated soils in the subsurface.**

The southeast area plume saw similar trends in TPH-g throughout monitoring history, however, some differences in the state of degradation are observed in this area as shown in Exhibit 9. Between 1994 and 2018, mass fluctuated two orders of magnitude over the 24-year period but has consistently been decreasing since installation of horizontal biosparging well BS-02. Reductions in plume volume have also been observed in recent years and are consistently declining with only a limited footprint remaining.



**Exhibit 9. Dissolved Phase Plume Characteristics for TPH-g (southeastern area) over time, set at an iso-concentration value of  $>100 \mu\text{g/L}$ , representative of saturated soils in the subsurface.**

Historical LNAPL thicknesses are presented in Table 4. During recent years, LNAPL has been detected in few wells at the site, four of which are in the remedial areas described in this report. In the second quarter 2022, three of the four wells were at a thickness of less than one foot. These wells include GMW-29 (0.77 foot), GMW-30 (0.26 foot), and GMW-O-12 (0.95 foot), all of which have intermittent LNAPL presence. The observed thickness in GMW-23 (6.26 feet) is a result of continued decline in groundwater elevations in the uppermost groundwater zone (Table 4).

An updated LNAPL extent map is included on Figure 5. Overall, the horizontal and vertical distribution of LNAPL at this site is well defined and the four wells containing LNAPL at the site exhibit exaggerated LNAPL thickness and intermittent near residual LNAPL presence 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 used to calculate an estimated transmissivity at the well which is a more representative attribute of LNAPL in a well than LNAPL thickness. Transmissivity at this well was calculated to be less than 0.01 square foot per day ( $\text{ft}^2/\text{day}$ ). Calculations of these testing events and results are available in Appendix D. 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 (where 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 has utilized a network of 31 dual- and triple-nested SVPs located within and around their three areas of ongoing treatment and monitoring at the site: the south-central area in the 36-acre parcel, the offsite/south-central area in the residential area south of the 36-acre parcel, and the southeastern area in the 15-acre parcel (Figure 2). These SVPs comprised 66 unique sample intervals from approximately 5, 10, 15, and 22 feet bgs that were available for sampling during the first semiannual 2022 sampling event.

As part of the modified monitoring and sampling plan indicated above, several SVPs were destroyed in May 2022, after the semiannual sampling event was conducted, because they are in the way of construction and redevelopment activities, including offsite/south-central SVP "SVM-15" and southeastern area SVPs "SVM-17," "SVM-18," "SVM-19," and "SVM-20." Therefore, the SVP network was reduced to 26 dual- and triple-nested SVPs, with 55 unique sample intervals available for sampling.

Additional site background information and historical data from long-term SVM can be found in the recently submitted IRAP (Jacobs, 2022a), the *First Quarter 2022 Remediation Progress Report* (Jacobs, 2022e), and the recently submitted *First 2022 Semiannual Soil Vapor Monitoring Report* (Jacobs, 2022c).

## 4.3 Soil Vapor Monitoring Results

Analytical results for samples collected during the March and April 2022 sampling event were presented in the *First 2022 Semiannual Soil Vapor Monitoring Report* (Jacobs, 2022c).

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

This section provides summary-level descriptions of the remedy transition metrics, planned second half 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 draft final 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 draft final IRAP (Jacobs, 2022a), have been and continue to be below EPA regional screening level (RSLs) (with and without active remediation) (EPA, 2021), as presented in the *First 2022 Semiannual Soil Vapor Monitoring Report* (Jacobs, 2022c).
  - All downgradient groundwater wells have remained stable or decreasing in trend for TPH-g since BS-01 shutdown in December 2019
- The LNAPL present in GMW-23, also continues to meet the LNAPL contingency criteria (transmissivity of  $\leq 0.01$  ft<sup>2</sup>/day, an order of magnitude below the ITRC effective recoverability endpoint):
  - Monitoring at GMW-23 will continue (approximately once per month) until it recovers to static fluid levels (three consistent fluid level measurements in a row).

#### 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 second quarter of 2022.
- Active LNAPL removal rate (e.g., through biosparging/SVE) is of similar magnitude, or less, to the ambient NSZD degradation rate (Exhibit 2).
- The ratio of more volatile to less volatile vapor-phase constituents has decreased over time (Exhibit 5).
- 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 450 lbs/yr (well below the transition point for BS-01, which was at 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 draft final IRAP (Jacobs, 2022a), 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, specifically when analyzed from more recent remedial operation activity
- 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 19,300 pounds of VOCs since startup (April 2021), averaging 16 lbs/day over the 90-day operation period during the second quarter of 2022.
  - With biodegradation included, HSVE-01 has removed approximately 83,400 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 draft final 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 <sup>14</sup>C laboratory analysis in January of 2022, the *Natural Source Zone Depletion Final Results* technical memorandum (Jacobs, 2022d; in press) provides a comprehensive review of spatial and temporal distributions of NSZD rates and methods.

## 5.2 Planned Second Half 2022 Activities

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

- Conduct semiannual SVM events and quarterly groundwater monitoring events.
- Submit second half 2022 SVM technical memorandum to the Regional Board.
- Submit *Natural Source Zone Depletion Final Results* technical memorandum to Regional Board, following IRAP comments.
- Obtain draft final IRAP approval and suspend BS-02 and vertical SVE operations in the southeastern area for implementation of NSZD.
- 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.
- Destruction of remediation well GMW-O-15 due to lodged TFE pump (awaiting Regional Board approval).
- Due to the development of the private property located at 12247 Cheshire Street, the following remediation well will be destroyed: MW-O-1 (including a portion of the conveyance line connecting the well to the treatment system). Following the facilitation of well location access by the property owner, it is anticipated this work will be conducted in the third quarter 2022.

## 5.3 Recommendations and Path Forward

During the third 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 also plans to suspend operations at BS-02 and associated vertical SVE well network and transition to NSZD upon approval of the draft final 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 third quarter 2022 operations. Newly acquired 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 Second Quarter 2022	
			(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; TFE	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	10/1/1997	71.43	26 - 46	TFE	--	OFF
	GMW-O-23	6/25/2007	73.63	20 - 40	SVE; TFE	Abandoned June 2022	
	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 Second Quarter 2022	
			(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	Abandoned June 2022	
	GMW-SF-10	4/2/2003	75.77	37 - 46	TFE	Abandoned June 2022	
	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) <sup>b</sup>				
	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethylbenzene (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 <sup>c</sup>	<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
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

**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) <sup>b</sup>				
	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethylbenzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
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 <sup>c</sup>	---	---	---	---	---	470	4,800	500	5,400	3,600	<0.099
8/17/2015 <sup>c</sup>	---	---	---	---	---	470	5,000	520	5,800	3,870	<0.100
8/17/2015 <sup>c</sup>	---	---	---	---	---	480	5,100	580	6,100	4,000	<0.097
8/17/2015 <sup>c</sup>	---	---	---	---	---	480	5,200	580	6,300	4,100	<0.099
9/1/2015 <sup>c</sup>	---	---	---	---	---	670	7,000	850	8,700	6,900	<0.097
9/1/2015 <sup>c</sup>	---	---	---	---	---	930	12,000	1,500	14,000	11,400	<0.140
9/1/2015 <sup>c</sup>	---	---	---	---	---	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 <sup>c</sup>	0.0059	0.27	22	---	750	---	9,600	2,400	20,000	13,500	<220
2/4/2016 <sup>c</sup>	0.0038	0.58	21	---	2,000	---	16,000	2,600	29,000	19,300	<610
3/3/2016 <sup>c</sup>	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
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

**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) <sup>b</sup>				
	Methane (%v)	Carbon Dioxide (%v)	Oxygen and Argon (%v)	TPH-g (ppmv)	TVOC (ppmv)	TGNMOC (ppmv)	Benzene (ppbv)	Ethylbenzene (ppbv)	Toluene (ppbv)	Xylenes (ppbv)	MTBE (ppbv)
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 <sup>c</sup>	--	640 <sup>c</sup>	78 <sup>c</sup>	520 <sup>c</sup>	880 <sup>c</sup>	200 <sup>c</sup>
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	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>
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	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>	-- <sup>d</sup>
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
1/6/2022 <sup>e</sup>	<0.0020	0.34	22	--	8.7	--	21	21	60	175	<1.6
2/1/2022	<0.0025	0.97	21	--	79	--	120	310	430	2,830	<20
3/1/2022	<0.0025	0.65	21	--	43	--	72	120	200	1,190	<2.5
4/1/2022	<0.0024	0.84	21	--	28	--	46	51	110	590	<2.5
5/1/2022	0.005	0.86	21	--	26	--	37	32	76	590	<2.3
6/1/2022	<0.0021	0.41	21	--	14	--	22	17	56	530	<2.1

Notes:

<sup>a</sup> Influent vapor samples were collected from the manifold conveying soil vapors extracted from the south-central and southeastern areas.

<sup>b</sup> Other detected VOCs are included in the laboratory analytical reports in Appendix A.

<sup>c</sup> Influent vapor samples were collected after dilution before entering the SVE combustion chamber.

<sup>d</sup> System was off for entire month.

<sup>e</sup> Influent vapor samples were inadvertently diluted, due to a large crack in Drip Leg 5 conveyance piping.

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)	BS-02 Incremental Uptime (%)	BS-03 Run Meter (hours)	BS-03 Incremental Hours of Operation (hours)	BS-03 Incremental Uptime (%)	BS-02 System Flow <sup>a</sup> (scfm)	BS-02 Sparge Leg Pressure (psi)	BS-03 System Flow (scfm)	BS-03 Sparge Leg Pressure (psi)
<b>Fourth Quarter 2016 Totals</b>	5,302	--	--	--	--	--	--	--	--
<b>Fourth Quarter 2017 Totals</b>	8,396	--	--	--	--	--	--	--	--
<b>Fourth Quarter 2018 Totals</b>	14,216	--	--	--	--	--	--	--	--
<b>Fourth Quarter 2019 Totals</b>	20,332	--	--	--	--	--	--	--	--
<b>Fourth Quarter 2020 Totals</b>	25,120	--	--	--	--	--	--	--	--
1/5/2021	25,291	--	--	--	--	171	2	--	--
1/12/2021	25,458	--	--	--	--	194	2	--	--
1/19/2021	25,627	--	--	--	--	180	2	--	--
1/26/2021	25,794	--	--	--	--	183	2	--	--
2/2/2021	25,961	--	--	--	--	178	2	--	--
2/9/2021	26,129	--	--	--	--	181	2	--	--
2/16/2021	26,297	--	--	--	--	180	2	--	--
2/23/2021	26,373	--	--	--	--	80	2	--	--
3/2/2021	26,494	--	--	--	--	192	2	--	--
3/9/2021	26,660	--	--	--	--	182	2	--	--
3/16/2021	26,825	--	--	--	--	193	3	--	--
3/23/2021	26,995	--	--	--	--	170	2	--	--
3/30/2021	27,162	--	--	--	--	186	2	--	--
<b>First Quarter 2021 Totals</b>	27,162	--	--	--	--	--	--	--	--

**Table 3. Biosparge System Operation Summary**  
*SFPP Norwalk Pump Station, Norwalk, California*

System Inspection Date	Cumulative Hours of Operation (hours)	BS-02 Incremental Uptime (%)	BS-03 Run Meter (hours)	BS-03 Incremental Hours of Operation (hours)	BS-03 Incremental Uptime (%)	BS-02 System Flow <sup>a</sup> (scfm)	BS-02 Sparge Leg Pressure (psi)	BS-03 System Flow (scfm)	BS-03 Sparge Leg Pressure (psi)
4/6/2021	27,331	--	--	--	--	189	2	--	--
4/13/2021	27,512	--	--	--	--	86	2	--	--
4/20/2021	27,634	--	--	--	--	176	2	--	--
4/29/2021	27,852	--	--	--	--	170	2	--	--
5/4/2021	27,973	--	--	--	--	185	2	--	--
5/11/2021	28,138	--	--	--	--	193	5	50	2
5/18/2021	--	--	--	--	--	--	--	--	--
5/25/2021	28,450	--	--	--	--	164	2	121	2
6/1/2021	28,617	--	--	--	--	189	2	125	2
6/8/2021	28,785	--	--	--	--	100	2	100	2
6/15/2021	28,954	--	--	--	--	180	2	94	2
6/22/2021	29,120	--	--	--	--	190	2	203	2
6/29/2021	29,289	--	--	--	--	189	2	265	4
<b>Second Quarter 2021 Totals</b>	29,289	--	--	--	--	--	--	--	--
7/6/2021	29,453	--	--	--	--	90	2	113	2
7/13/2021	29,620	--	--	--	--	183	2	249	2
7/21/2021	29,712	--	--	--	--	--	--	--	--
7/27/2021	29,853	--	--	--	--	185	6	216	6
8/3/2021	30,021	--	--	--	--	186	4	219	4
8/12/2021	30,138	--	--	--	--	172	6	250	6
8/24/2021	30,218	--	--	--	--	--	--	208	5
8/31/2021	30,381	--	--	--	--	121	4	238	4
9/7/2021	30,445	--	--	--	--	0	0	0	0
9/14/2021	30,613	--	--	--	--	197	6	257	21
9/21/2021	30,781	--	--	--	--	188	4	199	4
9/30/2021	31,000	--	9,892	--	--	184	4	194	4
<b>Third Quarter 2021 Totals</b>	31,000	--	--	--	--	--	--	--	--

**Table 3. Biosparge System Operation Summary**  
*SFPP Norwalk Pump Station, Norwalk, California*

System Inspection Date	Cumulative Hours of Operation (hours)	BS-02 Incremental Uptime (%)	BS-03 Run Meter (hours)	BS-03 Incremental Hours of Operation (hours)	BS-03 Incremental Uptime (%)	BS-02 System Flow <sup>a</sup> (scfm)	BS-02 Sparge Leg Pressure (psi)	BS-03 System Flow (scfm)	BS-03 Sparge Leg Pressure (psi)
10/5/2021	31,117	98	10,009	117	98	188	4	261	4
10/12/2021	31,285	100	10,176	167	100	183	4	260	4
10/19/2021	31,451	98	10,341	165	98	191	4	214	4
10/26/2021	31,614	97	10,503	162	97	188	4	215	4
11/9/2021	31,708	21	10,596	93	28	--	--	119	6
11/16/2021	31,877	0	10,764	167	94	--	--	198	4
11/23/2021	32,048	72	10,934	171	99	91	4	199	4
11/30/2021	32,209	100	11,094	160	100	90	4	209	4
12/2/2021	32,257	--	--	--	--	160	4	200	4
12/7/2021	32,374	100	11,258	164	100	165	4	200	4
12/14/2021	32,535	92	11,422	163	92	165	4	288	4
12/21/2021	32,669	97	11,588	166	97	161	4	237	4
12/28/2021	32,834	100	11,752	165	100	167	4	243	4
<b>Fourth Quarter 2021 Totals</b>	<b>32,834</b>	<b>76</b>	<b>11,752</b>	<b>1,861</b>	<b>87</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
1/13/2022	32,885	13	11,800	48	13	0	0	152	4
1/18/2022	33,002	0	11,917	117	100	0	0	151	4
1/25/2022	33,170	0	12,084	167	98	0	0	204	4
2/1/2022	33,339	0	12,251	167	99	0	0	258	4
2/8/2022	33,491	0	12,403	151	96	0	0	251	4
2/15/2022	33,658	0	12,568	166	99	0	0	313	4
2/22/2022	33,824	0	12,734	166	99	0	0	255	4
3/1/2022	33,993	0	12,903	169	100	0	0	247	4
3/8/2022	34,160	71	13,068	166	99	54	2	210	4
3/17/2022	34,374	97	13,282	213	99	151	4	211	4
3/22/2022	34,494	102	13,401	119	99	162	4	211	4
3/29/2022	34,661	99	13,567	166	99	163	4	216	4
<b>First Quarter 2022 Totals</b>	<b>34,661</b>	<b>31</b>	<b>13567</b>	<b>1,815</b>	<b>83</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>



**Table 3. Biosparge System Operation Summary**  
*SFPP Norwalk Pump Station, Norwalk, California*

System Inspection Date	Cumulative Hours of Operation (hours)	BS-02 Incremental Uptime (%)	BS-03 Run Meter (hours)	BS-03 Incremental Hours of Operation (hours)	BS-03 Incremental Uptime (%)	BS-02 System Flow <sup>a</sup> (scfm)	BS-02 Sparge Leg Pressure (psi)	BS-03 System Flow (scfm)	BS-03 Sparge Leg Pressure (psi)
4/5/2022	34,789	75	13,694	127	75	158	4	238	4
4/12/2022	34,956	93	13,861	167	99	158	4	284	4
4/19/2022	35,047	59	13,951	90	54	150	4	150	4
4/26/2022	35,213	98	14,116	165	98	156	4	197	4
5/3/2022	35,381	99	14,283	167	99	159	4	268	2
5/10/2022	35,533	90	14,444	161	96	182	4	231	4
5/17/2022	35,699	98	14,609	165	98	181	4	250	4
5/24/2022	35,867	100	14,767	158	94	181	4	250	4
5/31/2022	36,036	100	14,935	168	100	180	4	225	4
6/2/2022	36,086	100	14,984	50	100	179	2	219	2
6/9/2022	36,251	98	15,149	165	98	181	4	175	4
6/14/2022	36,373	100	15,270	121	100	181	4	226	4
6/15/2022	36,397	99	15,293	23	96	181	3	225	3
6/21/2022	36,539	98	15,436	142	99	177	4	170	2
6/28/2022	36,684	86	15,580	144	86	180	4	162	2
<b>Second Quarter 2022 Totals</b>	<b>36,684</b>	<b>92.2</b>	<b>15,580</b>	<b>2,013</b>	<b>92.2</b>	--	--	--	--
<b>Cumulative Totals</b>	<b>36,684</b>	--	--	--	--	--	--	--	--

Notes:

<sup>a</sup> 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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	4/20/2015	77.16	36.98	32.99	3.99	43.29	Blaine Tech
	10/20/2015	77.16	34.61	34.37	0.24	42.74	Kinder Morgan
	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	
5/9/2022	77.16	36.82	---	---	40.34	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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	6/29/2016	73.35	33.02	---	---	40.33	Blaine Tech
	8/22/2016	73.35	33.82	32.93	0.89	40.26	Blaine Tech
	10/3/2016	73.35	35.10	33.65	1.45	39.43	Blaine Tech
	3/8/2017	73.35	32.75	---	---	40.60	CH2M
	04/17/17	73.35	31.15	---	---	42.20	Blaine Tech
	10/2/2017	73.35	33.48	---	---	39.87	Blaine Tech
	4/16/2018	73.35	33.87	33.74	0.13	39.58	Blaine Tech
	11/5/2018	73.35	34.16	34.14	0.02	39.21	Blaine Tech
	4/16/2019	73.35	30.55	---	---	42.80	Blaine Tech
	10/28/2019	73.35	34.12	33.84	0.28	39.45	Blaine Tech
	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	
3/10/2022	73.35	33.27	--	--	40.08	Blaine Tech	
5/9/2022	73.35	33.07	--	--	40.28	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	

**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	9/18/2014	77.24	35.85	32.49	3.36	44.13	Blaine Tech
	9/26/2014	77.24	35.85	32.46	3.39	44.15	Blaine Tech
	10/1/2014	77.24	35.76	32.45	3.31	44.18	Blaine Tech
	10/6/2014	77.24	35.72	32.44	3.28	44.19	Blaine Tech
	10/14/2014	77.24	35.75	32.42	3.33	44.20	Blaine Tech
	10/23/2014	77.24	35.84	32.43	3.41	44.18	Blaine Tech
	10/27/2014	77.24	35.74	32.41	3.33	44.21	Blaine Tech
	11/3/2014	77.24	35.89	32.45	3.44	44.15	Blaine Tech
	11/10/2014	77.24	35.94	32.45	3.49	44.14	Blaine Tech
	11/18/2014	77.24	35.97	32.48	3.49	44.11	Blaine Tech
	11/25/2014	77.24	35.97	32.51	3.46	44.09	Blaine Tech
	12/3/2014	77.24	35.84	32.45	3.39	44.16	Blaine Tech
	12/12/2014	77.24	36.44	32.65	3.79	43.89	Blaine Tech
	12/19/2014	77.24	36.80	34.71	2.09	42.14	Blaine Tech
	4/20/2015	77.24	36.64	32.84	3.80	43.70	Blaine Tech
	7/24/2015	77.24	39.80	33.70	6.10	42.41	Northstar
	10/20/2015	77.24	36.10	34.92	1.18	42.10	Kinder Morgan
	3/16/2016	77.24	39.73	37.61	2.12	39.24	Kinder Morgan
	4/11/2016	77.24	38.59	35.50	3.09	41.17	Blaine Tech
	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	---	---	39.54	Blaine Tech	
5/9/2022	77.24	36.78	---	---	40.46	Blaine Tech	
GMW-23	3/10/2022	74.85	39.89	33.92	5.97	39.74	Blaine Tech
	5/9/2022	74.85	39.84	33.58	6.26	40.02	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	

**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	10/7/2013	77.48	35.42	31.61	3.81	45.11	Blaine Tech
	4/14/2014	77.48	37.74	32.01	5.73	44.32	Blaine Tech
	5/5/2014	77.48	37.81	32.09	5.72	44.25	Nieto & Sons
	5/12/2014	77.48	37.52	32.14	5.38	44.26	Nieto & Sons
	5/20/2014	77.48	37.39	32.21	5.18	44.23	Nieto & Sons
	5/27/2014	77.48	37.95	32.90	5.05	43.57	Nieto & Sons
	6/4/2014	77.48	37.00	32.70	4.30	43.92	Nieto & Sons
	6/10/2014	77.48	37.85	32.98	4.87	43.53	Nieto & Sons
	7/3/2014	77.48	39.60	33.04	6.56	43.13	Nieto & Sons
	7/8/2014	77.48	38.67	32.89	5.78	43.43	Blaine Tech
	7/18/2014	77.48	38.64	32.86	5.78	43.46	Blaine Tech
	7/24/2014	77.48	38.27	32.82	5.45	43.57	Blaine Tech
	8/1/2014	77.48	37.00	32.55	4.45	44.04	Blaine Tech
	8/8/2014	77.48	36.97	32.51	4.46	44.08	Blaine Tech
	8/13/2014	77.48	36.82	32.54	4.28	44.08	Blaine Tech
	8/19/2014	77.48	36.92	32.55	4.37	44.06	Blaine Tech
	8/29/2014	77.48	36.92	32.51	4.41	44.09	Blaine Tech
	9/5/2014	77.48	36.97	32.55	4.42	44.05	Blaine Tech
	9/11/2014	77.48	37.99	32.57	5.42	43.83	Blaine Tech
	9/18/2014	77.48	36.89	32.60	4.29	44.02	Blaine Tech
	9/26/2014	77.48	36.86	32.58	4.28	44.04	Blaine Tech
	10/1/2014	77.48	36.64	32.61	4.03	44.06	Blaine Tech
	10/6/2014	77.48	36.93	32.92	4.01	43.76	Blaine Tech
	10/14/2014	77.48	36.92	32.88	4.04	43.79	Blaine Tech
	10/23/2014	77.48	37.00	32.90	4.10	43.76	Blaine Tech
	10/27/2014	77.48	36.82	32.91	3.91	43.79	Blaine Tech
	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	---	---	39.00	Blaine Tech	
5/9/2022	77.48	37.50	---	---	39.98	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

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	12/18/2008	74.29	29.01	---	---	45.28	Envent
	1/15/2009	74.29	28.62	---	---	45.67	Envent
	3/24/2009	74.29	28.79	---	---	45.50	Envent
	4/21/2009	74.29	28.35	---	---	45.94	Envent
	7/21/2009	74.29	29.80	---	---	44.49	Envent
	10/19/2009	74.29	30.28	---	---	44.01	Blaine Tech
	6/22/2010	74.29	31.64	---	---	42.65	Blaine Tech
	10/4/2010	74.29	29.25	---	---	45.04	Blaine Tech
	4/11/2011	74.29	26.21	---	---	48.08	Blaine Tech
	10/10/2011	74.29	30.02	---	---	44.27	Blaine Tech
	4/16/2012	74.29	31.30	---	---	42.99	Blaine Tech
	7/9/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	78.14	31.88	---	---	46.26	Blaine Tech
	4/8/2013	78.14	32.11	---	---	46.03	Blaine Tech
	10/7/2013	78.14	33.23	33.10	0.13	45.01	Blaine Tech
	4/14/2014	78.14	37.40	33.00	4.40	44.13	Blaine Tech
	5/5/2014	78.14	37.51	33.06	4.45	44.06	Nieto & Sons
	5/12/2014	78.14	34.97	33.73	1.24	44.12	Nieto & Sons
	5/20/2014	78.14	36.75	34.30	2.45	43.28	Nieto & Sons
	5/27/2014	78.14	34.64	34.44	0.20	43.65	Nieto & Sons
	6/4/2014	78.14	35.00	---	---	43.14	Nieto & Sons
	6/10/2014	78.14	36.67	34.18	2.49	43.39	Nieto & Sons
	7/3/2014	78.14	34.21	---	---	43.93	Nieto & Sons
	7/24/2014	78.14	34.29	---	---	43.85	Blaine Tech
	8/1/2014	78.14	35.02	33.99	1.03	43.91	Blaine Tech
	8/8/2014	78.14	34.54	34.06	0.48	43.97	Blaine Tech
	8/14/2014	78.14	34.48	34.06	0.42	43.98	Blaine Tech
	8/19/2014	78.14	34.51	34.07	0.44	43.97	Blaine Tech
	8/29/2014	78.14	34.65	33.96	0.69	44.02	Blaine Tech
	9/18/2014	78.14	35.21	34.01	1.20	43.85	Blaine Tech
	9/26/2014	78.14	34.87	34.06	0.81	43.89	Blaine Tech
	10/1/2014	78.14	34.92	33.98	0.94	43.94	Blaine Tech
	10/6/2014	78.14	34.93	33.99	0.94	43.93	Blaine Tech
	10/14/2014	78.14	35.10	33.91	1.19	43.96	Blaine Tech
	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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	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
	5/9/2022	78.14	37.92	---	---	40.22	Blaine Tech
GMW-28	3/10/2022	74.68	34.63	---	---	40.05	Blaine Tech
	5/9/2022	74.68	34.48	---	---	40.20	Blaine Tech
GMW-29	3/10/2022	77.57	35.53	34.81	0.72	42.62	Blaine Tech
	5/9/2022	77.57	35.25	34.48	0.77	42.94	Blaine Tech
GMW-36	3/12/2007	74.53	24.29	---	---	50.24	Secor
	4/30/2007	74.53	24.40	---	---	50.13	Secor
	8/28/2007	74.53	24.31	---	---	50.22	Stantec
	11/12/2007	74.53	24.86	24.85	0.01	49.68	Stantec
	2/19/2008	74.53	25.50	---	---	49.03	Stantec
	4/14/2008	74.53	24.61	---	---	49.92	Stantec
	8/8/2008	74.53	26.20	26.14	0.06	48.38	Envent
	10/16/2008	74.77	26.11	26.09	0.02	48.68	Envent
	12/18/2008	74.53	28.70	28.65	0.05	45.87	Envent
	1/15/2009	74.53	27.73	27.45	0.28	47.02	Envent
	2/20/2009	74.53	26.39	26.35	0.04	48.17	Envent
	2/23/2009	74.53	26.13	25.80	0.33	48.66	Blaine Tech
	3/24/2009	74.53	29.83	---	---	44.70	Envent
	4/20/2009	74.53	25.63	25.59	0.04	48.93	Blaine Tech
	7/17/2009	74.53	27.40	---	---	47.13	Envent
	7/20/2009	74.53	25.90	---	---	48.63	Blaine Tech
	7/21/2009	74.53	26.03	---	---	48.50	Envent
	7/22/2009	74.53	25.90	---	---	48.63	Blaine Tech
	10/19/2009	74.53	26.56	26.45	0.11	48.06	Blaine Tech
	2/4/2010	74.53	26.93	26.80	0.13	47.70	Kinder Morgan
	3/15/2010	74.53	26.80	---	---	47.73	Blaine Tech
	4/16/2010	74.53	26.90	---	---	47.63	Blaine Tech
	5/24/2010	74.53	25.96	25.90	0.06	48.62	Blaine Tech
	5/28/2010	74.53	25.94	25.88	0.06	48.64	Blaine Tech
	6/22/2010	74.53	25.94	25.91	0.03	48.61	Blaine Tech
	7/12/2010	74.53	NM	---	---	NC	
	8/12/2010	74.53	NM	---	---	NC	
	9/20/2010	74.53	NM	---	---	NC	
	10/4/2010	74.53	26.90	---	---	47.63	
	10/24/2010	74.53	26.90	---	---	47.63	Blaine Tech
	11/23/2010	74.53	27.35	27.10	0.25	47.38	Blaine Tech
	12/22/2010	74.53	28.35	26.84	1.51	47.39	Blaine Tech
1/10/2011	74.53	29.10	27.70	1.40	46.55	Blaine Tech	
2/24/2011	74.53	NM	---	---	NC	Blaine Tech	
3/23/2011	74.53	NM	---	---	NC	Blaine Tech	
4/12/2011	74.53	26.98	25.05	1.93	49.09	Blaine Tech	
5/13/2011	74.53	NM	---	---	NC	Blaine Tech	
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	



**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	4/16/2012	74.53	27.34	---	---	47.19	Blaine Tech
	5/25/2012	74.53	NM	---	---	NC	Blaine Tech
	6/15/2012	---	33.27	---	---	NC	Blaine Tech
	7/9/2012	---	33.71	---	---	NC	Blaine Tech
	8/29/2012	---	NM	---	---	NC	Blaine Tech
	9/26/2012	---	NM	---	---	NC	Blaine Tech
	10/15/2012	76.66	32.11	---	---	44.55	Blaine Tech
	11/29/2012	76.66	33.93	31.68	2.25	44.53	Blaine Tech
	12/26/2012	76.66	34.86	30.36	4.50	45.40	Blaine Tech
	1/14/2013	76.66	34.12	30.42	3.70	45.50	Blaine Tech
	2/20/2013	76.66	NM	---	---	NC	Blaine Tech
	4/10/2013	76.66	32.42	29.75	2.67	46.38	Blaine Tech
	10/7/2013	76.66	34.65	30.72	3.93	45.15	Blaine Tech
	4/25/2014	76.66	34.71	31.12	3.59	44.82	Blaine Tech
	5/20/2014	76.66	34.95	31.50	3.45	44.47	Nieto & Sons
	5/27/2014	76.66	34.53	31.29	3.24	44.72	Nieto & Sons
	6/4/2014	76.66	34.93	31.50	3.43	44.47	Nieto & Sons
	8/13/2014	76.66	34.86	31.27	3.59	44.67	Blaine Tech
	8/19/2014	76.66	34.20	31.39	2.81	44.71	Blaine Tech
	8/29/2014	76.66	34.31	31.32	2.99	44.74	Blaine Tech
	9/5/2014	76.66	34.35	31.37	2.98	44.69	Blaine Tech
	9/11/2014	76.66	35.00	31.23	3.77	44.68	Blaine Tech
	9/18/2014	76.66	34.42	31.50	2.92	44.58	Blaine Tech
	9/26/2014	76.66	34.15	31.48	2.67	44.65	Blaine Tech
	10/1/2014	76.66	33.51	31.61	1.90	44.67	Blaine Tech
	10/6/2014	76.66	33.29	31.63	1.66	44.70	Blaine Tech
	10/14/2014	76.66	33.48	31.55	1.93	44.72	Blaine Tech
	10/23/2014	76.66	33.64	31.57	2.07	44.68	Blaine Tech
	10/27/2014	76.66	33.02	31.79	1.23	44.62	Blaine Tech
	11/3/2014	76.66	33.75	31.57	2.18	44.65	Blaine Tech
	11/18/2014	76.66	33.17	31.75	1.42	44.63	Blaine Tech
	11/25/2014	76.66	33.13	31.86	1.27	44.55	Blaine Tech
	12/3/2014	76.66	32.93	31.75	1.18	44.67	Blaine Tech
	4/20/2015	76.66	33.64	32.20	1.44	44.17	Blaine Tech
	10/21/2015	76.66	33.55	33.16	0.39	43.42	Blaine Tech
	4/12/2016	76.66	34.30	34.03	0.27	42.58	Kinder Morgan
	10/3/2016	76.66	35.05	34.65	0.40	41.93	Blaine Tech
	3/9/2017	76.66	33.45	---	---	43.21	CH2M
	4/17/2017	76.66	32.96	---	---	43.70	Blaine Tech
	10/2/2017	76.66	34.10	---	---	42.56	Blaine Tech
4/16/2018	76.66	35.18	---	---	41.48	Blaine Tech	
11/5/2018	76.66	35.91	---	---	40.75	Blaine Tech	
4/23/2019	76.66	33.56	---	---	43.10	Blaine Tech	
10/28/2019	76.66	34.86	34.84	0.02	41.82	Blaine Tech	
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	
3/10/2022	76.66	27.29	---	---	49.37	Blaine Tech	
5/9/2022	76.66	31.87	---	---	44.79	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

**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	2/24/2009	74.17	24.31	24.21	0.10	49.94	Envent
	3/27/2009	74.17	31.08	---	---	43.09	Envent
	4/21/2009	74.17	25.36	25.34	0.02	48.83	Envent
	7/21/2009	74.17	26.18	---	---	47.99	Envent
	10/19/2009	74.17	NM	---	---	NC	Blaine Tech
	11/6/2009	74.17	26.33	26.18	0.15	47.96	Kinder Morgan
	10/4/2010	74.17	30.00	---	---	44.17	Blaine Tech
	4/13/2011	74.17	24.19	---	---	49.98	Blaine Tech
	10/10/2011	74.17	24.38	---	---	49.79	Blaine Tech
	4/16/2012	74.17	NM	---	---	NC	Blaine Tech
	7/9/2012	74.17	NM	---	---	NC	Blaine Tech
	10/15/2012	74.17	28.12	---	---	46.05	Blaine Tech
	4/8/2013	74.17	NM	---	---	NC	Blaine Tech
	9/24/2013	74.17	31.25	28.15	3.10	45.40	Blaine Tech
	10/7/2013	74.17	31.19	27.69	3.50	45.78	Blaine Tech
	4/25/2014	74.17	28.96	28.62	0.34	45.48	Blaine Tech
	9/5/2014	74.17	31.13	27.89	3.24	45.63	Blaine Tech
	9/11/2014	74.17	31.12	27.85	3.27	45.67	Blaine Tech
	9/18/2014	74.17	31.22	27.85	3.37	45.65	Blaine Tech
	9/26/2014	74.17	31.34	27.91	3.43	45.57	Blaine Tech
	10/1/2014	74.17	31.19	27.84	3.35	45.66	Blaine Tech
	10/6/2014	74.17	32.19	27.84	4.35	45.46	Blaine Tech
	10/14/2014	74.17	31.18	28.85	2.33	44.85	Blaine Tech
	10/23/2014	74.17	31.34	27.85	3.49	45.62	Blaine Tech
	10/27/2014	74.17	31.28	28.89	2.39	44.80	Blaine Tech
	11/3/2014	74.17	32.34	27.83	4.51	45.44	Blaine Tech
	11/10/2014	74.17	31.46	27.97	3.49	45.50	Blaine Tech
	11/18/2014	74.17	31.41	27.88	3.53	45.58	Blaine Tech
	11/25/2014	74.17	31.48	27.87	3.61	45.58	Blaine Tech
	12/3/2014	74.17	33.34	29.95	3.39	43.54	Blaine Tech
	12/12/2014	74.17	33.25	29.08	4.17	44.26	Blaine Tech
	12/19/2014	74.17	32.52	28.09	4.43	45.19	Blaine Tech
	4/22/2015	74.17	31.54	28.10	3.44	45.38	Blaine Tech
	10/22/2015	74.17	33.08	29.23	3.85	44.17	Kinder Morgan
	3/16/2016	74.17	33.39	33.16	0.23	40.96	Kinder Morgan
	4/12/2016	74.17	33.33	33.12	0.21	41.01	Kinder Morgan
	6/30/2016	74.17	31.50	---	---	42.67	Kinder Morgan
	8/22/2016	74.17	32.75	32.74	0.01	41.43	Kinder Morgan
	10/3/2016	74.17	32.72	32.71	0.01	41.46	Kinder Morgan
	3/24/2017	74.17	31.50	30.45	1.05	43.51	CH2M
4/17/2017	74.17	30.12	29.96	0.16	44.18	Blaine Tech	
10/2/2017	74.17	33.54	---	---	40.63	Blaine Tech	
4/16/2018	74.17	NM	---	---	NC	Blaine Tech	
11/5/2018	74.17	33.22	33.11	0.11	41.04	Blaine Tech	
4/16/2019	74.17	NM	---	---	NC	Blaine Tech	
10/28/2019	74.17	NM	---	---	NC	Blaine Tech	
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	---	---	41.99	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	---	---	39.41	Blaine Tech	
3/10/2022	74.17	32.60	---	---	41.57	Blaine Tech	
5/9/2022	74.17	32.38	---	---	41.79	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

**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	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
	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	

**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	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	39.96	Blaine Tech	
3/10/2022	73.49	NM	---	---	NC	Blaine Tech	
5/9/2022	73.49	35.16	34.21	0.95	39.09	Blaine Tech	
GMW-O-14	3/10/2022	74.08	29.35	---	---	44.73	Blaine Tech
	5/9/2022	74.08	39.64	---	---	34.44	Blaine Tech
GMW-O-15	4/30/2007	74.23	23.41	23.30	0.11	50.91	Secor
	11/12/2007	74.23	23.95	23.85	0.10	50.36	Stantec
	4/14/2008	74.23	23.64	---	---	50.59	Stantec
	8/8/2008	74.23	24.60	---	---	49.63	Envent
	8/11/2008	74.23	24.40	24.34	0.06	49.88	Stantec
	10/16/2008	74.23	24.53	---	---	49.70	Envent
	12/18/2008	74.23	24.86	---	---	49.37	Envent
	1/2/2009	74.23	24.82	---	---	49.41	Envent
	1/15/2009	74.23	26.01	---	---	48.22	Envent
	2/20/2009	74.23	24.80	---	---	49.43	Envent
	2/23/2009	74.23	24.76	24.74	0.02	49.49	Blaine Tech
	3/24/2009	74.23	25.55	---	---	48.68	Envent
	4/20/2009	74.23	24.66	24.61	0.05	49.61	Blaine Tech
	7/17/2009	74.23	25.01	---	---	49.22	Envent
	7/20/2009	74.23	24.99	24.94	0.05	49.28	Blaine Tech
	7/22/2009	74.23	24.99	24.94	0.05	49.28	Blaine Tech
	10/19/2009	74.23	25.55	25.43	0.12	48.78	Blaine Tech
	2/4/2010	74.23	25.50	25.48	0.02	48.75	Kinder Morgan
	3/15/2010	74.23	NM	---	---	NC	
	4/16/2010	74.23	23.10	---	---	51.13	Blaine Tech
5/24/2010	74.23	25.67	---	---	48.56	Blaine Tech	

**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	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	
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	

**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	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	Inaccessible, pump stuck in well					
5/9/2022	Inaccessible, 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
	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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	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	
5/9/2022	74.32	29.62	---	---	44.70	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	
	10/10/2011	73.32	24.05	---	---	49.27	Blaine Tech
	1/9/2012	73.32	24.68	---	---	48.64	Blaine Tech
	4/16/2012	73.32	26.18	---	---	47.14	Blaine Tech
	7/9/2012	73.32	32.92	---	---	40.40	Blaine Tech
10/15/2012	73.32	32.97	32.95	0.02	40.37	Blaine Tech	
1/14/2013	73.32	32.98	32.93	0.05	40.38	Blaine Tech	
4/8/2013	73.32	29.63	26.46	3.17	46.27	Blaine Tech	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	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	---	---	38.42	Blaine Tech	
3/10/2022	73.32	32.34	---	---	40.98	Blaine Tech	
5/9/2022	73.32	32.11	---	---	41.21	Blaine Tech	
GMW-O-21	12/28/2007	71.43	27.67	---	---	43.76	Geomatrix
	8/15/2008	73.94	NM	---	---	NC	Envent
	10/17/2008	71.43	26.00	---	---	45.43	Envent
	12/19/2008	71.43	24.82	---	---	46.61	Envent
	3/27/2009	71.43	26.41	---	---	45.02	Envent
	7/21/2009	71.43	24.88	---	---	46.55	Envent
	10/19/2009	71.43	NM	---	---	NC	Blaine Tech
	11/9/2009	71.43	25.02	---	---	46.41	Kinder Morgan
	10/4/2010	71.43	25.40	---	---	46.03	Blaine Tech
	4/13/2011	71.43	23.72	---	---	47.71	Blaine Tech
	10/10/2011	71.43	24.65	---	---	46.78	Blaine Tech
	4/16/2012	71.43	NM	---	---	NC	Blaine Tech
	7/9/2012	71.43	NM	---	---	NC	Blaine Tech
	10/15/2012	71.43	32.50	---	---	38.93	Blaine Tech
	4/8/2013	71.43	NM	---	---	NC	Blaine Tech
	9/25/2013	71.43	29.25	---	---	42.18	Blaine Tech
10/7/2013	71.43	NM	---	---	NC	Blaine Tech	
4/14/2014	71.43	28.65	28.61	0.04	42.81	Blaine Tech	



**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	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	---	---	38.47	Blaine Tech	
3/10/2022	71.43	32.60	---	---	38.83	Blaine Tech	
5/9/2022	71.43	32.83	---	---	38.60	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	

**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	1/10/2011	73.63	27.45	---	---	46.18	Blaine Tech
	4/11/2011	73.63	25.03	---	---	48.60	Blaine Tech
	7/11/2011	73.63	NM	---	---	NC	
	10/10/2011	73.63	25.25	---	---	48.38	Blaine Tech
	1/9/2012	73.63	25.91	---	---	47.72	Blaine Tech
	4/16/2012	73.63	27.38	---	---	46.25	Blaine Tech
	7/9/2012	73.63	27.41	---	---	46.22	Blaine Tech
	10/15/2012	73.63	26.48	---	---	47.15	Blaine Tech
	1/14/2013	73.63	29.35	---	---	44.28	Blaine Tech
	4/8/2013	73.63	29.81	27.74	2.07	45.48	Blaine Tech
	9/23/2013	73.63	29.90	---	---	43.73	Blaine Tech
	10/7/2013	73.63	32.86	28.30	4.56	44.42	Blaine Tech
	4/25/2014	73.63	29.81	29.66	0.15	43.94	Blaine Tech
	9/5/2014	73.63	32.57	28.76	3.81	44.11	Blaine Tech
	9/11/2014	73.63	32.94	28.63	4.31	44.14	Blaine Tech
	9/18/2014	73.63	32.80	28.65	4.15	44.15	Blaine Tech
	9/26/2014	73.63	32.87	28.70	4.17	44.10	Blaine Tech
	10/1/2014	73.63	32.56	28.75	3.81	44.12	Blaine Tech
	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	---	---	40.44	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	---	---	39.88	Blaine Tech	
3/10/2022	73.63	33.58	---	---	40.05	Blaine Tech	
5/9/2022	73.63	33.40	---	---	40.23	Blaine Tech	
GMW-O-24	3/10/2022	74.39	31.15	---	---	43.24	Blaine Tech
	5/9/2022	74.39	33.36	---	---	41.03	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

**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	10/4/2010	73.00	25.28	---	---	47.72	Blaine Tech
	4/11/2011	73.00	23.90	---	---	49.10	Blaine Tech
	10/10/2011	73.00	24.70	---	---	48.30	Blaine Tech
	4/16/2012	73.00	26.99	---	---	46.01	Blaine Tech
	7/9/2012	73.00	NM	---	---	NC	Blaine Tech
	10/15/2012	73.05	34.21	---	---	38.84	Blaine Tech
	1/14/2013	73.05	34.32	---	---	38.73	Blaine Tech
	4/10/2013	73.05	27.37	---	---	45.68	Blaine Tech
	8/14/2014	73.05	29.35	28.37	0.98	44.48	Blaine Tech
	8/19/2014	73.05	28.46	28.44	0.02	44.61	Blaine Tech
	8/29/2014	73.05	29.32	28.31	1.01	44.54	Blaine Tech
	9/5/2014	73.05	29.33	28.29	1.04	44.55	Blaine Tech
	9/11/2014	73.05	29.49	28.47	1.02	44.38	Blaine Tech
	9/18/2014	73.05	28.95	28.91	0.04	44.13	Blaine Tech
	9/26/2014	73.05	28.93	28.59	0.34	44.39	Blaine Tech
GMW-SF-10	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
	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
GWR-3	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
	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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	10/1/2014	77.60	36.44	34.01	2.43	43.18	Blaine Tech
	10/6/2014	77.60	34.71	33.33	1.38	44.04	Blaine Tech
	10/14/2014	77.60	35.15	33.20	1.95	44.07	Blaine Tech
	10/23/2014	77.60	35.36	33.20	2.16	44.03	Blaine Tech
	10/27/2014	77.60	34.68	33.49	1.19	43.91	Blaine Tech
	11/3/2014	77.60	35.43	33.18	2.25	44.04	Blaine Tech
	11/10/2014	77.60	35.02	33.32	1.70	43.99	Blaine Tech
	11/18/2014	77.60	35.05	33.34	1.71	43.97	Blaine Tech
	11/25/2014	77.60	35.04	33.36	1.68	43.95	Blaine Tech
	12/3/2014	77.60	34.95	33.34	1.61	43.99	Blaine Tech
	12/12/2014	77.60	35.11	33.64	1.47	43.71	Blaine Tech
	12/19/2014	77.60	35.55	33.67	1.88	43.61	Blaine Tech
	4/20/2015	77.60	37.25	33.34	3.91	43.60	Blaine Tech
	7/24/2015	77.60	41.30	33.95	7.35	42.40	Northstar
	8/12/2015	77.60	37.03	34.42	2.61	42.74	Northstar
	10/20/2015	77.60	35.98	34.65	1.33	42.72	Blaine Tech
	3/16/2016	77.60	38.60	---	---	39.00	Kinder Morgan
	4/11/2016	77.60	36.90	---	---	40.70	Blaine Tech
	6/29/2016	77.60	37.77	---	---	39.83	Blaine Tech
	8/22/2016	77.60	38.24	---	---	39.36	Blaine Tech
	10/3/2016	77.60	39.20	39.15	0.05	38.44	Blaine Tech
	3/7/2017	77.60	35.62	---	---	41.98	CH2M
	4/17/2017	77.60	34.88	---	---	42.72	Blaine Tech
	10/2/2017	77.60	38.92	---	---	38.68	Blaine Tech
	4/16/2018	77.60	38.73	---	---	38.87	Blaine Tech
	11/5/2018	77.60	38.42	---	---	39.18	Blaine Tech
	4/16/2019	77.60	37.16	---	---	40.44	Blaine Tech
	10/28/2019	77.60	38.58	---	---	39.02	Blaine Tech
	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	
5/9/2022	77.60	37.21	---	---	40.39	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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

SFPF 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-18 (MID) Continued	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
5/9/2022	75.67	29.62	---	---	46.05	Blaine Tech	
MW-O-1	4/30/2007	75.48	24.10	23.98	0.12	51.48	Secor
	8/14/2007	75.48	25.31	23.78	1.53	51.39	Geomatrix
	8/21/2007	75.48	23.84	23.58	0.26	51.85	Geomatrix
	8/28/2007	75.48	23.07	23.06	0.01	52.42	Stantec
	9/11/2007	75.48	23.86	23.48	0.38	51.92	Geomatrix
	10/5/2007	75.48	24.67	---	---	50.81	Geomatrix
	11/2/2007	75.48	24.25	---	---	51.23	Geomatrix
	11/12/2007	75.48	24.27	24.25	0.02	51.23	Stantec
	12/28/2007	75.48	25.54	25.51	0.03	49.96	Geomatrix
	8/15/2008	75.48	NM	---	---	NC	Envent
	8/19/2008	75.48	25.18	25.13	0.05	50.34	Envent
	10/17/2008	75.48	25.30	---	---	50.18	Envent
	12/19/2008	75.48	26.31	---	---	49.17	Envent
	1/15/2009	75.48	25.84	---	---	49.64	Envent
	4/21/2009	75.48	25.41	---	---	50.07	Envent
	10/19/2009	75.48	26.30	---	---	49.18	Blaine Tech
	10/4/2010	75.48	26.90	---	---	48.58	Blaine Tech
	4/11/2011	75.48	25.59	---	---	49.89	Blaine Tech
	10/10/2011	75.48	26.52	---	---	48.96	Blaine Tech
	4/16/2012	75.48	27.25	---	---	48.23	Blaine Tech
	7/9/2012	75.48	NM	---	---	NC	Blaine Tech
	10/15/2012	75.48	28.94	---	---	46.54	Blaine Tech
	4/8/2013	75.48	28.81	---	---	46.67	Blaine Tech
	10/7/2013	75.48	29.21	---	---	46.27	Blaine Tech
	4/14/2014	75.48	29.82	---	---	45.66	Blaine Tech
	10/27/2014	75.48	29.92	---	---	45.56	Blaine Tech
	4/20/2015	75.48	30.39	---	---	45.09	Blaine Tech
	10/27/2015	75.48	27.67	---	---	47.81	Blaine Tech
	3/14/2016	75.48	DRY	---	---	NC	Blaine Tech
	4/11/2016	75.48	DRY	---	---	NC	Blaine Tech
	6/29/2016	75.48	DRY	---	---	NC	Blaine Tech
	8/22/2016	75.48	DRY	---	---	NC	Blaine Tech
	10/3/2016	75.48	DRY	---	---	NC	Blaine Tech
	4/17/2017	75.48	DRY	---	---	NC	Blaine Tech
	10/2/2017	75.48	DRY	---	---	NC	Blaine Tech
	4/16/2018	75.48	DRY	---	---	NC	Blaine Tech
11/5/2018	75.48	DRY	---	---	NC	Blaine Tech	
4/16/2019	75.48	32.09	---	---	43.39	Blaine Tech	
10/28/2019	75.48	DRY	---	---	NC	Blaine Tech	
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	

**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	11/1/2021	75.48	DRY	---	---	NC	Blaine Tech
	3/10/2022	75.48	DRY	---	---	NC	Blaine Tech
	5/9/2022	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
	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	
3/10/2022	71.90	33.52	---	---	38.38	Blaine Tech	
5/9/2022	71.90	33.36	---	---	38.54	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

**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	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
	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	

**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	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	
5/9/2022	78.93	38.52	---	---	40.41	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
	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	



**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	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	
5/9/2022	78.53	38.17	---	---	40.36	Blaine Tech	
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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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 Continued	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	
5/9/2022	78.12	37.75	---	---	40.37	Blaine Tech	
MW-SF-4	3/12/2007	79.38	30.01	29.41	0.60	49.85	Secor
	4/30/2007	79.38	29.96	29.11	0.85	50.10	Secor
	8/14/2007	79.38	30.34	28.38	1.96	50.60	Geomatrix
	8/28/2007	79.38	29.95	28.30	1.65	50.74	Stantec
	9/11/2007	79.38	29.98	28.43	1.55	50.63	Geomatrix
	10/5/2007	79.38	30.68	28.85	1.83	50.15	Geomatrix
	10/12/2007	79.38	30.27	29.96	0.31	49.36	Geomatrix
	10/19/2007	79.38	30.28	---	---	49.10	Geomatrix
	10/26/2007	79.38	30.52	---	---	48.86	Geomatrix
	11/2/2007	79.38	30.68	---	---	48.70	Geomatrix
	11/12/2007	79.38	29.70	29.69	0.01	49.69	Stantec
	12/21/2007	79.38	30.69	---	---	48.69	Geomatrix
	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	

**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	10/19/2009	79.38	31.93	31.90	0.03	47.47	Blaine Tech
	3/15/2010	79.38	31.95	31.91	0.04	47.46	Blaine Tech
	5/24/2010	79.38	31.60	---	---	47.78	Blaine Tech
	5/28/2010	79.38	26.40	---	---	52.98	Blaine Tech
	6/22/2010	79.38	31.63	---	---	47.75	Blaine Tech
	7/12/2010	79.38	31.37	---	---	48.01	Blaine Tech
	10/4/2010	79.38	31.81	---	---	47.57	Blaine Tech
	1/10/2011	79.38	32.99	---	---	46.39	Blaine Tech
	4/11/2011	79.38	30.85	---	---	48.53	Blaine Tech
	7/11/2011	79.38	30.35	---	---	49.03	Blaine Tech
	10/10/2011	79.38	NM	---	---	NC	Blaine Tech
	1/9/2012	79.38	32.07	---	---	47.31	Blaine Tech
	4/16/2012	79.38	33.35	---	---	46.03	Blaine Tech
	7/9/2012	79.38	32.11	---	---	47.27	Blaine Tech
	10/15/2012	79.38	34.04	---	---	45.34	Blaine Tech
	1/14/2013	79.38	34.52	---	---	44.86	Blaine Tech
	4/8/2013	79.38	DRY	---	---	NC	Blaine Tech
	10/7/2013	79.38	DRY	---	---	NC	Blaine Tech
	4/25/2014	79.38	40.03	34.23	5.80	43.96	Blaine Tech
	5/6/2014	79.38	39.78	33.91	5.87	44.27	Nieto & Sons
	5/12/2014	79.38	37.02	34.64	2.38	44.25	Nieto & Sons
	5/20/2014	79.38	36.60	35.60	1.00	43.58	Nieto & Sons
	5/27/2014	79.38	36.12	35.45	0.67	43.79	Nieto & Sons
	6/4/2014	79.38	36.54	35.91	0.63	43.34	Nieto & Sons
	6/10/2014	79.38	37.02	35.38	1.64	43.66	Nieto & Sons
	7/3/2014	79.38	36.98	35.63	1.35	43.47	Nieto & Sons
	7/8/2014	79.38	36.78	35.34	1.44	43.74	Blaine Tech
	7/18/2014	79.38	35.88	35.55	0.33	43.76	Blaine Tech
	7/24/2014	79.38	35.98	35.42	0.56	43.85	Blaine Tech
	8/1/2014	79.38	35.57	35.30	0.27	44.02	Blaine Tech
	8/14/2014	79.38	35.42	35.23	0.19	44.11	Blaine Tech
	8/19/2014	79.38	35.36	35.21	0.15	44.14	Blaine Tech
	8/29/2014	79.38	35.32	35.20	0.12	44.16	Blaine Tech
	9/18/2014	79.38	35.55	35.30	0.25	44.03	Blaine Tech
	9/26/2014	79.38	35.56	35.30	0.26	44.03	Blaine Tech
	10/1/2014	79.38	35.56	35.24	0.32	44.07	Blaine Tech
	10/6/2014	79.38	35.48	35.22	0.26	44.11	Blaine Tech
	10/14/2014	79.38	35.33	35.20	0.13	44.15	Blaine Tech
	10/23/2014	79.38	35.51	35.22	0.29	44.10	Blaine Tech
	10/27/2014	79.38	35.54	35.25	0.29	44.07	Blaine Tech
11/18/2014	79.38	35.56	35.25	0.31	44.07	Blaine Tech	
11/25/2014	79.38	35.66	35.32	0.34	43.99	Blaine Tech	
12/12/2014	79.38	35.81	35.58	0.23	43.75	Blaine Tech	
12/19/2014	79.38	35.75	35.62	0.13	43.73	Blaine Tech	
4/20/2015	79.38	37.78	35.29	2.49	43.58	Blaine Tech	
5/19/2015	79.38	39.22	35.28	3.94	43.29	Northstar	
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	

**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	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	
5/9/2022	79.38	38.69	---	---	40.69	Blaine Tech	
MW-SF-5	4/30/2007	79.74	29.54	---	---	50.20	Secor
	8/21/2007	79.74	28.36	---	---	51.38	Geomatrix
	8/28/2007	79.74	28.84	---	---	50.90	Stantec
	10/5/2007	79.74	29.50	---	---	50.24	Geomatrix
	11/2/2007	79.74	31.50	---	---	48.24	Geomatrix
	11/12/2007	79.74	29.93	---	---	49.81	Stantec
	12/21/2007	79.74	31.00	---	---	48.74	Geomatrix
	4/14/2008	79.74	30.20	---	---	49.54	Stantec
	8/11/2008	79.74	30.85	---	---	48.89	Stantec
	10/13/2008	79.74	30.93	---	---	48.81	Stantec
	4/20/2009	79.74	30.99	---	---	48.75	Blaine Tech
	10/19/2009	79.74	NM	---	---	NC	Blaine Tech
	5/24/2010	79.74	31.55	---	---	48.19	Blaine Tech
	5/28/2010	79.74	31.44	---	---	48.30	Blaine Tech
	6/22/2010	79.74	31.57	---	---	48.17	Blaine Tech
	10/4/2010	79.74	31.39	---	---	48.35	Blaine Tech
	1/10/2011	79.74	33.80	---	---	45.94	Blaine Tech
	4/11/2011	79.74	31.03	---	---	48.71	Blaine Tech
	7/11/2011	79.74	NM	---	---	NC	
	10/10/2011	79.74	31.28	---	---	48.46	Blaine Tech
	1/9/2012	79.74	32.12	---	---	47.62	Blaine Tech
	4/16/2012	79.74	33.30	---	---	46.44	Blaine Tech
	7/9/2012	79.74	34.45	---	---	45.29	Blaine Tech
	10/15/2012	79.74	33.28	---	---	46.46	Blaine Tech
	1/14/2013	79.74	33.37	---	---	46.37	Blaine Tech
	4/8/2013	79.74	34.28	---	---	45.46	Blaine Tech
	10/7/2013	79.74	34.58	---	---	45.16	Blaine Tech
	4/14/2014	79.74	35.33	---	---	44.41	Blaine Tech
	10/27/2014	79.74	35.48	---	---	44.26	Blaine Tech
	4/20/2015	79.74	36.05	---	---	43.69	Blaine Tech
	10/19/2015	79.74	36.82	---	---	42.92	Blaine Tech
	3/14/2016	79.74	DRY	---	---	NC	Blaine Tech
4/11/2016	79.74	DRY	---	---	NC	Blaine Tech	
6/29/2016	79.74	DRY	---	---	NC	Blaine Tech	
8/22/2016	79.74	DRY	---	---	NC	Blaine Tech	
10/3/2016	79.74	DRY	---	---	NC	Blaine Tech	
4/17/2017	79.74	36.88	---	---	42.86	Blaine Tech	
10/2/2017	79.74	DRY	---	---	NC	Blaine Tech	
4/16/2018	79.74	DRY	---	---	NC	Blaine Tech	
11/5/2018	79.74	DRY	---	---	NC	Blaine Tech	
4/16/2019	79.74	DRY	---	---	NC	Blaine Tech	
10/28/2019	79.74	DRY	---	---	NC	Blaine Tech	
5/4/2020	79.74	37.86	---	---	41.88	Blaine Tech	
11/2/2020	79.74	DRY	---	---	NC	Blaine Tech	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	5/3/2021	79.74	DRY	---	---	NC	Blaine Tech
	11/1/2021	79.74	DRY	---	---	NC	Blaine Tech
	5/9/2022	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	76.80	34.50	33.31	1.19	43.25	Blaine Tech
	8/13/2014	76.80	32.95	32.54	0.41	44.18	Blaine Tech
	8/19/2014	76.80	32.87	32.62	0.25	44.13	Blaine Tech
	8/29/2014	76.80	32.79	32.56	0.23	44.19	Blaine Tech
	9/5/2014	76.80	32.81	32.59	0.22	44.17	Blaine Tech
	9/18/2014	76.80	32.95	32.65	0.30	44.09	Blaine Tech
	9/26/2014	76.80	32.94	32.61	0.33	44.12	Blaine Tech
	10/1/2014	76.80	32.91	32.60	0.31	44.14	Blaine Tech
	10/6/2014	76.80	32.90	32.61	0.29	44.13	Blaine Tech
	10/14/2014	76.80	33.72	33.60	0.12	43.18	Blaine Tech
	10/23/2014	76.80	34.57	33.94	0.63	42.73	Blaine Tech
	10/27/2014	76.80	32.92	32.58	0.34	44.15	Blaine Tech
	11/18/2014	76.80	32.99	32.62	0.37	44.11	Blaine Tech
	11/25/2014	76.80	32.66	32.58	0.08	44.20	Blaine Tech
12/12/2014	76.80	33.45	33.07	0.38	43.65	Blaine Tech	
12/19/2014	76.80	33.60	33.15	0.45	43.56	Blaine Tech	
4/20/2015	76.80	33.23	33.11	0.12	43.67	Blaine Tech	
10/21/2015	76.80	34.28	---	---	42.52	Kinder Morgan	
3/14/2016	76.80	38.10	38.08	0.02	38.72	Blaine Tech	
4/11/2016	76.80	35.83	---	---	40.97	Blaine Tech	
6/29/2016	76.80	36.89	---	---	39.91	Blaine Tech	
8/22/2016	76.80	37.11	---	---	39.69	Blaine Tech	
10/3/2016	76.80	38.45	---	---	38.35	Blaine Tech	
4/17/2017	76.80	34.03	---	---	42.77	Blaine Tech	
10/2/2017	76.80	37.89	---	---	38.91	Blaine Tech	
4/16/2018	76.80	37.65	---	---	39.15	Blaine Tech	
11/5/2018	76.80	37.70	---	---	39.10	Blaine Tech	
4/16/2019	76.80	36.13	---	---	40.67	Blaine Tech	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	10/28/2019	76.80	37.41	---	---	39.39	Blaine Tech
	5/4/2020	76.80	34.90	---	---	41.90	Blaine Tech
	11/2/2020	76.80	35.35	---	---	41.45	Blaine Tech
	5/3/2021	76.80	35.86	---	---	40.94	Blaine Tech
	11/1/2021	76.80	37.50	---	---	39.30	Blaine Tech
	5/9/2022	76.80	36.47	---	---	40.33	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	
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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	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
	11/1/2021	74.10	NA	---	---	NA	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	
5/4/2020	76.53	DRY	---	---	NC	Blaine Tech	
11/2/2020	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	5/3/2021	76.53	DRY	---	---	NC	Blaine Tech
	11/1/2021	76.53	DRY	---	---	NC	Blaine Tech
	5/9/2022	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	



**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

SFPF 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	6/29/2016	78.56	37.06	---	---	41.50	Blaine Tech
	8/22/2016	78.56	39.25	---	---	39.31	Blaine Tech
	10/3/2016	78.56	40.05	---	---	38.51	Blaine Tech
	3/10/2017	78.56	36.56	---	---	42.00	CH2M
	4/17/2017	78.56	35.91	---	---	42.65	Blaine Tech
	10/2/2017	78.56	40.09	---	---	38.47	Blaine Tech
	4/16/2018	78.56	39.90	---	---	38.66	Blaine Tech
	11/5/2018	78.56	39.52	---	---	39.04	Blaine Tech
	4/16/2019	78.56	38.52	---	---	40.04	Blaine Tech
	10/28/2019	78.56	39.13	---	---	39.43	Blaine Tech
	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	
5/9/2022	78.56	38.14	---	---	40.42	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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	11/3/2014	78.07	37.48	33.09	4.39	44.10	Blaine Tech
	11/18/2014	78.07	37.44	33.15	4.29	44.06	Blaine Tech
	11/25/2014	78.07	37.35	33.21	4.14	44.03	Blaine Tech
	12/3/2014	78.07	37.31	33.12	4.19	44.11	Blaine Tech
	12/12/2014	78.07	37.92	33.45	4.47	43.73	Blaine Tech
	12/19/2014	78.07	38.25	33.50	4.75	43.62	Blaine Tech
	3/17/2015	78.07	36.42	34.05	2.37	43.55	Kinder Morgan
	4/20/2015	78.07	36.42	34.05	2.37	43.55	Blaine Tech
	10/20/2015	78.07	36.78	34.84	1.94	42.84	Kinder Morgan
	3/16/2016	78.07	39.03	---	---	39.04	Kinder Morgan
	4/11/2016	78.07	37.13	---	---	40.94	Blaine Tech
	6/29/2016	78.07	38.34	38.28	0.06	39.78	Blaine Tech
	8/22/2016	78.07	38.60	---	---	39.47	Blaine Tech
	10/3/2016	78.07	39.45	---	---	38.62	Blaine Tech
	3/10/2017	78.07	36.09	---	---	41.98	CH2M
	4/17/2017	78.07	35.12	---	---	42.95	Blaine Tech
	10/2/2017	78.07	39.31	---	---	38.76	Blaine Tech
	4/16/2018	78.07	39.09	---	---	38.98	Blaine Tech
	11/5/2018	78.07	38.96	---	---	39.11	Blaine Tech
	4/16/2019	78.07	37.53	---	---	40.54	Blaine Tech
10/28/2019	78.07	38.78	---	---	39.29	Blaine Tech	
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	
5/9/2022	78.07	37.36	---	---	40.71	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	

**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	5/12/2014	73.40	30.02	28.88	1.14	44.24	Nieto & Sons
	5/20/2014	73.40	31.10	29.77	1.33	43.30	Nieto & Sons
	5/27/2014	73.40	30.17	29.48	0.69	43.75	Nieto & Sons
	6/4/2014	73.40	30.22	---	---	43.18	Nieto & Sons
	6/10/2014	73.40	30.20	29.76	0.44	43.53	Nieto & Sons
	7/3/2014	73.40	30.49	29.88	0.61	43.37	Nieto & Sons
	7/24/2014	73.40	30.50	29.54	0.96	43.62	Blaine Tech
	8/1/2014	73.40	29.82	29.25	0.57	44.01	Blaine Tech
	8/8/2014	73.40	34.07	33.71	0.36	39.60	Blaine Tech
	8/14/2014	73.40	29.96	29.13	0.83	44.06	Blaine Tech
	8/19/2014	73.40	29.91	29.15	0.76	44.06	Blaine Tech
	8/29/2014	73.40	30.15	29.02	1.13	44.10	Blaine Tech
	9/5/2014	73.40	30.19	29.08	1.11	44.04	Blaine Tech
	9/11/2014	73.40	30.66	28.91	1.75	44.05	Blaine Tech
	9/18/2014	73.40	30.41	29.15	1.26	43.94	Blaine Tech
	9/26/2014	73.40	30.18	29.14	1.04	44.00	Blaine Tech
	10/1/2014	73.40	30.38	29.05	1.33	44.02	Blaine Tech
	10/6/2014	73.40	30.10	29.12	0.98	44.04	Blaine Tech
	10/13/2014	73.40	30.28	29.07	1.21	44.03	Blaine Tech
	10/23/2014	73.40	30.72	28.95	1.77	44.01	Blaine Tech
	10/27/2014	73.40	30.21	29.06	1.15	44.05	Blaine Tech
	11/3/2014	73.40	30.62	28.93	1.69	44.05	Blaine Tech
	11/18/2014	73.40	30.54	29.11	1.43	43.93	Blaine Tech
	11/25/2014	73.40	29.48	29.14	0.34	44.18	Blaine Tech
	12/3/2014	73.40	31.02	28.93	2.09	43.95	Blaine Tech
	12/12/2014	73.40	31.05	29.40	1.65	43.59	Blaine Tech
	12/19/2014	73.40	31.11	29.40	1.71	43.57	Blaine Tech
	4/20/2015	73.40	32.44	29.04	3.40	43.51	Blaine Tech
	10/19/2015	73.40	35.16	29.31	5.85	42.63	Blaine Tech
	3/14/2016	73.40	34.72	---	---	38.68	Blaine Tech
	4/11/2016	73.40	32.28	---	---	41.12	Blaine Tech
	6/29/2016	73.40	33.62	---	---	39.78	Blaine Tech
	8/22/2016	73.40	33.66	---	---	39.74	Blaine Tech
10/3/2016	73.40	34.20	---	---	39.20	Blaine Tech	
3/24/2017	73.40	31.25	---	---	42.15	CH2M	
4/17/2017	73.40	30.40	---	---	43.00	Blaine Tech	
10/2/2017	73.40	34.52	---	---	38.88	Blaine Tech	
4/16/2018	73.40	34.26	---	---	39.14	Blaine Tech	
11/5/2018	73.40	34.43	---	---	38.97	Blaine Tech	
4/16/2019	73.40	32.29	---	---	41.11	Blaine Tech	
11/1/2019	73.40	33.76	---	---	39.64	Blaine Tech	
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	
5/9/2022	73.40	33.52	---	---	39.88	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	

**Table 4. Groundwater and Product Measurements, and Elevations for Total Fluids, Groundwater, and Soil Vapor Extraction Wells**

*SFPF 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	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
	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	
5/9/2022	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	

**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	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
	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	
5/9/2022	78.27	37.86	---	---	40.41	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	

**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	9/3/2010	78.21	30.25	---	---	47.96	Kinder Morgan
	10/4/2010	78.21	30.49	---	---	47.72	Blaine Tech
	4/12/2011	78.21	29.52	---	---	48.69	Blaine Tech
	10/10/2011	78.21	29.85	---	---	48.36	Blaine Tech
	4/16/2012	78.21	NM	---	---	NC	Blaine Tech
	7/9/2012	78.21	NM	---	---	NC	Blaine Tech
	10/15/2012	78.21	32.47	---	---	45.74	Blaine Tech
	4/8/2013	78.21	32.97	32.73	0.24	45.43	Blaine Tech
	5/24/2013	78.21	32.97	32.73	0.24	45.43	Blaine Tech
	10/7/2013	78.21	NM	---	---	NC	Blaine Tech
	11/14/2013	78.21	33.80	33.21	0.59	44.88	Blaine Tech
	4/18/2014	78.21	34.20	33.65	0.55	44.45	Blaine Tech
	8/8/2014	78.21	34.06	34.05	0.01	44.16	Blaine Tech
	10/27/2014	78.21	34.25	---	---	43.96	Blaine Tech
	4/20/2015	78.21	34.52	---	---	43.69	Blaine Tech
	6/8/2015	78.21	35.17	35.00	0.17	43.18	Blaine Tech
	10/21/2015	78.21	34.56	---	---	43.65	Kinder Morgan
	3/14/2016	78.21	39.60	---	---	38.61	Blaine Tech
	4/11/2016	78.21	37.15	---	---	41.06	Blaine Tech
	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	
5/9/2022	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 <sub>2</sub> O)	Mass Removed (pounds) <sup>a</sup>
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
<b>First Quarter 2021 Total</b>	<b>129,835</b>	<b>2,132</b>	--	--	--	<b>4,908</b>

**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 <sub>2</sub> O)	Mass Removed (pounds) <sup>a</sup>
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
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
<b>Second Quarter 2021 Total</b>	<b>131,987</b>	<b>2,152</b>	--	--	--	<b>18,546</b>
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
<b>Third Quarter 2021 Total</b>	<b>133,909</b>	<b>1,922</b>	--	--	--	<b>4,894</b>
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
<b>Fourth Quarter 2021 Total</b>	<b>135,778</b>	<b>1,869</b>	--	--	--	<b>3,630</b>



**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 <sub>2</sub> O)	Mass Removed (pounds) <sup>a</sup>
1/6/2022	135,847	69	52	1,840	55	56
1/13/2022	136,011	164	116	1,659	55	181
1/18/2022	136,130	119	116	1,509	55	73
1/25/2022	136,299	169	112	1,656	55	176
2/1/2022	136,466	167	126	1,532	55	198
2/8/2022	136,619	153	125	1,531	55	189
2/15/2022	136,786	167	92	1,565	55	142
2/22/2022	136,952	166	74	1,468	55	114
3/1/2022	137,121	169	58	1,701	55	110
3/8/2022	137,288	167	70	1,823	55	145
3/17/2022	137,501	213	62	1,664	55	143
3/22/2022	137,621	120	66	1,752	55	93
3/29/2022	137,790	169	84	1,788	55	167
<b>First Quarter 2022 Total</b>	<b>137,790</b>	<b>2,012</b>	--	--	--	<b>1,785</b>
04/05/22	137,914	124	28	1,958	55	43
04/12/22	138,083	169	36	1,888	55	73
04/19/22	138,194	111	32	2,045	55	40
04/26/22	138,358	164	28	2,163	55	49
05/03/22	138,526	168	24	2,032	55	48
05/10/22	138,679	153	8	1,935	55	14
05/17/22	138,845	166	36	2,164	55	71
05/24/22	139,013	168	36	2,260	55	59
05/31/22	139,181	168	20	2,498	55	35
06/02/22	139,232	51	49	1,780	55	27
06/09/22	139,397	165	16	1,623	55	30
06/14/22	139,519	122	36	1,746	55	52
06/21/22	139,684	165	8	1,772	55	16
06/28/22	139,829	145	24	1,694	55	38
<b>Second Quarter 2022 Total</b>	<b>139,829</b>	<b>2,039</b>	--	--	--	<b>595</b>
<b>Cumulative Totals</b>	<b>139,829</b>	--	--	--	--	<b>3,643,888</b>

Notes:

<sup>a</sup> The total mass removed is based on influent FID or PID readings, hours of operation, and flow rate.

-- = not applicable or not available

FID = flame ionization detector

in. H<sub>2</sub>O = 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 (C<sub>4</sub> to C<sub>12</sub>)

**Figures**

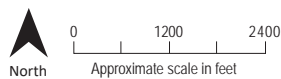
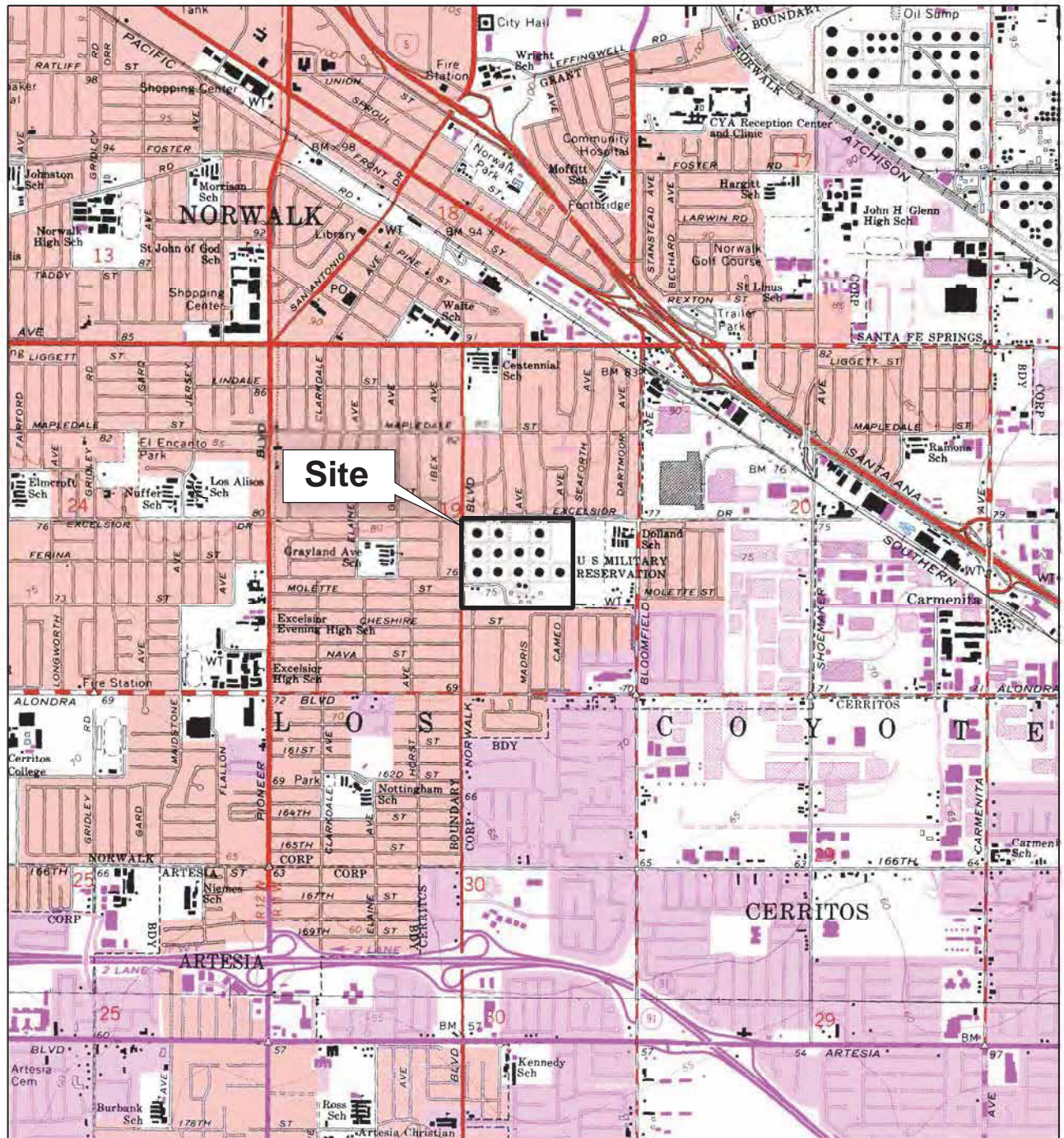
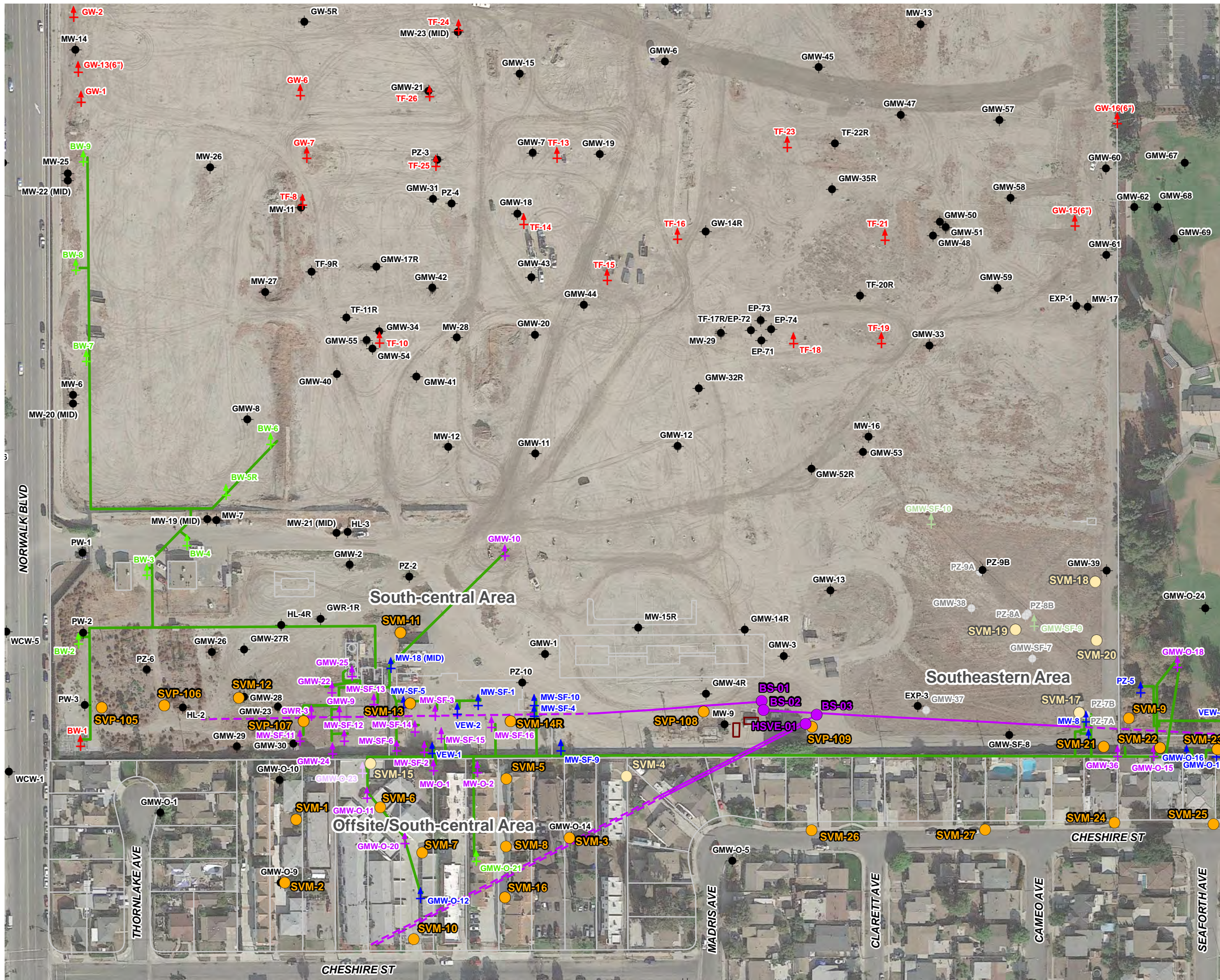


Figure 1. Site Location Map  
SFPP Norwalk Pump Station  
Norwalk, California

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
  - Abandoned/Destroyed Groundwater Monitoring Well
  - ↑ Existing Remediation Well
  - ↑ Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells
  - ↑ Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells (Abandoned)
  - ↑ Kinder Morgan Soil Vapor Extraction Wells
  - ↑ Kinder Morgan Total Fluids and/or Groundwater Extraction Wells
  - ↑ Kinder Morgan Total Fluids and/or Groundwater Extraction Wells (Abandoned)
  - 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.

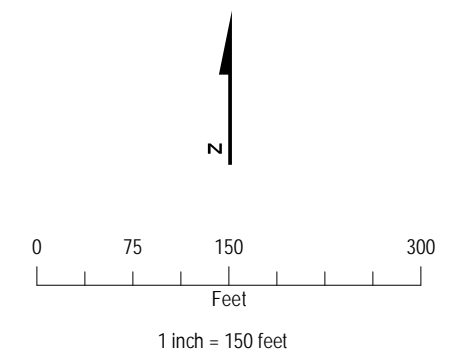
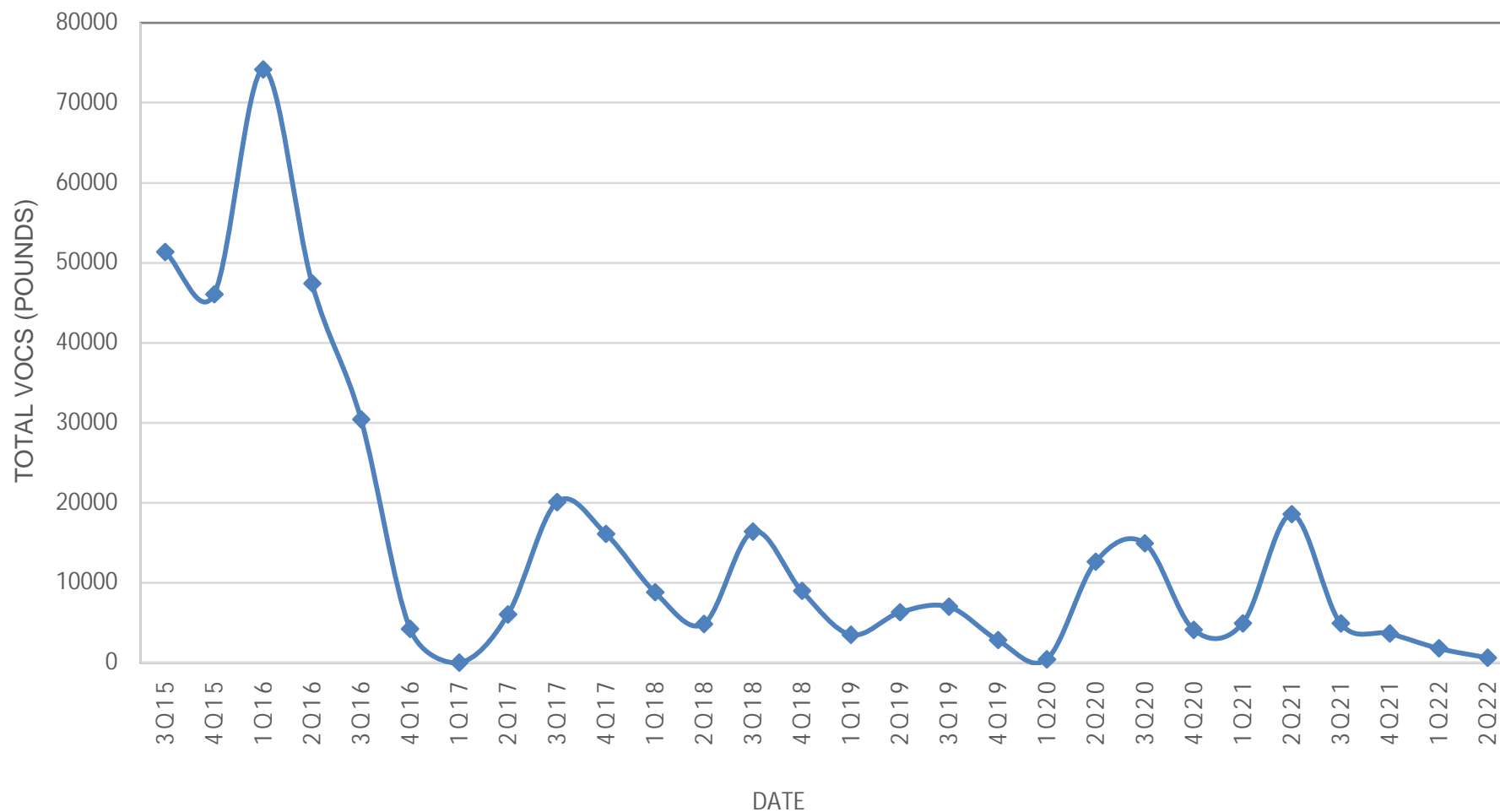
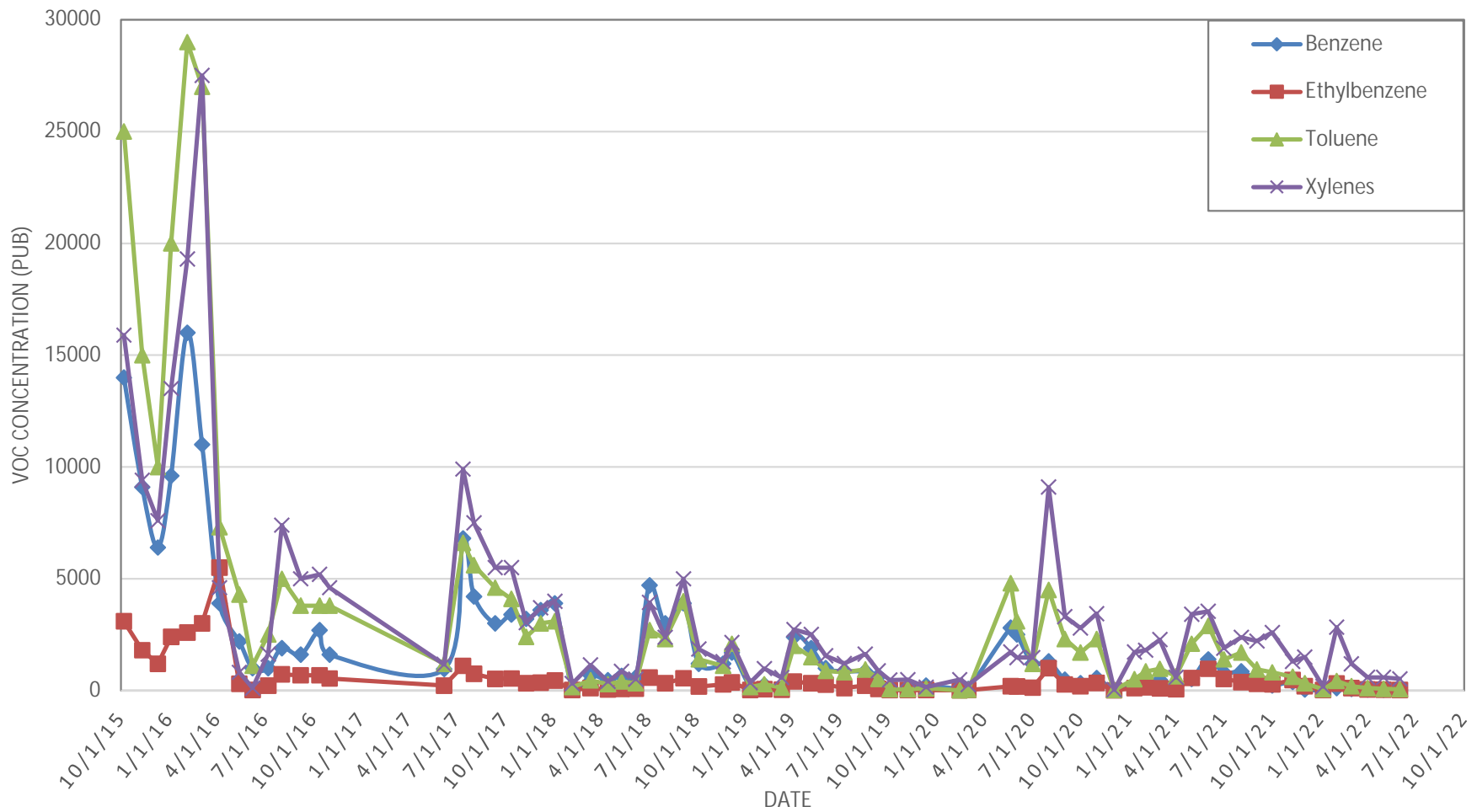


Figure 2. Current and Historical Remediation System Layout(s)  
SFPP Norwalk Pump Station  
Norwalk, California



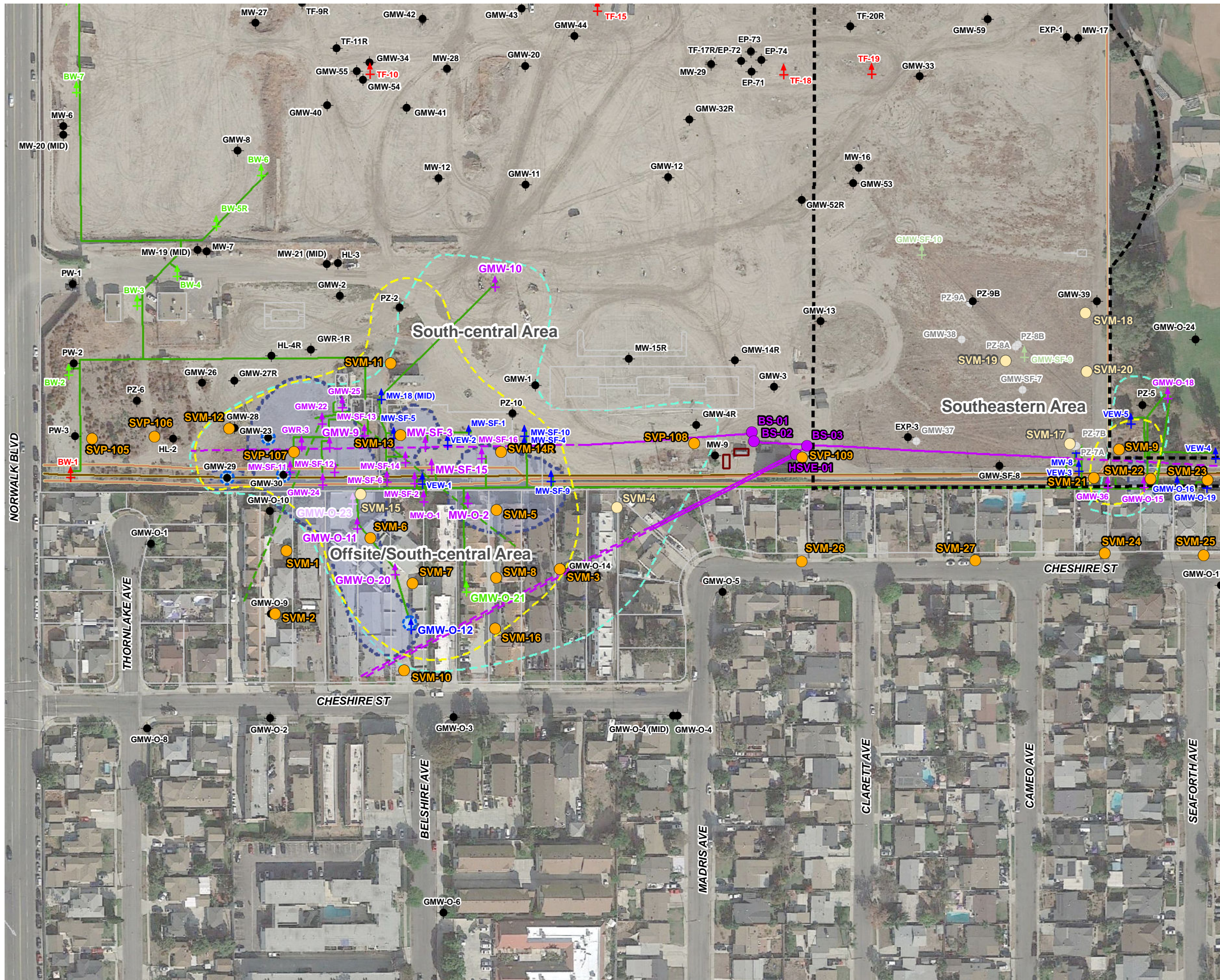
Note:  
 VOC = volatile organic compound

**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
- Destroyed Soil Vapor Probe/Soil Vapor Monitoring Probe
- Horizontal Biosparge Well Entry Point
- Existing Groundwater Monitoring Well
- Abandoned/Destroyed Groundwater Monitoring Well
- + Existing Remediation Well
- + Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells
- + Kinder Morgan Combined Soil Vapor and Total Fluids Extraction Wells (Abandoned)
- + Kinder Morgan Soil Vapor Extraction Wells
- + Kinder Morgan Total Fluids and/or Groundwater Extraction Wells
- + Kinder Morgan Total Fluids and/or Groundwater Extraction Wells (Abandoned)
- 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 (2022)

Imagery Source:  
Google Earth December 3, 2017.

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

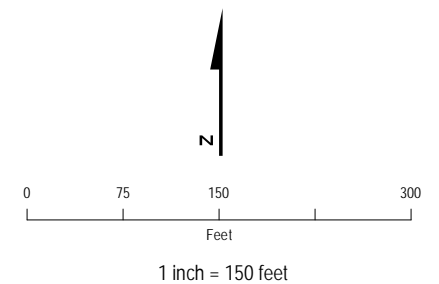


Figure 5. Current and Historical Extent of Dissolved Phase and LNAPL SFPP Norwalk Pump Station Norwalk, California

**Appendix A**  
**Laboratory Analytical Reports**





April 11, 2022

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



LA Cert #04140  
EPA Methods TO3, TO14A, TO15, 25C/3C,  
ASTM D1946, 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: N040105-01/04

Enclosed are results for sample(s) received 4/01/22 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 04/08/22.

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.

No 40107-01/04

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

CHAIN OF CUSTODY RECORD

DATE: 4/11/22  
PAGE: 1 of 1

<b>Section A</b> Required Client Information: Company: Jacobs Attention: Eric Davis Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017 Email To: eric.davis@jacobs.com Phone: 404-323-1600 Fax:		<b>Section B</b> Required Project Information: Report To: Eric Davis Copy To: Court Reece Purchase Order No.: Project Name: SFPP Norwalk		<b>Section C</b> Invoice Information: Attention: Eric Davis Company: Jacobs Name: Address: 1000 Wilshire Blvd. Suite 2100 Los Angeles, CA 90017 Project Manager: Joann De La Ossa		<b>Section D</b> Sampler Information: Sampler Name: James Dye Name: Sampler Signature: Sample Date: 4/11/22	
---	--	---	--	--	--	--	--

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G=GRAB C=COMP)	CONTAINER TYPE		TOTAL # OF CONTAINERS	Analysis Test	TDS (Total VOCs as Heptane)	TD-15 (VOCs, Target Analytes)	ASTM-D 1996 (O2/Nitrogen, CO2, H2, H2)	Comments
					# OF CONTAINERS	PRESERVATIVE						
					VOLUME (mL)		SAMPLING					
					DATE	TIME						
1	EFF- 040122	Effluent (stack)	Vapor	G			1	X	X			Individually Certified 6-Liter SUMMA
2	EFF- 040122 D	Effluent (stack) (duplicate)	Vapor	G			1	X	X			Individually Certified 6-Liter SUMMA
3	POST- 040122	Influent (post-dilution)	Vapor	G			1	X	X			Individually Certified 1-Liter SUMMA
4	INF- 040122	Influent (pre-dilution)	Vapor	G			1	X	X	X		Batch Certified 1-Liter Summa
5												Target analytes includes Historical VOCs and remaining ATU list per subcontract
6												
7												
8												
9												
10												

Requisitioned by (Signature and Printed Name): JAMES DYE 4/11/22 1430	Requisitioned by (Signature and Printed Name): <del>FREDERICK</del> 4/11/22 1430	Turn Around Time (TAT): DA = Same Day DB = 24 Hours DC = 48 Hours DD = 72 Hours DE = 5 Workdays DF = 10 Workdays TAT Starts at 8 AM the following day if samples received after 3:00 PM.	Special Instruction:
Requisitioned by (Signature and Printed Name): JORGE ROJAS 4/11/22 1430	Requisitioned by (Signature and Printed Name): DANIEL 4/11/22 1430		
Requisitioned by (Signature and Printed Name):	Requisitioned by (Signature and Printed Name):		

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

Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 04/01/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	N040105-01			N040105-02			N040105-03			N040105-04		
Client Sample I.D.:	VEFF-040122			VEFF-040122-D			VPOST-040122			VINP-040122		
Date/Time Sampled:	4/1/22 7:30			4/1/22 7:30			4/1/22 7:40			4/1/22 7:50		
Date/Time Analyzed:	4/7/22 16:28			4/7/22 17:08			4/7/22 17:47			4/7/22 18:28		
QC Batch No.:	220407MS2A1			220407MS2A1			220407MS2A1			220407MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.4			2.4			2.4			2.4		
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	0.00039 J	0.0024	0.00023	0.00039 J	0.0024	0.00023	0.027	0.0024	0.00023	0.046	0.0024	0.00023
Chloroform	ND	0.0024	0.00034	ND	0.0024	0.00034	0.00042 J	0.0024	0.00034	0.0012 J	0.0024	0.00034
Carbon Tetrachloride	ND	0.0024	0.00042	ND	0.0024	0.00042	ND	0.0024	0.00042	ND	0.0024	0.00042
1,4-Dioxane	ND	0.012	0.00042	ND	0.012	0.00042	ND	0.012	0.00042	ND	0.012	0.00042
1,4-Dichlorobenzene	ND	0.0024	0.00035	ND	0.0024	0.00035	ND	0.0024	0.00035	ND	0.0024	0.00035
1,1-Dichloroethane	ND	0.0024	0.00033	ND	0.0024	0.00033	ND	0.0024	0.00033	ND	0.0024	0.00033
Ethylbenzene	0.0060	0.0024	0.00014	0.0059	0.0024	0.00014	0.027	0.0024	0.00014	0.051	0.0024	0.00014
1,2-Dichloroethane	ND	0.0024	0.00018	ND	0.0024	0.00018	ND	0.0024	0.00018	0.00095 J	0.0024	0.00018
Methylene Chloride	ND	0.0024	0.00069	ND	0.0024	0.00069	ND	0.0024	0.00069	ND	0.0024	0.00069
t-Butyl Methyl Ether (MTBE)	ND	0.0024	0.00054	ND	0.0024	0.00054	ND	0.0024	0.00054	ND	0.0024	0.00054
Tetrachloroethene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029
1,1,2-Trichloroethane	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0024	0.00039
Trichloroethene	ND	0.0024	0.00034	ND	0.0024	0.00034	ND	0.0024	0.00034	ND	0.0024	0.00034
Vinyl Chloride	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0024	0.00039
Naphthalene	ND	0.012	0.00092	ND	0.012	0.00092	ND	0.012	0.00092	ND	0.012	0.00092
c-1,2-Dichloroethene	ND	0.0024	0.00046	ND	0.0024	0.00046	ND	0.0024	0.00046	ND	0.0024	0.00046
2-Butanone	0.012	0.0024	0.0015	0.0066	0.0024	0.0015	ND	0.0024	0.0015	0.0082	0.0024	0.0015
Dichlorodifluoromethane (12)	ND	0.0024	0.00037	ND	0.0024	0.00037	0.00044 J	0.0024	0.00037	0.00047 J	0.0024	0.00037
Chloromethane	ND	0.0048	0.00053	ND	0.0048	0.00053	ND	0.0048	0.00053	ND	0.0048	0.00053
1,1,1-Trichloroethane	ND	0.0024	0.00024	ND	0.0024	0.00024	ND	0.0024	0.00024	ND	0.0024	0.00024
1,2-CI-1,1,2,2-F ethane (114)	ND	0.0024	0.00048	ND	0.0024	0.00048	ND	0.0024	0.00048	ND	0.0024	0.00048
Bromomethane	ND	0.0024	0.00071	ND	0.0024	0.00071	ND	0.0024	0.00071	ND	0.0024	0.00071
Chloroethane	ND	0.0024	0.0020	ND	0.0024	0.0020	ND	0.0024	0.0020	ND	0.0024	0.0020
Trichlorofluoromethane (11)	ND	0.0024	0.00052	ND	0.0024	0.00052	ND	0.0024	0.00052	ND	0.0024	0.00052
1,2-Dichloropropane	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0024	0.00044
Bromodichloromethane	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0024	0.00014
c-1,3-Dichloropropene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029
4-Methyl-2-Pentanone	ND	0.0024	0.00016	ND	0.0024	0.00016	ND	0.0024	0.00016	ND	0.0024	0.00016
Toluene	0.0053	0.0024	0.00019	0.0041	0.0024	0.00019	0.054	0.0024	0.00019	0.11	0.0024	0.00019
t-1,3-Dichloropropene	ND	0.0024	0.00025	ND	0.0024	0.00025	ND	0.0024	0.00025	ND	0.0024	0.00025
1,1-Dichloroethene	ND	0.0024	0.00055	ND	0.0024	0.00055	ND	0.0024	0.00055	ND	0.0024	0.00055
1,3-Dichloropropane	ND	0.0024	0.00012	ND	0.0024	0.00012	ND	0.0024	0.00012	ND	0.0024	0.00012
Carbon Disulfide	0.037	0.012	0.00058	0.0077 J	0.012	0.00058	0.0054 J	0.012	0.00058	0.0092 J	0.012	0.00058
2-Hexanone	ND	0.0024	0.00050	ND	0.0024	0.00050	ND	0.0024	0.00050	ND	0.0024	0.00050
Dibromochloromethane	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0024	0.00044
1,2-Dibromoethane	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0024	0.00022
Chlorobenzene	ND	0.0024	0.00019	ND	0.0024	0.00019	0.0027	0.0024	0.00019	0.0055	0.0024	0.00019
1,1,2-CI 1,2,2-F ethane (113)	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0024	0.00065
p,&m-Xylene	0.042	0.0024	0.00027	0.041	0.0024	0.00027	0.20	0.0024	0.00027	0.38	0.0024	0.00027



Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 04/01/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	N040105-01			N040105-02			N040105-03			N040105-04		
Client Sample I.D.:	VEFF-040122			VEFF-040122-D			VPOST-040122			VINP-040122		
Date/Time Sampled:	4/1/22 7:30			4/1/22 7:30			4/1/22 7:40			4/1/22 7:50		
Date/Time Analyzed:	4/7/22 16:28			4/7/22 17:08			4/7/22 17:47			4/7/22 18:28		
QC Batch No.:	220407MS2A1			220407MS2A1			220407MS2A1			220407MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.4			2.4			2.4			2.4		
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	0.013	0.0024	0.00029	0.013	0.0024	0.00029	0.10	0.0024	0.00029	0.21	0.0024	0.00029
Styrene	0.00067 J	0.0024	0.00031	0.00067 J	0.0024	0.00031	0.0032	0.0024	0.00031	0.0065	0.0024	0.00031
Bromoform	ND	0.0024	0.00013	ND	0.0024	0.00013	ND	0.0024	0.00013	ND	0.0024	0.00013
Isopropyl benzene	ND	0.0024	0.00025	ND	0.0024	0.00025	0.0036	0.0024	0.00025	0.0081	0.0024	0.00025
1,1,2,2-Tetrachloroethane	ND	0.0048	0.00015	ND	0.0048	0.00015	ND	0.0048	0.00015	ND	0.0048	0.00015
Benzyl Chloride	ND Q	0.0024	0.00044	ND Q	0.0024	0.00044	ND Q	0.0024	0.00044	0.0012 Q	0.0024	0.00044
1,2,3-Trichloropropane	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0024	0.00065	0.0026	0.0024	0.00065
n-Propyl Benzene	0.00068 J	0.0024	0.00014	0.00068 J	0.0024	0.00014	0.0082	0.0024	0.00014	0.018	0.0024	0.00014
4-Ethyl Toluene	0.0019 J	0.0024	0.00015	0.0019 J	0.0024	0.00015	0.056	0.0024	0.00015	0.13	0.0024	0.00015
1,3,5-Trimethylbenzene	0.00080 J	0.0048	0.00042	0.00085 J	0.0048	0.00042	0.045	0.0048	0.00042	0.11	0.0048	0.00042
4-Chlorotoluene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029
tert-Butylbenzene	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0024	0.00022
1,2,4-Trimethylbenzene	0.0018 J	0.0048	0.00027	0.0018 J	0.0048	0.00027	0.029	0.0048	0.00027	0.069	0.0048	0.00027
sec-Butylbenzene	ND	0.0024	0.00023	ND	0.0024	0.00023	0.0012 J	0.0024	0.00023	0.0028	0.0024	0.00023
p-Isopropyltoluene	0.0019 J	0.0024	0.00031	0.0034	0.0024	0.00031	0.0015 J	0.0024	0.00031	0.0027	0.0024	0.00031
1,3-Dichlorobenzene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029
Acetone	0.061	0.012	0.00069	0.053	0.012	0.00069	0.16	0.012	0.00069	0.11	0.012	0.00069
n-Butylbenzene	ND	0.0024	0.00018	ND	0.0024	0.00018	0.00071 J	0.0024	0.00018	ND	0.0024	0.00018
1,2-Dichlorobenzene	ND	0.0024	0.00030	ND	0.0024	0.00030	ND	0.0024	0.00030	ND	0.0024	0.00030
1,2,4-Trichlorobenzene	ND	0.0048	0.00040	ND	0.0048	0.00040	ND	0.0048	0.00040	ND	0.0048	0.00040
Hexachlorobutadiene	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0024	0.00014
t-Butanol	ND	0.012	0.00046	ND	0.012	0.00046	ND	0.012	0.00046	ND	0.012	0.00046
n-Hexane	0.00037 J	0.012	0.00032	0.00043 J	0.012	0.00032	0.21	0.012	0.00032	0.36	0.012	0.00032
Isopropyl ether	ND	0.012	0.00027	ND	0.012	0.00027	ND	0.012	0.00027	ND	0.012	0.00027
t-Butyl ethyl ether	ND	0.012	0.00048	ND	0.012	0.00048	ND	0.012	0.00048	ND	0.012	0.00048
2,2-Dichloropropane	ND	0.012	0.00023	ND	0.012	0.00023	ND	0.012	0.00023	ND	0.012	0.00023
t-Amyl methyl ether	ND	0.012	0.00017	ND	0.012	0.00017	ND	0.012	0.00017	ND	0.012	0.00017
t-1,2-Dichloroethene	ND	0.0024	0.00072	ND	0.0024	0.00072	ND	0.0024	0.00072	ND	0.0024	0.00072
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.  
 Q = Estimated. Initial calibration criteria were not met.

Reviewed/Approved By: Mark Johnson Date 4/8/22  
 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: 04/01/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK																	
Client Sample I.D.:	--																	
Date/Time Sampled:	--																	
Date/Time Analyzed:	4/7/22 10:11																	
QC Batch No.:	220407MS2A1																	
Analyst Initials:	DT																	
Dilution Factor:	0.20																	
ANALYTE	Result ppmv	RL ppmv	MDL ppmv															
Benzene	0.000024 J	0.00020	0.000019															
Chloroform	ND	0.00020	0.000028															
Carbon Tetrachloride	ND	0.00020	0.000035															
1,4-Dioxane	ND	0.0010	0.000035															
1,4-Dichlorobenzene	ND	0.00020	0.000029															
1,1-Dichloroethane	ND	0.00020	0.000027															
Ethylbenzene	ND	0.00020	0.000011															
1,2-Dichloroethane	ND	0.00020	0.000015															
Methylene Chloride	ND	0.00020	0.000057															
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045															
Tetrachloroethene	ND	0.00020	0.000024															
1,1,2-Trichloroethane	ND	0.00020	0.000032															
Trichloroethene	ND	0.00020	0.000028															
Vinyl Chloride	ND	0.00020	0.000032															
Naphthalene	ND	0.0010	0.000077															
c-1,2-Dichloroethene	ND	0.00020	0.000039															
2-Butanone	ND	0.00020	0.000012															
Dichlorodifluoromethane (12)	ND	0.00020	0.000031															
Chloromethane	ND	0.00040	0.000044															
1,1,1-Trichloroethane	ND	0.00020	0.000020															
1,2-CI-1,1,2,2-F ethane (114)	ND	0.00020	0.000040															
Bromomethane	ND	0.00020	0.000059															
Chloroethane	ND	0.00020	0.000017															
Trichlorofluoromethane (11)	ND	0.00020	0.000043															
1,2-Dichloropropane	ND	0.00020	0.000036															
Bromodichloromethane	ND	0.00020	0.000012															
c-1,3-Dichloropropene	ND	0.00020	0.000024															
4-Methyl-2-Pentanone	ND	0.00020	0.000013															
Toluene	ND	0.00020	0.000016															
t-1,3-Dichloropropene	ND	0.00020	0.000021															
1,1-Dichloroethene	ND	0.00020	0.000045															
1,3-Dichloropropane	ND	0.00020	0.0000099															
Carbon Disulfide	ND	0.0010	0.000048															
2-Hexanone	ND	0.00020	0.000041															
Dibromochloromethane	ND	0.00020	0.000036															
1,2-Dibromoethane	ND	0.00020	0.000018															
Chlorobenzene	ND	0.00020	0.000016															
1,1,2-CI 1,2,2-F ethane (113)	ND	0.00020	0.000054															
p,&m-Xylene	ND	0.00020	0.000023															



Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 04/01/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK													
Client Sample I.D.:	--													
Date/Time Sampled:	--													
Date/Time Analyzed:	4/7/22 10:11													
QC Batch No.:	220407MS2A1													
Analyst Initials:	DT													
Dilution Factor:	0.20													
ANALYTE	Result ppmv	RL ppmv	MDL ppmv											
o-Xylene	ND	0.00020	0.000024											
Styrene	ND	0.00020	0.000026											
Bromoform	ND	0.00020	0.000011											
Isopropyl benzene	ND	0.00020	0.000021											
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012											
Benzyl Chloride	ND Q	0.00020	0.000037											
1,2,3-Trichloropropane	ND	0.00020	0.000054											
n-Propyl Benzene	ND	0.00020	0.000012											
4-Ethyl Toluene	ND	0.00020	0.000013											
1,3,5-Trimethylbenzene	ND	0.00040	0.000035											
4-Chlorotoluene	ND	0.00020	0.000024											
tert-Butylbenzene	ND	0.00020	0.000018											
1,2,4-Trimethylbenzene	ND	0.00040	0.000023											
sec-Butylbenzene	ND	0.00020	0.000019											
p-Isopropyltoluene	ND	0.00020	0.000026											
1,3-Dichlorobenzene	ND	0.00020	0.000024											
Acetone	ND	0.0010	0.000058											
n-Butylbenzene	ND	0.00020	0.000015											
1,2-Dichlorobenzene	ND	0.00020	0.000025											
1,2,4-Trichlorobenzene	ND	0.00040	0.000033											
Hexachlorobutadiene	ND	0.00020	0.000012											
t-Butanol	ND	0.0010	0.000038											
n-Hexane	ND	0.0010	0.000027											
Isopropyl ether	ND	0.0010	0.000022											
t-Butyl ethyl ether	ND	0.0010	0.000040											
2,2-Dichloropropane	ND	0.0010	0.000019											
t-Amyl methyl ether	ND	0.0010	0.000014											
t-1,2-Dichloroethene	ND	0.00020	0.000060											
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.  
 Q = Estimated. Initial calibration criteria were not met.

Reviewed/Approved By: Mark Johnson  
 Operations Manager

Date: 4/8/22

The cover letter is an integral part of this analytical report



LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 220407MS2A1

Matrix: Air

Reporting Units: ppmv

EPA Method TO15  
LABORATORY CONTROL SAMPLE SUMMARY

Lab No.:		METHOD BLANK		LCS		LCSD					
Date/Time Analyzed:		4/7/22 10:11		4/7/22 5:39		4/7/22 13:45					
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	0.00878	87.8	0.00810	81.0	8.0	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.00894	89.4	0.00837	83.7	6.6	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.00881	88.1	0.00821	82.1	7.1	70	130	30.0
Toluene	ND	0.00020	0.010	0.00843	84.3	0.00807	80.7	4.4	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00724	72.4	0.00713	71.3	1.5	70	130	30.0

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:** 04/01/22  
**Matrix:** Air  
**Reporting Units:** ppmv

**EPA METHOD TO3**

Lab No.:	N040105-01	N040105-02	N040105-03	N040105-04				
<b>Client Sample I.D.:</b>	VEFF-040122	VEFF-040122-D	VPOST-040122	VINF-040122				
<b>Date/Time Sampled:</b>	4/1/22 7:30	4/1/22 7:30	4/1/22 7:40	4/1/22 7:50				
<b>Date/Time Analyzed:</b>	4/5/22 11:10	4/5/22 11:33	4/5/22 12:42	4/5/22 13:04				
<b>QC Batch No.:</b>	220404GC11A1	220404GC11A1	220404GC11A1	220404GC11A1				
<b>Analyst Initials:</b>	CM	CM	CM	CM				
<b>Dilution Factor:</b>	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	15	2.4	28	2.4

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

Reviewed/Approved By:   
 Mark Johnson  
 Operations Manager

Date 4/8/22

The cover letter is an integral part of this analytical report





QC Batch No: 220404GC11A1

Matrix: Air

Reporting Units: ppmv

**EPA METHOD TO3  
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK	LCS		LCSD							
Date Analyzed:	4/4/22 18:39	4/4/22 17:54		4/4/22 18:17							
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	4.97	99	4.97	99	0.0	70	130	25

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: \_\_\_\_\_

  
Mark Johnson  
Operations Manager

Date 4/8/22

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:** 04/01/22  
**Matrix:** Air  
**Reporting Units:** % v/v

**ASTM D1946**

<b>Lab No.:</b>	N040105-04						
<b>Client Sample I.D.:</b>	VINF-040122						
<b>Date/Time Sampled:</b>	4/1/22 7:50						
<b>Date/Time Analyzed:</b>	4/6/22 14:24						
<b>QC Batch No.:</b>	220406GC8A1						
<b>Analyst Initials:</b>	CM						
<b>Dilution Factor:</b>	2.4						
<b>ANALYTE</b>	<b>Result % v/v</b>	<b>RL % v/v</b>					
Carbon Dioxide	0.84	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  
 Operations Manager

Date 4/8/22

The cover letter is an integral part of this analytical report



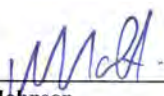
QC Batch No: 220406GC8A1  
 Matrix: Air  
 Reporting Units: % v/v

**ASTM D1946  
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	4/6/22 12:46			4/6/22 14:53		4/6/22 15:07					
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	9.26	92	9.32	93	0.7	70	130	30
Oxygen/Argon	ND	0.50	15	15.7	106	15.8	107	0.8	70	130	30
Nitrogen	ND	1.0	70	70.4	101	70.9	101	0.7	70	130	30
Methane	ND	0.0010	0.10	0.103	103	0.103	103	0.2	70	130	30

ND = Not Detected (below RL)

RL = Reporting Limit

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

Date 4/8/22

The cover letter is an integral part of this analytical report





May 12, 2022



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

LA Cert #04140  
EPA Methods TO3, TO14A, TO15, 25C/3C,  
ASTM D1946, 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: N050305-01/04

Enclosed are results for sample(s) received 5/03/22 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 5/10/22.

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 "MJohnson - 1".

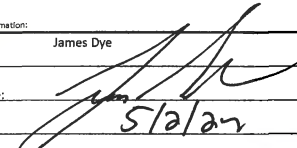
Mark Johnson  
Operations Manager  
MJohnson@AirTechLabs.com

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

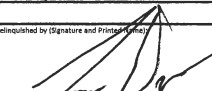
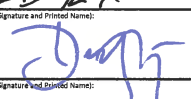
N050305-01/04

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

CHAIN OF CUSTODY RECORD  
DATE: 5/1/22  
PAGE: 1 of 1

<b>Section A</b> Required Client Information:		<b>Section B</b> Required Project Information:		<b>Section C</b> Invoice Information:		<b>Section D</b> 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: 5/1/22	
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			Comments
					DATE	TIME		TO-3 (Total VOCs as Heptane)	TO-15 (VOCs, Target Analytes)	ASTM-D 1946 (O2/Ngcn, CO2, CH4, H2)	
1	EFF- 050127	Effluent (stack)	Vapor	G	5/1/22	0800	1	X	X		Individually Certified 6-Liter SUMMA
2	EFF- 050122	Effluent (stack) (duplicate)	Vapor	G	5/1/22	0800	1	X	X		Individually Certified 6-Liter SUMMA
3	POST- 050122	Influent (post-dilution)	Vapor	G	5/1/22	0810	1	X	X		Individually Certified 1-Liter SUMMA
4	INF- 050122	Influent (pre-dilution)	Vapor	G	5/1/22	0820	1	X	X	X	Batch Certified 1-Liter Summa
5											Target analytes includes Historical VOCs and remaining ATU list per subcontract
6											
7											
8											
9											
10											

Relinquished by (Signature and Printed Name):  Date / Time: 5/1/22 0800	Relinquished by (Signature and Printed Name): FED Ex Date / Time: 5/1/22 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 type="checkbox"/> F = 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: 5/3/22	Relinquished by (Signature and Printed Name):  Date / Time: 5/3/22 1511		
Relinquished by (Signature and Printed Name):	Relinquished by (Signature and Printed Name):		

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

Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 05/03/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	N050305-01			N050305-02			N050305-03			N050305-04		
Client Sample I.D.:	EFF-050122			EFF-050122D			POST-050122			INF-050122		
Date/Time Sampled:	5/1/22 8:00			5/1/22 8:00			5/1/22 8:10			5/1/22 8:20		
Date/Time Analyzed:	5/9/22 13:50			5/9/22 14:29			5/9/22 15:08			5/9/22 15:47		
QC Batch No.:	220509MS2A1			220509MS2A1			220509MS2A1			220509MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.4			2.4			2.4			2.3		
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	0.00047 J	0.0024	0.00023	0.00042 J	0.0024	0.00023	0.023	0.0024	0.00023	0.037	0.0023	0.00022
Chloroform	ND	0.0024	0.00034	ND	0.0024	0.00034	0.00079 J	0.0024	0.00034	0.0011 J	0.0023	0.00032
Carbon Tetrachloride	ND	0.0024	0.00042	ND	0.0024	0.00042	ND	0.0024	0.00042	ND	0.0023	0.00040
1,4-Dioxane	ND	0.012	0.00042	ND	0.012	0.00042	ND	0.012	0.00042	ND	0.011	0.00040
1,4-Dichlorobenzene	ND	0.0024	0.00035	ND	0.0024	0.00035	ND	0.0024	0.00035	ND	0.0023	0.00034
1,1-Dichloroethane	ND	0.0024	0.00033	ND	0.0024	0.00033	ND	0.0024	0.00033	ND	0.0023	0.00031
Ethylbenzene	0.0034	0.0024	0.00014	0.0035	0.0024	0.00014	0.019	0.0024	0.00014	0.032	0.0023	0.00013
1,2-Dichloroethane	ND	0.0024	0.00018	ND	0.0024	0.00018	ND	0.0024	0.00018	ND	0.0023	0.00017
Methylene Chloride	ND	0.0024	0.00069	ND	0.0024	0.00069	ND	0.0024	0.00069	ND	0.0023	0.00066
t-Butyl Methyl Ether (MTBE)	ND	0.0024	0.00054	ND	0.0024	0.00054	ND	0.0024	0.00054	ND	0.0023	0.00051
Tetrachloroethene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0023	0.00028
1,1,2-Trichloroethane	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0023	0.00037
Trichloroethene	ND	0.0024	0.00034	ND	0.0024	0.00034	ND	0.0024	0.00034	ND	0.0023	0.00033
Vinyl Chloride	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0024	0.00039	ND	0.0023	0.00037
Naphthalene	ND	0.012	0.00092	ND	0.012	0.00092	ND	0.012	0.00092	ND	0.011	0.00088
c-1,2-Dichloroethene	ND	0.0024	0.00046	ND	0.0024	0.00046	ND	0.0024	0.00046	ND	0.0023	0.00044
2-Butanone	0.0062	0.0024	0.0015	ND	0.0024	0.0015	0.0037	0.0024	0.0015	0.0047	0.0023	0.0014
Dichlorodifluoromethane (12)	ND	0.0024	0.00037	ND	0.0024	0.00037	0.00051 J	0.0024	0.00037	0.00044 J	0.0023	0.00035
Chloromethane	ND	0.0048	0.00053	ND	0.0048	0.00053	ND	0.0048	0.00053	ND	0.0046	0.00051
1,1,1-Trichloroethane	ND	0.0024	0.00024	ND	0.0024	0.00024	ND	0.0024	0.00024	ND	0.0023	0.00023
1,2-CI-1,1,2,2-F ethane (114)	ND	0.0024	0.00048	ND	0.0024	0.00048	ND	0.0024	0.00048	ND	0.0023	0.00046
Bromomethane	ND	0.0024	0.00071	ND	0.0024	0.00071	ND	0.0024	0.00071	ND	0.0023	0.00067
Chloroethane	ND	0.0024	0.0020	ND	0.0024	0.0020	ND	0.0024	0.0020	ND	0.0023	0.0019
Trichlorofluoromethane (11)	ND	0.0024	0.00052	ND	0.0024	0.00052	ND	0.0024	0.00052	ND	0.0023	0.00049
1,2-Dichloropropane	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0023	0.00042
Bromodichloromethane	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0023	0.00014
c-1,3-Dichloropropene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0023	0.00028
4-Methyl-2-Pentanone	ND	0.0024	0.00016	ND	0.0024	0.00016	ND	0.0024	0.00016	ND	0.0023	0.00015
Toluene	0.0022 J	0.0024	0.00019	0.0020 J	0.0024	0.00019	0.044	0.0024	0.00019	0.076	0.0023	0.00018
t-1,3-Dichloropropene	ND	0.0024	0.00025	ND	0.0024	0.00025	ND	0.0024	0.00025	ND	0.0023	0.00024
1,1-Dichloroethene	ND	0.0024	0.00055	ND	0.0024	0.00055	ND	0.0024	0.00055	ND	0.0023	0.00052
1,3-Dichloropropane	ND	0.0024	0.00012	ND	0.0024	0.00012	ND	0.0024	0.00012	ND	0.0023	0.00011
Carbon Disulfide	0.033	0.012	0.00058	ND	0.012	0.00058	ND	0.012	0.00058	0.020	0.011	0.00055
2-Hexanone	ND	0.0024	0.00050	ND	0.0024	0.00050	ND	0.0024	0.00050	ND	0.0023	0.00047
Dibromochloromethane	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0024	0.00044	ND	0.0023	0.00042
1,2-Dibromoethane	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0023	0.00021
Chlorobenzene	ND	0.0024	0.00019	ND	0.0024	0.00019	0.0034	0.0024	0.00019	0.0063	0.0023	0.00018
1,1,2-CI 1,2,2-F ethane (113)	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0023	0.00062
p,&m-Xylene	0.026	0.0024	0.00027	0.027	0.0024	0.00027	0.20	0.0024	0.00027	0.34	0.0023	0.00026



Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 05/03/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	N050305-01			N050305-02			N050305-03			N050305-04		
Client Sample I.D.:	EFF-050122			EFF-050122D			POST-050122			INF-050122		
Date/Time Sampled:	5/1/22 8:00			5/1/22 8:00			5/1/22 8:10			5/1/22 8:20		
Date/Time Analyzed:	5/9/22 13:50			5/9/22 14:29			5/9/22 15:08			5/9/22 15:47		
QC Batch No.:	220509MS2A1			220509MS2A1			220509MS2A1			220509MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.4			2.4			2.4			2.3		
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	0.0091	0.0024	0.00029	0.0096	0.0024	0.00029	0.13	0.0024	0.00029	0.25	0.0023	0.00028
Styrene	0.0016 J	0.0024	0.00031	ND	0.0024	0.00031	0.0039	0.0024	0.00031	0.0078	0.0023	0.00030
Bromoform	ND	0.0024	0.00013	ND	0.0024	0.00013	ND	0.0024	0.00013	ND	0.0023	0.00013
Isopropyl benzene	ND	0.0024	0.00025	ND	0.0024	0.00025	0.0037	0.0024	0.00025	0.0073	0.0023	0.00024
1,1,2,2-Tetrachloroethane	ND	0.0048	0.00015	ND	0.0048	0.00015	ND	0.0048	0.00015	ND	0.0046	0.00014
Benzyl Chloride	ND Q	0.0024	0.00044	ND Q	0.0024	0.00044	ND Q	0.0024	0.00044	ND Q	0.0023	0.00042
1,2,3-Trichloropropane	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0024	0.00065	ND	0.0023	0.00062
n-Propyl Benzene	0.00053 J	0.0024	0.00014	0.00047 J	0.0024	0.00014	0.0083	0.0024	0.00014	0.016	0.0023	0.00013
4-Ethyl Toluene	0.0023 J	0.0024	0.00015	0.0020 J	0.0024	0.00015	0.083	0.0024	0.00015	0.16	0.0023	0.00015
1,3,5-Trimethylbenzene	0.0015 J	0.0048	0.00042	0.0016 J	0.0048	0.00042	0.075	0.0048	0.00042	0.15	0.0046	0.00040
4-Chlorotoluene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0023	0.00027
tert-Butylbenzene	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0024	0.00022	ND	0.0023	0.00021
1,2,4-Trimethylbenzene	0.0016 J	0.0048	0.00027	0.0014 J	0.0048	0.00027	0.043	0.0048	0.00027	0.081	0.0046	0.00026
sec-Butylbenzene	ND	0.0024	0.00023	ND	0.0024	0.00023	0.0018 J	0.0024	0.00023	0.0031	0.0023	0.00022
p-Isopropyltoluene	0.0080	0.0024	0.00031	ND	0.0024	0.00031	0.0015 J	0.0024	0.00031	0.0059	0.0023	0.00030
1,3-Dichlorobenzene	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0024	0.00029	ND	0.0023	0.00028
Acetone	0.15	0.012	0.00069	0.032	0.012	0.00069	0.088	0.012	0.00069	0.078	0.011	0.00066
n-Butylbenzene	ND	0.0024	0.00018	0.00019 J	0.0024	0.00018	ND	0.0024	0.00018	ND	0.0023	0.00017
1,2-Dichlorobenzene	ND	0.0024	0.00030	ND	0.0024	0.00030	ND	0.0024	0.00030	ND	0.0023	0.00029
1,2,4-Trichlorobenzene	ND	0.0048	0.00040	ND	0.0048	0.00040	ND	0.0048	0.00040	ND	0.0046	0.00038
Hexachlorobutadiene	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0024	0.00014	ND	0.0023	0.00013
t-Butanol	ND	0.012	0.00046	ND	0.012	0.00046	ND	0.012	0.00046	ND	0.011	0.00044
n-Hexane	ND	0.012	0.00032	0.0011 J	0.012	0.00032	0.22	0.012	0.00032	0.33	0.011	0.00031
Isopropyl ether	ND	0.012	0.00027	ND	0.012	0.00027	ND	0.012	0.00027	ND	0.011	0.00026
t-Butyl ethyl ether	ND	0.012	0.00048	ND	0.012	0.00048	ND	0.012	0.00048	ND	0.011	0.00046
2,2-Dichloropropane	ND	0.012	0.00023	ND	0.012	0.00023	ND	0.012	0.00023	ND	0.011	0.00022
t-Amyl methyl ether	ND	0.012	0.00017	ND	0.012	0.00017	ND	0.012	0.00017	ND	0.011	0.00016
t-1,2-Dichloroethene	ND	0.0024	0.00072	ND	0.0024	0.00072	ND	0.0024	0.00072	ND	0.0023	0.00069
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.  
 Q = Analyte exhibited high %RSD in the initial calibration. Results are estimated.  
 Reviewed/Approved By: Mark Johnson  
 Operations Manager

Date 5/10/22

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: 05/03/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK													
Client Sample I.D.:	--													
Date/Time Sampled:	--													
Date/Time Analyzed:	5/9/22 13:11													
QC Batch No.:	220509MS2A1													
Analyst Initials:	DT													
Dilution Factor:	0.20													
ANALYTE	Result ppmv	RL ppmv	MDL ppmv											
Benzene	ND	0.00020	0.000019											
Chloroform	ND	0.00020	0.000028											
Carbon Tetrachloride	ND	0.00020	0.000035											
1,4-Dioxane	ND	0.0010	0.000035											
1,4-Dichlorobenzene	ND	0.00020	0.000029											
1,1-Dichloroethane	ND	0.00020	0.000027											
Ethylbenzene	ND	0.00020	0.000011											
1,2-Dichloroethane	ND	0.00020	0.000015											
Methylene Chloride	ND	0.00020	0.000057											
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045											
Tetrachloroethene	ND	0.00020	0.000024											
1,1,2-Trichloroethane	ND	0.00020	0.000032											
Trichloroethene	ND	0.00020	0.000028											
Vinyl Chloride	ND	0.00020	0.000032											
Naphthalene	ND	0.0010	0.000077											
c-1,2-Dichloroethene	ND	0.00020	0.000039											
2-Butanone	ND	0.00020	0.00012											
Dichlorodifluoromethane (12)	ND	0.00020	0.000031											
Chloromethane	ND	0.00040	0.000044											
1,1,1-Trichloroethane	ND	0.00020	0.000020											
1,2-CI-1,1,2,2-F ethane (114)	ND	0.00020	0.000040											
Bromomethane	ND	0.00020	0.000059											
Chloroethane	ND	0.00020	0.00017											
Trichlorofluoromethane (11)	ND	0.00020	0.000043											
1,2-Dichloropropane	ND	0.00020	0.000036											
Bromodichloromethane	ND	0.00020	0.000012											
c-1,3-Dichloropropene	ND	0.00020	0.000024											
4-Methyl-2-Pentanone	ND	0.00020	0.000013											
Toluene	ND	0.00020	0.000016											
t-1,3-Dichloropropene	ND	0.00020	0.000021											
1,1-Dichloroethene	ND	0.00020	0.000045											
1,3-Dichloropropane	ND	0.00020	0.0000099											
Carbon Disulfide	ND	0.0010	0.000048											
2-Hexanone	ND	0.00020	0.000041											
Dibromochloromethane	ND	0.00020	0.000036											
1,2-Dibromoethane	ND	0.00020	0.000018											
Chlorobenzene	ND	0.00020	0.000016											
1,1,2-CI 1,2,2-F ethane (113)	ND	0.00020	0.000054											
p,&m-Xylene	ND	0.00020	0.000023											





Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 05/03/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK																	
Client Sample I.D.:	--																	
Date/Time Sampled:	--																	
Date/Time Analyzed:	5/9/22 13:11																	
QC Batch No.:	220509MS2A1																	
Analyst Initials:	DT																	
Dilution Factor:	0.20																	
ANALYTE	Result ppmv	RL ppmv	MDL ppmv															
o-Xylene	ND	0.00020	0.000024															
Styrene	ND	0.00020	0.000026															
Bromoform	ND	0.00020	0.000011															
Isopropyl benzene	ND	0.00020	0.000021															
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012															
Benzyl Chloride	ND	0.00020	0.000037															
1,2,3-Trichloropropane	ND	0.00020	0.000054															
n-Propyl Benzene	ND	0.00020	0.000012															
4-Ethyl Toluene	ND	0.00020	0.000013															
1,3,5-Trimethylbenzene	ND	0.00040	0.000035															
4-Chlorotoluene	ND	0.00020	0.000024															
tert-Butylbenzene	ND	0.00020	0.000018															
1,2,4-Trimethylbenzene	ND	0.00040	0.000023															
sec-Butylbenzene	ND	0.00020	0.000019															
p-Isopropyltoluene	ND	0.00020	0.000026															
1,3-Dichlorobenzene	ND	0.00020	0.000024															
Acetone	ND	0.0010	0.000058															
n-Butylbenzene	ND	0.00020	0.000015															
1,2-Dichlorobenzene	ND	0.00020	0.000025															
1,2,4-Trichlorobenzene	ND	0.00040	0.000033															
Hexachlorobutadiene	ND	0.00020	0.000012															
t-Butanol	ND	0.0010	0.000038															
n-Hexane	ND	0.0010	0.000027															
Isopropyl ether	ND	0.0010	0.000022															
t-Butyl ethyl ether	ND	0.0010	0.000040															
2,2-Dichloropropane	ND	0.0010	0.000019															
t-Amyl methyl ether	ND	0.0010	0.000014															
t-1,2-Dichloroethene	ND	0.00020	0.000060															
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.  
 Q = Analyte exhibited high %RSD in the initial calibration. Results are estimated.  
 Reviewed/Approved By: Mark Johnson  
 Operations Manager

Date 5/10/22

The cover letter is an integral part of this analytical report



### LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 220509MS2A1

Matrix: Air

Reporting Units: ppmv

**EPA Method TO15  
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK			LCS		LCSD					
Date/Time Analyzed:	5/9/22 13:11			5/9/22 10:36		5/9/22 11:15					
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	0.00937	93.7	0.00883	88.3	5.9	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.00984	98.4	0.00981	98.1	0.2	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.00986	98.6	0.00989	98.9	0.2	70	130	30.0
Toluene	ND	0.00020	0.010	0.00926	92.6	0.00909	90.9	1.8	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00933	93.3	0.00883	88.3	5.5	70	130	30.0

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: \_\_\_\_\_

*Mark Johnson*  
Mark Johnson  
Operations Manager

Date: \_\_\_\_\_

*5/10/22*

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: 05/03/22  
 Matrix: Air  
 Reporting Units: ppmv

**EPA METHOD TO3**

Lab No.:	N050305-01	N050305-02	N050305-03	N050305-04				
Client Sample I.D.:	EFF-050122	EFF-050122D	POST-050122	INF-050122				
Date/Time Sampled:	5/1/22 8:00	5/1/22 8:00	5/1/22 8:10	5/1/22 8:20				
Date/Time Analyzed:	5/9/22 9:37	5/9/22 10:00	5/9/22 10:23	5/9/22 10:46				
QC Batch No.:	220509GC11A1	220509GC11A1	220509GC11A1	220509GC11A1				
Analyst Initials:	AS	AS	AS	AS				
Dilution Factor:	2.4	2.4	2.4	2.3				
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	14	2.4	26	2.3

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

Reviewed/Approved By: \_\_\_\_\_

*Mark Johnson*  
 Mark Johnson  
 Operations Manager

Date 5/10/22

The cover letter is an integral part of this analytical report



QC Batch No: 220509GC11A1

Matrix: Air

Reporting Units: ppmv

**EPA METHOD TO3  
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK	LCS		LCSD						
Date Analyzed:	5/9/22 8:28	5/9/22 6:48		5/9/22 7:02						
Analyst Initials:	AS	AS		AS						
Dilution Factor:	1.0	1.0		1.0						
ANALYTE	Result ppmv	RL ppmv	Result ppmv	% Rec.	Result ppmv	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
TVOC as Hexane	ND	1.0	4.68	94	4.72	94	0.9	70	130	25

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

Reviewed/Approved By: \_\_\_\_\_  
*Mark Johnson*  
Mark Johnson  
Operations Manager

Date 5/10/22

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:** 05/03/22  
**Matrix:** Air  
**Reporting Units:** % v/v

ASTM D1946

<b>Lab No.:</b>	N050305-04					
<b>Client Sample I.D.:</b>	INF-050122					
<b>Date/Time Sampled:</b>	5/1/22 8:20					
<b>Date/Time Analyzed:</b>	5/5/22 11:43					
<b>QC Batch No.:</b>	220505GC8A1					
<b>Analyst Initials:</b>	AS					
<b>Dilution Factor:</b>	2.3					
<b>ANALYTE</b>	<b>Result % v/v</b>	<b>RL % v/v</b>				
Carbon Dioxide	0.86	0.023				
Oxygen/Argon	21	1.1				
Nitrogen	78	2.3				
Methane	0.0053	0.0023				

Results normalized including non-methane hydrocarbons

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: \_\_\_\_\_  
Mark Johnson  
Operations Manager

Date: 5/4/22

The cover letter is an integral part of this analytical report



QC Batch No: 220505GC8A1  
 Matrix: Air  
 Reporting Units: % v/v

ASTM D1946 LABORATORY CONTROL SAMPLE SUMMARY											
Lab No.:	METHOD BLANK			LCS		LCSD					
Date Analyzed:	5/5/22 9:44			5/5/22 9:01		5/5/22 9:15					
Analyst Initials:	AS			AS		AS					
Dilution Factor:	1.0			1.0		1.0					
								Limits			
ANALYTE	Result % v/v	RL % v/v	SPIKE AMT. % v/v	Result % v/v	% Rec.	Result % v/v	% Rec.	RPD %	Low %Rec	High %Rec	Max. RPD
Carbon Dioxide	ND	0.010	10	8.56	85	8.89	89	3.8	70	130	30
Oxygen/Argon	ND	0.50	15	16.0	108	15.6	105	2.6	70	130	30
Nitrogen	ND	1.0	70	70.2	100	69.5	99	1.0	70	130	30
Methane	ND	0.0010	0.10	0.0994	99	0.0992	99	0.3	70	130	30

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

Reviewed/Approved By: Mark Johnson  
 Mark Johnson  
 Operations Manager

Date 5/6/22

The cover letter is an integral part of this analytical report





June 10, 2022

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



LA Cert #04140  
EPA Methods TO3, TO14A, TO15, 25C/3C,  
ASTM D1946, 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: N060205-01/04

Enclosed are results for sample(s) received 6/02/22 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 6/09/22.

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.

N060205-a/04

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

CHAIN OF CUSTODY RECORD

DATE: 6-2-22  
PAGE: 1 of 1

<b>Section A</b> Required Client Information:		<b>Section B</b> Required Project Information:		<b>Section C</b> Invoice Information:		<b>Section D</b> Sampler Information:	
Company: <b>Jacobs</b> Attention: <b>Eric Davis</b>		Report To: <b>Eric Davis</b>		Attention: <b>Eric Davis</b>		Sampler Name: <b>James Dye</b> <b>NILS ORLUCKY</b>	
Address: <b>1000 Wilshire Blvd. Suite 2100</b> <b>Los Angeles, CA 90017</b>		Copy To: <b>Court Reece</b>		Company Name: <b>Jacobs</b>		Sampler Signature: <b>[Signature]</b>	
Email To: <b>eric.davis@jacobs.com</b>		Purchase Order No.:		Address: <b>1000 Wilshire Blvd. Suite 2100</b> <b>Los Angeles, CA 90017</b>		Sample Date: <b>6-2-22</b>	
Phone: <b>404-323-1600</b>	Fax:	Project Name: <b>SPPP Norwalk</b>		Project Manager: <b>Joann De La Ossa</b>			

ITEM #	SAMPLE ID	LOCATION/ DESCRIPTION	MATRIX	SAMPLE TYPE (G-GRAB C-COMP)	CONTAINER TYPE		TOTAL # OF CONTAINERS	Analysis Test	TO-5 (Total VOCs as Hexane)	TO-15 (NOCs, Target Analytes)	ASTM-D 1946 (O2/Arsenic, CO2, CH4, H2)	Comments
					# OF CONTAINERS	PRESERVATIVE						
					VOLUME (mL)							
					SAMPLING							
					DATE	TIME						
1	EFF- <u>060222</u>	Effluent (stack)	Vapor	G	<u>6-2-22</u>	<u>1140</u>	1	X	X			Individually Certified 6-Liter SUMMA
2	EFF- <u>060222</u> D	Effluent (stack) (duplicate)	Vapor	G	↓	<u>1140</u>	1	X	X			Individually Certified 6-Liter SUMMA
3	POST- <u>060222</u>	Influent (post-dilution)	Vapor	G		<u>1205</u>	1	X	X			Individually Certified 1-Liter SUMMA
4	INF- <u>060222</u>	Influent (pre-dilution)	Vapor	G		<u>1212</u>	1	X	X	X		Batch Certified 1-Liter Summa
5												
6												
7												
8												
9												
10												

Relinquished by (Signature and Printed Name): <u>[Signature]</u> <u>6/2/22</u> <u>1330</u>	Relinquished by (Signature and Printed Name): <u>Joann De La Ossa</u> <u>ATLU 6/2/22 1330</u>	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	Special Instruction:
Relinquished by (Signature and Printed Name):	Relinquished by (Signature and Printed Name):	TAT Starts at 8 AM the following day if samples received after 3:00 PM.	

<b>Matrix:</b>	<b>Preservatives:</b>	<b>Container Type:</b>
W = Water O = Oil P = Product S = Soil Others/Specify:	W = Wastewater N = HNO3 O = NaOH T = Na2SO4 Z = Zn(AC)2 Others/Specify:	T = Tube V = VOA P = Pint A = Amber J = Jar B = Tediard G = Glass M = Metal P = Plastic C = Can



Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 06/02/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	N060205-01			N060205-02			N060205-03			N060205-04		
Client Sample I.D.:	EFF-060222			EFF-060222-D			POST-060222			INF-060222		
Date/Time Sampled:	6/2/22 11:40			6/2/22 11:40			6/2/22 12:05			6/2/22 12:12		
Date/Time Analyzed:	6/7/22 21:30			6/7/22 22:10			6/7/22 22:50			6/7/22 23:30		
QC Batch No.:	220607MS2A1			220607MS2A1			220607MS2A1			220607MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.0			2.0			1.9			2.1		
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	0.00079 J	0.0020	0.00019	0.00089 J	0.0020	0.00019	0.029	0.0019	0.00018	0.022	0.0021	0.00020
Chloroform	ND	0.0020	0.00028	ND	0.0020	0.00028	0.0013 J	0.0019	0.00026	0.0010 J	0.0021	0.00029
Carbon Tetrachloride	ND	0.0020	0.00034	ND	0.0020	0.00034	ND	0.0019	0.00033	ND	0.0021	0.00037
1,4-Dioxane	ND	0.0099	0.00035	ND	0.0099	0.00035	ND	0.0094	0.00033	ND	0.011	0.00037
1,4-Dichlorobenzene	ND	0.0020	0.00029	ND	0.0020	0.00029	ND	0.0019	0.00027	ND	0.0021	0.00031
1,1-Dichloroethane	ND	0.0020	0.00027	ND	0.0020	0.00027	ND	0.0019	0.00025	ND	0.0021	0.00029
Ethylbenzene	0.00019 J	0.0020	0.00011	0.00029 J	0.0020	0.00011	0.025	0.0019	0.00011	0.017	0.0021	0.00012
1,2-Dichloroethane	ND	0.0020	0.00015	ND	0.0020	0.00015	0.00059 J	0.0019	0.00014	ND	0.0021	0.00016
Methylene Chloride	ND	0.0020	0.00057	ND	0.0020	0.00057	ND	0.0019	0.00053	ND	0.0021	0.00060
t-Butyl Methyl Ether (MTBE)	ND	0.0020	0.00044	0.00048 J	0.0020	0.00044	ND	0.0019	0.00042	ND	0.0021	0.00047
Tetrachloroethene	ND	0.0020	0.00024	ND	0.0020	0.00024	ND	0.0019	0.00022	ND	0.0021	0.00025
1,1,2-Trichloroethane	ND	0.0020	0.00032	ND	0.0020	0.00032	ND	0.0019	0.00030	ND	0.0021	0.00034
Trichloroethene	ND	0.0020	0.00028	ND	0.0020	0.00028	ND	0.0019	0.00026	ND	0.0021	0.00030
Vinyl Chloride	ND	0.0020	0.00032	ND	0.0020	0.00032	ND	0.0019	0.00030	ND	0.0021	0.00034
Naphthalene	ND	0.0099	0.00076	ND	0.0099	0.00076	ND	0.0094	0.00072	ND	0.011	0.00081
c-1,2-Dichloroethene	ND	0.0020	0.00038	ND	0.0020	0.00038	ND	0.0019	0.00036	ND	0.0021	0.00041
2-Butanone	0.0070	0.0020	0.0012	0.0092	0.0020	0.0012	ND	0.0019	0.0012	0.0025	0.0021	0.0013
Dichlorodifluoromethane (12)	ND	0.0020	0.00030	ND	0.0020	0.00030	0.00055 J	0.0019	0.00029	0.00058 J	0.0021	0.00032
Chloromethane	ND	0.0040	0.00044	ND	0.0040	0.00044	ND	0.0037	0.00041	ND	0.0042	0.00046
1,1,1-Trichloroethane	ND	0.0020	0.00020	ND	0.0020	0.00020	ND	0.0019	0.00019	ND	0.0021	0.00021
1,2-CI-1,1,2,2-F ethane (114)	ND	0.0020	0.00040	ND	0.0020	0.00040	ND	0.0019	0.00038	ND	0.0021	0.00042
Bromomethane	ND	0.0020	0.00058	ND	0.0020	0.00058	ND	0.0019	0.00055	ND	0.0021	0.00062
Chloroethane	ND	0.0020	0.0017	ND	0.0020	0.0017	ND	0.0019	0.0016	ND	0.0021	0.0018
Trichlorofluoromethane (11)	ND	0.0020	0.00043	ND	0.0020	0.00043	ND	0.0019	0.00040	ND	0.0021	0.00045
1,2-Dichloropropane	ND	0.0020	0.00036	ND	0.0020	0.00036	ND	0.0019	0.00034	ND	0.0021	0.00038
Bromodichloromethane	ND	0.0020	0.00012	ND	0.0020	0.00012	ND	0.0019	0.00011	ND	0.0021	0.00013
c-1,3-Dichloropropene	ND	0.0020	0.00024	ND	0.0020	0.00024	ND	0.0019	0.00022	ND	0.0021	0.00025
4-Methyl-2-Pentanone	ND	0.0020	0.00013	ND	0.0020	0.00013	ND	0.0019	0.00013	ND	0.0021	0.00014
Toluene	0.00071 J	0.0020	0.00016	0.00081 J	0.0020	0.00016	0.075	0.0019	0.00015	0.056	0.0021	0.00017
t-1,3-Dichloropropene	ND	0.0020	0.00020	ND	0.0020	0.00020	ND	0.0019	0.00019	ND	0.0021	0.00022
1,1-Dichloroethene	ND	0.0020	0.00045	ND	0.0020	0.00045	ND	0.0019	0.00042	ND	0.0021	0.00048
1,3-Dichloropropane	ND	0.0020	0.000099	ND	0.0020	0.000099	ND	0.0019	0.000093	ND	0.0021	0.00010
Carbon Disulfide	0.012	0.0099	0.00048	0.054	0.0099	0.00048	0.0025 J	0.0094	0.00045	0.012	0.011	0.00050
2-Hexanone	ND	0.0020	0.00041	ND	0.0020	0.00041	ND	0.0019	0.00039	ND	0.0021	0.00043
Dibromochloromethane	ND	0.0020	0.00036	ND	0.0020	0.00036	ND	0.0019	0.00034	ND	0.0021	0.00038
1,2-Dibromoethane	ND	0.0020	0.00018	ND	0.0020	0.00018	ND	0.0019	0.00017	ND	0.0021	0.00019
Chlorobenzene	ND	0.0020	0.00015	ND	0.0020	0.00015	0.0057	0.0019	0.00015	0.0042	0.0021	0.00016
1,1,2-CI 1,2,2-F ethane (113)	ND	0.0020	0.00053	ND	0.0020	0.00053	ND	0.0019	0.00050	ND	0.0021	0.00057
p,&m-Xylene	0.0017 J	0.0020	0.00022	0.0018 J	0.0020	0.00022	0.41	0.0019	0.00021	0.27	0.0021	0.00024



Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 06/02/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	N060205-01			N060205-02			N060205-03			N060205-04		
Client Sample I.D.:	EFF-060222			EFF-060222-D			POST-060222			INF-060222		
Date/Time Sampled:	6/2/22 11:40			6/2/22 11:40			6/2/22 12:05			6/2/22 12:12		
Date/Time Analyzed:	6/7/22 21:30			6/7/22 22:10			6/7/22 22:50			6/7/22 23:30		
QC Batch No.:	220607MS2A1			220607MS2A1			220607MS2A1			220607MS2A1		
Analyst Initials:	DT			DT			DT			DT		
Dilution Factor:	2.0			2.0			1.9			2.1		
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	0.0015 J	0.0020	0.00024	0.0015 J	0.0020	0.00024	0.41	0.0019	0.00023	0.26	0.0021	0.00026
Styrene	ND	0.0020	0.00025	ND	0.0020	0.00025	0.011	0.0019	0.00024	0.0076	0.0021	0.00027
Bromoform	ND	0.0020	0.00011	ND	0.0020	0.00011	ND	0.0019	0.00010	ND	0.0021	0.00012
Isopropyl benzene	ND	0.0020	0.00021	ND	0.0020	0.00021	0.011	0.0019	0.00020	0.0067	0.0021	0.00022
1,1,2,2-Tetrachloroethane	ND	0.0040	0.00012	ND	0.0040	0.00012	ND	0.0037	0.00011	ND	0.0042	0.00013
Benzyl Chloride	ND	0.0020	0.00036	ND	0.0020	0.00036	0.0022	0.0019	0.00034	0.0010 J	0.0021	0.00039
1,2,3-Trichloropropane	ND	0.0020	0.00053	ND	0.0020	0.00053	ND	0.0019	0.00050	ND	0.0021	0.00057
n-Propyl Benzene	ND	0.0020	0.00012	ND	0.0020	0.00012	0.026	0.0019	0.00011	0.015	0.0021	0.00012
4-Ethyl Toluene	0.0012 J	0.0020	0.00013	0.0011 J	0.0020	0.00013	0.32	0.0019	0.00012	0.17	0.0021	0.00013
1,3,5-Trimethylbenzene	0.0013 J	0.0040	0.00034	0.0012 J	0.0040	0.00034	0.32	0.0037	0.00032	0.17	0.0042	0.00036
4-Chlorotoluene	ND	0.0020	0.00024	ND	0.0020	0.00024	ND	0.0019	0.00022	ND	0.0021	0.00025
tert-Butylbenzene	ND	0.0020	0.00018	ND	0.0020	0.00018	ND	0.0019	0.00017	ND	0.0021	0.00019
1,2,4-Trimethylbenzene	0.00096 J	0.0040	0.00022	0.00070 J	0.0040	0.00022	0.17	0.0037	0.00021	0.085	0.0042	0.00024
sec-Butylbenzene	ND	0.0020	0.00019	ND	0.0020	0.00019	0.0063	0.0019	0.00018	0.0035	0.0021	0.00020
p-Isopropyltoluene	0.0039	0.0020	0.00026	0.00095 J	0.0020	0.00026	0.0060	0.0019	0.00024	0.0043	0.0021	0.00027
1,3-Dichlorobenzene	ND	0.0020	0.00024	ND	0.0020	0.00024	ND	0.0019	0.00023	ND	0.0021	0.00026
Acetone	0.033	0.0099	0.00057	0.048	0.0099	0.00057	0.035	0.0094	0.00054	0.037	0.011	0.00061
n-Butylbenzene	ND	0.0020	0.00014	ND	0.0020	0.00014	ND	0.0019	0.00014	ND	0.0021	0.00015
1,2-Dichlorobenzene	ND	0.0020	0.00025	ND	0.0020	0.00025	ND	0.0019	0.00023	ND	0.0021	0.00026
1,2,4-Trichlorobenzene	ND	0.0040	0.00033	ND	0.0040	0.00033	ND	0.0037	0.00031	ND	0.0042	0.00035
Hexachlorobutadiene	ND	0.0020	0.00012	ND	0.0020	0.00012	ND	0.0019	0.00011	ND	0.0021	0.00012
t-Butanol	ND	0.0099	0.00038	ND	0.0099	0.00038	ND	0.0094	0.00036	ND	0.011	0.00040
n-Hexane	0.00086 J	0.0099	0.00027	0.00083 J	0.0099	0.00027	0.30	0.0094	0.00025	0.22	0.011	0.00028
Isopropyl ether	ND	0.0099	0.00022	ND	0.0099	0.00022	ND	0.0094	0.00021	ND	0.011	0.00023
t-Butyl ethyl ether	ND	0.0099	0.00040	ND	0.0099	0.00040	ND	0.0094	0.00037	ND	0.011	0.00042
2,2-Dichloropropane	ND	0.0099	0.00019	ND	0.0099	0.00019	ND	0.0094	0.00018	ND	0.011	0.00020
t-Amyl methyl ether	ND	0.0099	0.00014	ND	0.0099	0.00014	ND	0.0094	0.00013	ND	0.011	0.00015
t-1,2-Dichloroethene	ND	0.0020	0.00059	ND	0.0020	0.00059	ND	0.0019	0.00056	ND	0.0021	0.00063
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 6/9/22

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: 06/02/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK														
Client Sample I.D.:	--														
Date/Time Sampled:	--														
Date/Time Analyzed:	6/7/22 5:23														
QC Batch No.:	220607MS2A1														
Analyst Initials:	DT														
Dilution Factor:	0.20														
ANALYTE	Result ppmv	RL ppmv	MDL ppmv												
Benzene	0.000022 J	0.00020	0.000019												
Chloroform	ND	0.00020	0.000028												
Carbon Tetrachloride	ND	0.00020	0.000035												
1,4-Dioxane	ND	0.0010	0.000035												
1,4-Dichlorobenzene	ND	0.00020	0.000029												
1,1-Dichloroethane	ND	0.00020	0.000027												
Ethylbenzene	ND	0.00020	0.000011												
1,2-Dichloroethane	ND	0.00020	0.000015												
Methylene Chloride	ND	0.00020	0.000057												
t-Butyl Methyl Ether (MTBE)	ND	0.00020	0.000045												
Tetrachloroethene	ND	0.00020	0.000024												
1,1,2-Trichloroethane	ND	0.00020	0.000032												
Trichloroethene	ND	0.00020	0.000028												
Vinyl Chloride	ND	0.00020	0.000032												
Naphthalene	ND	0.0010	0.000077												
c-1,2-Dichloroethene	ND	0.00020	0.000039												
2-Butanone	ND	0.00020	0.00012												
Dichlorodifluoromethane (12)	ND	0.00020	0.000031												
Chloromethane	ND	0.00040	0.000044												
1,1,1-Trichloroethane	ND	0.00020	0.000020												
1,2-Cl-1,1,2,2-F ethane (114)	ND	0.00020	0.000040												
Bromomethane	ND	0.00020	0.000059												
Chloroethane	ND	0.00020	0.00017												
Trichlorofluoromethane (11)	ND	0.00020	0.000043												
1,2-Dichloropropane	ND	0.00020	0.000036												
Bromodichloromethane	ND	0.00020	0.000012												
c-1,3-Dichloropropene	ND	0.00020	0.000024												
4-Methyl-2-Pentanone	ND	0.00020	0.000013												
Toluene	ND	0.00020	0.000016												
t-1,3-Dichloropropene	ND	0.00020	0.000021												
1,1-Dichloroethene	ND	0.00020	0.000045												
1,3-Dichloropropane	ND	0.00020	0.0000099												
Carbon Disulfide	ND	0.0010	0.000048												
2-Hexanone	ND	0.00020	0.000041												
Dibromochloromethane	ND	0.00020	0.000036												
1,2-Dibromoethane	ND	0.00020	0.000018												
Chlorobenzene	ND	0.00020	0.000016												
1,1,2-Cl 1,2,2-F ethane (113)	ND	0.00020	0.000054												
p,&m-Xylene	ND	0.00020	0.000023												



Client: Jacobs  
 Attn: Eric Davis  
 Project Name: SFPP Norwalk  
 Project No.: NA  
 Date Received: 06/02/22  
 Matrix: Air  
 Reporting Units: ppmv

EPA Method TO15

Lab No.:	METHOD BLANK														
Client Sample I.D.:	--														
Date/Time Sampled:	--														
Date/Time Analyzed:	6/7/22 5:23														
QC Batch No.:	220607MS2A1														
Analyst Initials:	DT														
Dilution Factor:	0.20														
ANALYTE	Result ppmv	RL ppmv	MDL ppmv												
o-Xylene	ND	0.00020	0.000024												
Styrene	ND	0.00020	0.000026												
Bromoform	ND	0.00020	0.000011												
Isopropyl benzene	ND	0.00020	0.000021												
1,1,2,2-Tetrachloroethane	ND	0.00040	0.000012												
Benzyl Chloride	ND	0.00020	0.000037												
1,2,3-Trichloropropane	ND	0.00020	0.000054												
n-Propyl Benzene	ND	0.00020	0.000012												
4-Ethyl Toluene	ND	0.00020	0.000013												
1,3,5-Trimethylbenzene	ND	0.00040	0.000035												
4-Chlorotoluene	ND	0.00020	0.000024												
tert-Butylbenzene	ND	0.00020	0.000018												
1,2,4-Trimethylbenzene	ND	0.00040	0.000023												
sec-Butylbenzene	ND	0.00020	0.000019												
p-Isopropyltoluene	ND	0.00020	0.000026												
1,3-Dichlorobenzene	ND	0.00020	0.000024												
Acetone	ND	0.0010	0.000058												
n-Butylbenzene	ND	0.00020	0.000015												
1,2-Dichlorobenzene	ND	0.00020	0.000025												
1,2,4-Trichlorobenzene	ND	0.00040	0.000033												
Hexachlorobutadiene	ND	0.00020	0.000012												
t-Butanol	ND	0.0010	0.000038												
n-Hexane	ND	0.0010	0.000027												
Isopropyl ether	ND	0.0010	0.000022												
t-Butyl ethyl ether	ND	0.0010	0.000040												
2,2-Dichloropropane	ND	0.0010	0.000019												
t-Amyl methyl ether	ND	0.0010	0.000014												
t-1,2-Dichloroethene	ND	0.00020	0.000060												
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 1 Date 6/9/22  
 Mark Johnson  
 Operations Manager

The cover letter is an integral part of this analytical report



LCS/LCSD Recovery and RPD Summary Report

QC Batch #: 220607MS2A1

Matrix: Air

Reporting Units: ppmv

EPA Method TO15  
LABORATORY CONTROL SAMPLE SUMMARY

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	0.00963	96.3	0.00948	94.8	1.6	70	130	30.0
Methylene Chloride	ND	0.00020	0.010	0.00991	99.1	0.00991	99.1	0.0	70	130	30.0
Trichloroethene	ND	0.00020	0.010	0.00968	96.8	0.00947	94.7	2.1	70	130	30.0
Toluene	ND	0.00020	0.010	0.00943	94.3	0.00942	94.2	0.1	70	130	30.0
1,1,2,2-Tetrachloroethane	ND	0.00020	0.010	0.00834	83.4	0.00842	84.2	0.9	70	130	30.0

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By: \_\_\_\_\_

Mark Johnson  
Operations Manager

Date: \_\_\_\_\_

6/9/22

The cover letter is an integral part of this analytical report



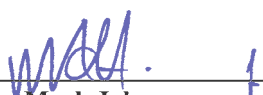
Client: **Jacobs**  
 Attn: **Eric Davis**  
 Project Name: **SFPP Norwalk**  
 Project No.: **NA**  
 Date Received: **06/02/22**  
 Matrix: **Air**  
 Reporting Units: **ppmv**

**EPA METHOD TO3**

Lab No.:	N060205-01	N060205-02	N060205-03	N060205-04				
Client Sample I.D.:	EFF-060222	EFF-060222-D	POST-060222	INF-060222				
Date/Time Sampled:	6/2/22 11:40	6/2/22 11:40	6/2/22 12:05	6/2/22 12:12				
Date/Time Analyzed:	6/7/22 12:05	6/7/22 12:27	6/7/22 13:58	6/7/22 14:21				
QC Batch No.:	220607G11A1	220607G11A1	220607G11A1	220607G11A1				
Analyst Initials:	AS	AS	AS	AS				
Dilution Factor:	2.0	2.0	1.9	2.1				
ANALYTE	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv	Result ppmv	RL ppmv
TVOC as Hexane	ND	2.0	ND	2.0	23	1.9	14	2.1

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



QC Batch No: 220607GC11A1

Matrix: Air

Reporting Units: ppmv

**EPA METHOD TO3  
LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK	LCS		LCSD							
Date Analyzed:	6/7/22 10:57	6/7/22 9:21		6/7/22 9:44							
Analyst Initials:	AS	AS		AS							
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	4.59	92	4.61	92	0.4	70	130	25

ND = Not Detected (below RL)

RL = Reporting Limit

Reviewed/Approved By:   
 Mark Johnson  
 Operations Manager

Date 6/9/22

The cover letter is an integral part of this analytical report







QC Batch No: 220607GC8A1  
 Matrix: Air  
 Reporting Units: % v/v

**ASTM D1946**  
**LABORATORY CONTROL SAMPLE SUMMARY**

Lab No.:	METHOD BLANK					LCS	LCSD				
Date Analyzed:	6/7/22 10:03					6/7/22 9:19	6/7/22 9:33				
Analyst Initials:	AS\RC					AS\RC	AS\RC				
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	9.71	97	11.0	109	12.1	70	130	30
Oxygen/Argon	ND	0.50	15	15.0	101	14.0	95	6.9	70	130	30
Nitrogen	ND	1.0	70	67.9	97	66.4	95	2.2	70	130	30
Methane	ND	0.0010	0.10	0.101	101	0.100	100	1.4	70	130	30

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

Reviewed/Approved By: \_\_\_\_\_  
*Mark Johnson*  
 Mark Johnson  
 Operations Manager

Date 6/9/22

The cover letter is an integral part of this analytical report



9765 Eton Avenue  
Chatsworth  
California 91311  
Tel: (818) 998-5547  
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April 12, 2022

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

**Re : KMEP Norwalk Biosparge Startup / 693142  
MB187343 / 2C14020**

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 03/14/22 15:19 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
<b><u>Fixed Gases</u></b>					
SVP-105-5	2C14020-01	Vapor	10	03/14/22 08:04	03/14/22 15:19
SVP-105-10	2C14020-02	Vapor	10	03/14/22 08:09	03/14/22 15:19
SVP-105-10-DUP	2C14020-03	Vapor	10	03/14/22 08:09	03/14/22 15:19
SVP-106-5	2C14020-04	Vapor	10	03/14/22 08:24	03/14/22 15:19
SVP-106-10	2C14020-05	Vapor	10	03/14/22 08:24	03/14/22 15:19
AMBIENT AIR	2C14020-06	Vapor	10	03/14/22 08:30	03/14/22 15:19
SVM-12-7	2C14020-07	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVM-12-15	2C14020-08	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVM-12-22	2C14020-09	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVP-107-5	2C14020-10	Vapor	10	03/14/22 09:25	03/14/22 15:19
SVP-107-10	2C14020-11	Vapor	10	03/14/22 09:25	03/14/22 15:19
SVM-11-7	2C14020-12	Vapor	10	03/14/22 10:05	03/14/22 15:19
SVM-11-15	2C14020-13	Vapor	10	03/14/22 10:00	03/14/22 15:19
SVM-11-22	2C14020-14	Vapor	10	03/14/22 10:00	03/14/22 15:19
SVM-13-7	2C14020-15	Vapor	10	03/14/22 10:32	03/14/22 15:19
SVM-13-22	2C14020-17	Vapor	10	03/14/22 10:31	03/14/22 15:19
SVM-14R-8	2C14020-18	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVM-14R-16	2C14020-19	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVM-14R-22	2C14020-20	Vapor	10	03/14/22 10:50	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVP-109-5	2C14020-21	Vapor	10	03/15/22 07:50	03/14/22 15:19
SVP-109-10	2C14020-22	Vapor	10	03/15/22 07:50	03/14/22 15:19
SVM-21-5	2C14020-23	Vapor	10	03/15/22 08:18	03/14/22 15:19
SVM-21-14.5	2C14020-24	Vapor	10	03/15/22 08:18	03/14/22 15:19
SVP-108-5	2C14020-25	Vapor	10	03/15/22 08:30	03/14/22 15:19
SVP-108-10	2C14020-26	Vapor	10	03/15/22 08:30	03/14/22 15:19
SVM-17-5	2C14020-27	Vapor	10	03/15/22 08:50	03/14/22 15:19
SVM-17-14.5	2C14020-28	Vapor	10	03/15/22 08:50	03/14/22 15:19
SVM-17-14.5 DUP	2C14020-29	Vapor	10	03/15/22 08:50	03/14/22 15:19
AMBIENT AIR	2C14020-30	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-22-5	2C14020-31	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-22-14.5	2C14020-32	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-18-5	2C14020-33	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-18-14.5	2C14020-34	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-20-5	2C14020-35	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-20-14.5	2C14020-36	Vapor	10	03/15/22 09:37	03/14/22 15:19
SVM-19-5	2C14020-37	Vapor	10	03/15/22 09:55	03/14/22 15:19
SVM-19-5 DUP	2C14020-38	Vapor	10	03/15/22 09:55	03/14/22 15:19
SVM-23-5	2C14020-39	Vapor	10	03/15/22 10:19	03/14/22 15:19
SVM-23-14.5	2C14020-40	Vapor	10	03/15/22 10:19	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-9-5	2C14020-41	Vapor	10	03/15/22 10:55	03/14/22 15:19
SVM-9-14.5	2C14020-42	Vapor	10	03/15/22 10:55	03/14/22 15:19
SVM-3-5	2C14020-43	Vapor	10	03/15/22 11:33	03/14/22 15:19
SVM-3-15	2C14020-44	Vapor	10	03/15/22 11:33	03/14/22 15:19
SVM-2-5	2C14020-45	Vapor	10	03/15/22 12:05	03/14/22 15:19
SVM-1-5	2C14020-46	Vapor	10	03/15/22 12:23	03/14/22 15:19
SVM-1-15	2C14020-47	Vapor	10	03/15/22 12:23	03/14/22 15:19
SVM-25-5	2C14020-48	Vapor	10	03/16/22 07:58	03/14/22 15:19
SVM-25-10	2C14020-49	Vapor	10	03/16/22 07:57	03/14/22 15:19
SVM-24-5	2C14020-50	Vapor	10	03/16/22 08:02	03/14/22 15:19
SVM-24-10	2C14020-51	Vapor	10	03/16/22 08:02	03/14/22 15:19
SVM-27-5	2C14020-52	Vapor	10	03/16/22 08:51	03/14/22 15:19
SVM-27-10	2C14020-53	Vapor	10	03/16/22 08:51	03/14/22 15:19
SVM-26-5	2C14020-54	Vapor	10	03/16/22 08:55	03/14/22 15:19
SVM-26-10	2C14020-55	Vapor	10	03/16/22 08:55	03/14/22 15:19
SVM-7-7	2C14020-56	Vapor	10	03/16/22 09:56	03/14/22 15:19
SVM-7-13	2C14020-57	Vapor	10	03/16/22 09:56	03/14/22 15:19
SVM-6-7	2C14020-58	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-6-13	2C14020-59	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-6-13 DUP	2C14020-60	Vapor	10	03/16/22 10:02	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-10-15	2C14020-61	Vapor	10	03/16/22 10:20	03/14/22 15:19
SVM-15-7	2C14020-62	Vapor	10	03/16/22 10:45	03/14/22 15:19
SVM-15-15	2C14020-63	Vapor	10	03/16/22 10:45	03/14/22 15:19
SVM-15-22	2C14020-64	Vapor	10	03/16/22 10:45	03/14/22 15:19
AMBIENT AIR	2C14020-65	Vapor	10	03/16/22 10:34	03/14/22 15:19
SVM-16-7	2C14020-66	Vapor	10	03/16/22 11:24	03/14/22 15:19
SVM-16-16	2C14020-67	Vapor	10	03/16/22 11:24	03/14/22 15:19
SVM-16-22	2C14020-68	Vapor	10	03/16/22 11:40	03/14/22 15:19
SVM-5-5	2C14020-69	Vapor	10	03/16/22 11:57	03/14/22 15:19
SVM-5-15	2C14020-70	Vapor	10	03/16/22 12:00	03/14/22 15:19
SVM-8-5	2C14020-71	Vapor	10	03/16/22 11:55	03/14/22 15:19
SVM-8-15	2C14020-72	Vapor	10	03/16/22 11:49	03/14/22 15:19

### TO-15 (Mid Level)

SVP-105-5	2C14020-01	Vapor	10	03/14/22 08:04	03/14/22 15:19
SVP-105-10	2C14020-02	Vapor	10	03/14/22 08:09	03/14/22 15:19
SVP-105-10-DUP	2C14020-03	Vapor	10	03/14/22 08:09	03/14/22 15:19
SVP-106-5	2C14020-04	Vapor	10	03/14/22 08:24	03/14/22 15:19
SVP-106-10	2C14020-05	Vapor	10	03/14/22 08:24	03/14/22 15:19
AMBIENT AIR	2C14020-06	Vapor	10	03/14/22 08:30	03/14/22 15:19
SVM-12-7	2C14020-07	Vapor	10	03/14/22 09:10	03/14/22 15:19

**Allen Aminian**  
 QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-12-15	2C14020-08	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVM-12-22	2C14020-09	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVP-107-5	2C14020-10	Vapor	10	03/14/22 09:25	03/14/22 15:19
SVP-107-10	2C14020-11	Vapor	10	03/14/22 09:25	03/14/22 15:19
SVM-11-7	2C14020-12	Vapor	10	03/14/22 10:05	03/14/22 15:19
SVM-11-15	2C14020-13	Vapor	10	03/14/22 10:00	03/14/22 15:19
SVM-11-22	2C14020-14	Vapor	10	03/14/22 10:00	03/14/22 15:19
SVM-13-7	2C14020-15	Vapor	10	03/14/22 10:32	03/14/22 15:19
SVM-13-22	2C14020-17	Vapor	10	03/14/22 10:31	03/14/22 15:19
SVM-14R-8	2C14020-18	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVM-14R-16	2C14020-19	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVM-14R-22	2C14020-20	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVP-109-5	2C14020-21	Vapor	10	03/15/22 07:50	03/14/22 15:19
SVP-109-10	2C14020-22	Vapor	10	03/15/22 07:50	03/14/22 15:19
SVM-21-5	2C14020-23	Vapor	10	03/15/22 08:18	03/14/22 15:19
SVM-21-14.5	2C14020-24	Vapor	10	03/15/22 08:18	03/14/22 15:19
SVP-108-5	2C14020-25	Vapor	10	03/15/22 08:30	03/14/22 15:19
SVP-108-10	2C14020-26	Vapor	10	03/15/22 08:30	03/14/22 15:19
SVM-17-5	2C14020-27	Vapor	10	03/15/22 08:50	03/14/22 15:19
SVM-17-14.5	2C14020-28	Vapor	10	03/15/22 08:50	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-17-14.5 DUP	2C14020-29	Vapor	10	03/15/22 08:50	03/14/22 15:19
AMBIENT AIR	2C14020-30	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-22-5	2C14020-31	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-22-14.5	2C14020-32	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-18-5	2C14020-33	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-18-14.5	2C14020-34	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-20-5	2C14020-35	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-20-14.5	2C14020-36	Vapor	10	03/15/22 09:37	03/14/22 15:19
SVM-19-5	2C14020-37	Vapor	10	03/15/22 09:55	03/14/22 15:19
SVM-19-5 DUP	2C14020-38	Vapor	10	03/15/22 09:55	03/14/22 15:19
SVM-23-5	2C14020-39	Vapor	10	03/15/22 10:19	03/14/22 15:19
SVM-23-14.5	2C14020-40	Vapor	10	03/15/22 10:19	03/14/22 15:19
SVM-9-5	2C14020-41	Vapor	10	03/15/22 10:55	03/14/22 15:19
SVM-9-14.5	2C14020-42	Vapor	10	03/15/22 10:55	03/14/22 15:19
SVM-3-5	2C14020-43	Vapor	10	03/15/22 11:33	03/14/22 15:19
SVM-3-15	2C14020-44	Vapor	10	03/15/22 11:33	03/14/22 15:19
SVM-2-5	2C14020-45	Vapor	10	03/15/22 12:05	03/14/22 15:19
SVM-1-5	2C14020-46	Vapor	10	03/15/22 12:23	03/14/22 15:19
SVM-1-15	2C14020-47	Vapor	10	03/15/22 12:23	03/14/22 15:19
SVM-25-5	2C14020-48	Vapor	10	03/16/22 07:58	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager





## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-25-10	2C14020-49	Vapor	10	03/16/22 07:57	03/14/22 15:19
SVM-24-5	2C14020-50	Vapor	10	03/16/22 08:02	03/14/22 15:19
SVM-24-10	2C14020-51	Vapor	10	03/16/22 08:02	03/14/22 15:19
SVM-27-5	2C14020-52	Vapor	10	03/16/22 08:51	03/14/22 15:19
SVM-27-10	2C14020-53	Vapor	10	03/16/22 08:51	03/14/22 15:19
SVM-26-5	2C14020-54	Vapor	10	03/16/22 08:55	03/14/22 15:19
SVM-26-10	2C14020-55	Vapor	10	03/16/22 08:55	03/14/22 15:19
SVM-7-7	2C14020-56	Vapor	10	03/16/22 09:56	03/14/22 15:19
SVM-7-13	2C14020-57	Vapor	10	03/16/22 09:56	03/14/22 15:19
SVM-6-7	2C14020-58	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-6-13	2C14020-59	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-6-13 DUP	2C14020-60	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-10-15	2C14020-61	Vapor	10	03/16/22 10:20	03/14/22 15:19
SVM-15-7	2C14020-62	Vapor	10	03/16/22 10:45	03/14/22 15:19
SVM-15-15	2C14020-63	Vapor	10	03/16/22 10:45	03/14/22 15:19
SVM-15-22	2C14020-64	Vapor	10	03/16/22 10:45	03/14/22 15:19
AMBIENT AIR	2C14020-65	Vapor	10	03/16/22 10:34	03/14/22 15:19
SVM-16-7	2C14020-66	Vapor	10	03/16/22 11:24	03/14/22 15:19
SVM-16-16	2C14020-67	Vapor	10	03/16/22 11:24	03/14/22 15:19
SVM-16-22	2C14020-68	Vapor	10	03/16/22 11:40	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-5-5	2C14020-69	Vapor	10	03/16/22 11:57	03/14/22 15:19
SVM-5-15	2C14020-70	Vapor	10	03/16/22 12:00	03/14/22 15:19
SVM-8-5	2C14020-71	Vapor	10	03/16/22 11:55	03/14/22 15:19
SVM-8-15	2C14020-72	Vapor	10	03/16/22 11:49	03/14/22 15:19
<b><u>TO-3</u></b>					
SVP-105-5	2C14020-01	Vapor	10	03/14/22 08:04	03/14/22 15:19
SVP-105-10	2C14020-02	Vapor	10	03/14/22 08:09	03/14/22 15:19
SVP-105-10-DUP	2C14020-03	Vapor	10	03/14/22 08:09	03/14/22 15:19
SVP-106-5	2C14020-04	Vapor	10	03/14/22 08:24	03/14/22 15:19
SVP-106-10	2C14020-05	Vapor	10	03/14/22 08:24	03/14/22 15:19
AMBIENT AIR	2C14020-06	Vapor	10	03/14/22 08:30	03/14/22 15:19
SVM-12-7	2C14020-07	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVM-12-15	2C14020-08	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVM-12-22	2C14020-09	Vapor	10	03/14/22 09:10	03/14/22 15:19
SVP-107-5	2C14020-10	Vapor	10	03/14/22 09:25	03/14/22 15:19
SVP-107-10	2C14020-11	Vapor	10	03/14/22 09:25	03/14/22 15:19
SVM-11-7	2C14020-12	Vapor	10	03/14/22 10:05	03/14/22 15:19
SVM-11-15	2C14020-13	Vapor	10	03/14/22 10:00	03/14/22 15:19
SVM-11-22	2C14020-14	Vapor	10	03/14/22 10:00	03/14/22 15:19
SVM-13-7	2C14020-15	Vapor	10	03/14/22 10:32	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-13-22	2C14020-17	Vapor	10	03/14/22 10:31	03/14/22 15:19
SVM-14R-8	2C14020-18	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVM-14R-16	2C14020-19	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVM-14R-22	2C14020-20	Vapor	10	03/14/22 10:50	03/14/22 15:19
SVP-109-5	2C14020-21	Vapor	10	03/15/22 07:50	03/14/22 15:19
SVP-109-10	2C14020-22	Vapor	10	03/15/22 07:50	03/14/22 15:19
SVM-21-5	2C14020-23	Vapor	10	03/15/22 08:18	03/14/22 15:19
SVM-21-14.5	2C14020-24	Vapor	10	03/15/22 08:18	03/14/22 15:19
SVP-108-5	2C14020-25	Vapor	10	03/15/22 08:30	03/14/22 15:19
SVP-108-10	2C14020-26	Vapor	10	03/15/22 08:30	03/14/22 15:19
SVM-17-5	2C14020-27	Vapor	10	03/15/22 08:50	03/14/22 15:19
SVM-17-14.5	2C14020-28	Vapor	10	03/15/22 08:50	03/14/22 15:19
SVM-17-14.5 DUP	2C14020-29	Vapor	10	03/15/22 08:50	03/14/22 15:19
AMBIENT AIR	2C14020-30	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-22-5	2C14020-31	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-22-14.5	2C14020-32	Vapor	10	03/15/22 09:12	03/14/22 15:19
SVM-18-5	2C14020-33	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-18-14.5	2C14020-34	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-20-5	2C14020-35	Vapor	10	03/15/22 09:35	03/14/22 15:19
SVM-20-14.5	2C14020-36	Vapor	10	03/15/22 09:37	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-19-5	2C14020-37	Vapor	10	03/15/22 09:55	03/14/22 15:19
SVM-19-5 DUP	2C14020-38	Vapor	10	03/15/22 09:55	03/14/22 15:19
SVM-23-5	2C14020-39	Vapor	10	03/15/22 10:19	03/14/22 15:19
SVM-23-14.5	2C14020-40	Vapor	10	03/15/22 10:19	03/14/22 15:19
SVM-9-5	2C14020-41	Vapor	10	03/15/22 10:55	03/14/22 15:19
SVM-9-14.5	2C14020-42	Vapor	10	03/15/22 10:55	03/14/22 15:19
SVM-3-5	2C14020-43	Vapor	10	03/15/22 11:33	03/14/22 15:19
SVM-3-15	2C14020-44	Vapor	10	03/15/22 11:33	03/14/22 15:19
SVM-2-5	2C14020-45	Vapor	10	03/15/22 12:05	03/14/22 15:19
SVM-1-5	2C14020-46	Vapor	10	03/15/22 12:23	03/14/22 15:19
SVM-1-15	2C14020-47	Vapor	10	03/15/22 12:23	03/14/22 15:19
SVM-25-5	2C14020-48	Vapor	10	03/16/22 07:58	03/14/22 15:19
SVM-25-10	2C14020-49	Vapor	10	03/16/22 07:57	03/14/22 15:19
SVM-24-5	2C14020-50	Vapor	10	03/16/22 08:02	03/14/22 15:19
SVM-24-10	2C14020-51	Vapor	10	03/16/22 08:02	03/14/22 15:19
SVM-27-5	2C14020-52	Vapor	10	03/16/22 08:51	03/14/22 15:19
SVM-27-10	2C14020-53	Vapor	10	03/16/22 08:51	03/14/22 15:19
SVM-26-5	2C14020-54	Vapor	10	03/16/22 08:55	03/14/22 15:19
SVM-26-10	2C14020-55	Vapor	10	03/16/22 08:55	03/14/22 15:19
SVM-7-7	2C14020-56	Vapor	10	03/16/22 09:56	03/14/22 15:19

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
SVM-7-13	2C14020-57	Vapor	10	03/16/22 09:56	03/14/22 15:19
SVM-6-7	2C14020-58	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-6-13	2C14020-59	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-6-13 DUP	2C14020-60	Vapor	10	03/16/22 10:02	03/14/22 15:19
SVM-10-15	2C14020-61	Vapor	10	03/16/22 10:20	03/14/22 15:19
SVM-15-7	2C14020-62	Vapor	10	03/16/22 10:45	03/14/22 15:19
SVM-15-15	2C14020-63	Vapor	10	03/16/22 10:45	03/14/22 15:19
SVM-15-22	2C14020-64	Vapor	10	03/16/22 10:45	03/14/22 15:19
AMBIENT AIR	2C14020-65	Vapor	10	03/16/22 10:34	03/14/22 15:19
SVM-16-7	2C14020-66	Vapor	10	03/16/22 11:24	03/14/22 15:19
SVM-16-16	2C14020-67	Vapor	10	03/16/22 11:24	03/14/22 15:19
SVM-16-22	2C14020-68	Vapor	10	03/16/22 11:40	03/14/22 15:19
SVM-5-5	2C14020-69	Vapor	10	03/16/22 11:57	03/14/22 15:19
SVM-5-15	2C14020-70	Vapor	10	03/16/22 12:00	03/14/22 15:19
SVM-8-5	2C14020-71	Vapor	10	03/16/22 11:55	03/14/22 15:19
SVM-8-15	2C14020-72	Vapor	10	03/16/22 11:49	03/14/22 15:19

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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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
<b>Fixed Gases by TCD</b>								
Oxygen	SVP-105-5	<b>21</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-105-5	<b>1.2</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-105-10	<b>20</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-105-10	<b>1.4</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-105-10-DUP	<b>20</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-105-10-DUP	<b>1.5</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-106-5	<b>21</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-106-5	<b>1.6</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-106-10	<b>21</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-106-10	<b>0.90</b>	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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**Project Name:** KMEP Norwalk Biosparge Startup

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	AMBIENT AIR	22	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVM-12-7	20	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVM-12-7	1.2	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVM-12-15	16	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVM-12-15	4.7	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVM-12-22	8.1	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVM-12-22	14	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-107-5	20	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-107-5	1.5	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-107-10	20	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-107-10	1.3	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M

**Allen Aminian**  
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**Project No:** 693142  
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**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

**ANALYTICAL DATA SUMMARY**

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-11-7	19	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVM-11-7	0.84	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVM-11-15	19	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVM-11-15	1.7	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVM-11-22	9.0	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Carbon Dioxide	SVM-11-22	8.9	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVM-13-7	21	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVM-13-22	14	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Carbon Dioxide	SVM-13-22	3.7	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVM-14R-8	19	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Carbon Dioxide	SVM-14R-8	1.1	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M

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QA/QC Manager



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**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

**ANALYTICAL DATA SUMMARY**

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-14R-16	17	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Carbon Dioxide	SVM-14R-16	2.2	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVM-14R-22	6.5	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Carbon Dioxide	SVM-14R-22	11	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVP-109-5	20	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVP-109-10	22	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVM-21-5	21	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVM-21-14.5	22	0.20	% by Volume	2	03/21/22	03/25/22	ASTM D1946M
Oxygen	SVP-108-5	17	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Carbon Dioxide	SVP-108-5	3.8	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVP-108-10	11	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M

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#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVP-108-10	9.2	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-17-5	20	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-17-14.5	20	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-17-14.5 DUP	21	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	AMBIENT AIR	21	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-22-5	22	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-22-14.5	21	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-18-5	20	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Carbon Dioxide	SVM-18-5	3.0	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-18-14.5	21	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Carbon Dioxide	SVM-18-14.5	0.92	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M

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QA/QC Manager



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**AA Project No:** MB187343  
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#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-20-5	21	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Carbon Dioxide	SVM-20-5	0.93	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-20-14.5	21	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Carbon Dioxide	SVM-20-14.5	0.51	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-19-5	25	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Carbon Dioxide	SVM-19-5	0.46	0.20	% by Volume	2	03/22/22	03/22/22	ASTM D1946M
Oxygen	SVM-19-5 DUP	20	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-19-5 DUP	0.54	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-23-5	21	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-23-14.5	21	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-9-5	19	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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**ANALYTICAL DATA SUMMARY**

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-9-5	<b>3.9</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-9-14.5	<b>20</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-9-14.5	<b>0.44</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-3-5	<b>21</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-3-15	<b>20</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-2-5	<b>17</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-2-5	<b>2.2</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-1-5	<b>20</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-1-5	<b>0.62</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-1-15	<b>17</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-1-15	<b>2.5</b>	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M

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QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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**ANALYTICAL DATA SUMMARY**

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-25-5	20	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-25-5	2.0	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-25-10	19	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-25-10	2.7	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-24-5	21	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-24-5	1.0	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-24-10	20	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-24-10	0.83	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-27-5	20	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-27-5	0.86	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-27-10	20	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M

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QA/QC Manager



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#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-27-10	1.8	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-26-5	20	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-26-5	1.8	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-26-10	20	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-26-10	1.7	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-7-7	20	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-7-7	2.2	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-7-13	16	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-7-13	4.3	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-6-7	13	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-6-13	4.1	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M

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 QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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**ANALYTICAL DATA SUMMARY**

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-6-13	<b>9.9</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-6-13 DUP	<b>1.5</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-6-13 DUP	<b>11</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-10-15	<b>20</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-15-7	<b>19</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-15-7	<b>1.3</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-15-15	<b>19</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-15-15	<b>1.5</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-15-22	<b>16</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-15-22	<b>2.8</b>	0.20	% by Volum e	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	AMBIENT AIR	<b>21</b>	0.20	% by Volum e	2	03/24/22	03/24/22	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Oxygen	SVM-16-7	22	0.20	% by Volume	2	03/25/22	03/25/22	ASTM D1946M
Oxygen	SVM-16-16	20	0.20	% by Volume	2	03/25/22	03/25/22	ASTM D1946M
Oxygen	SVM-16-22	21	0.20	% by Volume	2	03/25/22	03/25/22	ASTM D1946M
Oxygen	SVM-5-5	20	0.20	% by Volume	2	03/25/22	03/25/22	ASTM D1946M
Oxygen	SVM-5-15	21	0.20	% by Volume	2	03/25/22	03/25/22	ASTM D1946M
Oxygen	SVM-8-5	20	0.20	% by Volume	2	03/25/22	03/25/22	ASTM D1946M
Oxygen	SVM-8-15	21	0.20	% by Volume	2	03/25/22	03/25/22	ASTM D1946M

#### VOCs by EPA TO-3

Gasoline Range Organics (GRO)	SVP-108-10	5.9	0.50	ug/L	1	03/17/22	04/05/22	TO-3
Gasoline Range Organics (GRO)	SVM-17-5	0.66	0.50	ug/L	1	03/23/22	03/23/22	TO-3
Gasoline Range Organics (GRO)	SVM-3-15	1.2	0.50	ug/L	1	03/25/22	03/25/22	TO-3
Gasoline Range Organics (GRO)	SVM-27-10	0.59	0.50	ug/L	1	03/25/22	03/26/22	TO-3
Gasoline Range Organics (GRO)	SVM-26-5	0.73	0.50	ug/L	1	03/25/22	03/26/22	TO-3

**Allen Aminian**  
QA/QC Manager





### LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Gasoline Range Organics (GRO)	SVM-6-7	150	0.50	ug/L	1	03/28/22	03/28/22	TO-3
Gasoline Range Organics (GRO)	SVM-6-13	11000	150	ug/L	300	03/31/22	03/31/22	TO-3
Gasoline Range Organics (GRO)	SVM-6-13 DUP	11000	150	ug/L	300	03/31/22	03/31/22	TO-3
Gasoline Range Organics (GRO)	SVM-10-15	4.8	0.50	ug/L	1	03/28/22	03/28/22	TO-3
Gasoline Range Organics (GRO)	SVM-15-7	1.9	0.50	ug/L	1	03/28/22	03/29/22	TO-3
Gasoline Range Organics (GRO)	SVM-16-22	0.83	0.50	ug/L	1	03/31/22	03/31/22	TO-3

#### VOCs by GCMS EPA TO-15 (Mid Level)

Ethanol	SVP-106-5	0.14 E	0.020	ug/L	1	03/16/22	03/16/22	TO-15
Acetone	AMBIENT AIR	0.034	0.020	ug/L	1	03/16/22	03/17/22	TO-15
Ethanol	AMBIENT AIR	0.036	0.020	ug/L	1	03/16/22	03/17/22	TO-15
Chloroform	SVM-12-7	0.0073	0.0040	ug/L	1	03/16/22	03/17/22	TO-15
Tetrachloroethylene (PCE)	SVM-12-22	0.018	0.010	ug/L	1	03/16/22	03/17/22	TO-15
Tetrachloroethylene (PCE)	SVM-11-22	0.017	0.010	ug/L	1	03/17/22	03/17/22	TO-15
Tetrachloroethylene (PCE)	SVM-13-22	0.013	0.010	ug/L	1	03/17/22	03/17/22	TO-15
Chloroform	SVM-14R-16	0.020	0.0040	ug/L	1	03/17/22	03/17/22	TO-15
Tetrachloroethylene (PCE)	SVP-109-10	0.067	0.010	ug/L	1	03/17/22	03/18/22	TO-15
Ethanol	SVM-21-14.5	0.024	0.020	ug/L	1	03/17/22	03/18/22	TO-15
Cyclohexane	SVP-108-10	1.7	0.80	ug/L	40	03/22/22	03/22/22	TO-15
Tetrachloroethylene (PCE)	SVM-17-14.5	0.020	0.010	ug/L	1	03/18/22	03/18/22	TO-15
Acetone	AMBIENT AIR	0.027	0.020	ug/L	1	03/18/22	03/18/22	TO-15
Ethanol	AMBIENT AIR	0.025	0.020	ug/L	1	03/18/22	03/18/22	TO-15
Chloroform	SVM-22-14.5	0.0082	0.0040	ug/L	1	03/18/22	03/19/22	TO-15
Ethanol	SVM-18-5	0.021	0.020	ug/L	1	03/18/22	03/19/22	TO-15
Isopropanol (IPA)	SVM-20-14.5	0.31 W-0	0.20	ug/L	1	03/18/22	03/19/22	TO-15

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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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

**ANALYTICAL DATA SUMMARY**

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Chloroform	SVM-19-5	<b>0.0062</b>	0.0040	ug/L	1	03/18/22	03/19/22	TO-15
Chloroform	SVM-23-14.5	<b>0.0071</b>	0.0040	ug/L	1	03/23/22	03/23/22	TO-15
Tetrachloroethylene (PCE)	SVM-9-5	<b>0.031</b>	0.010	ug/L	1	03/23/22	03/24/22	TO-15
Acetone	SVM-9-14.5	<b>0.024</b>	0.020	ug/L	1	03/23/22	03/24/22	TO-15
Chloroform	SVM-3-5	<b>0.0092</b>	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Ethanol	SVM-3-5	<b>0.021</b>	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Bromodichloromethane	SVM-3-15	<b>0.032</b>	0.0025	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-3-15	<b>0.071</b>	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Ethanol	SVM-3-15	<b>0.021</b>	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Acetone	SVM-1-5	<b>0.025</b>	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Ethanol	SVM-1-5	<b>0.12</b>	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-25-10	<b>0.0056</b>	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Tetrachloroethylene (PCE)	SVM-25-10	<b>0.029</b>	0.010	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-24-5	<b>0.0053</b>	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-24-10	<b>0.015</b>	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-27-10	<b>0.033</b>	0.0040	ug/L	1	03/25/22	03/26/22	TO-15
Chloroform	SVM-26-5	<b>0.0094</b>	0.0040	ug/L	1	03/25/22	03/26/22	TO-15
Tetrachloroethylene (PCE)	SVM-26-5	<b>0.14</b>	0.010	ug/L	1	03/25/22	03/26/22	TO-15
Tetrachloroethylene (PCE)	SVM-7-13	<b>0.025</b>	0.010	ug/L	1	03/28/22	03/28/22	TO-15
Cyclohexane	SVM-6-7	<b>0.16</b>	0.032	ug/L	1.6	03/28/22	03/28/22	TO-15
Bromodichloromethane	SVM-6-13	<b>44</b>	2.5	ug/L	1000	03/29/22	03/29/22	TO-15
Cyclohexane	SVM-6-13	<b>260</b>	120	ug/L	6000	03/29/22	03/29/22	TO-15
Ethyl Acetate	SVM-6-13	<b>33</b>	20	ug/L	1000	03/29/22	03/29/22	TO-15
Heptane	SVM-6-13	<b>58</b>	20	ug/L	1000	03/29/22	03/29/22	TO-15
n-Hexane	SVM-6-13	<b>230</b>	120	ug/L	6000	03/29/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-6-13	<b>1500</b>	600	ug/L	30000	03/29/22	03/29/22	TO-15
Vinyl acetate	SVM-6-13	<b>45</b>	20	ug/L	1000	03/29/22	03/29/22	TO-15
Bromodichloromethane	SVM-6-13 DUP	<b>44</b>	2.5	ug/L	1000	03/29/22	03/29/22	TO-15
Cyclohexane	SVM-6-13 DUP	<b>250</b>	120	ug/L	6000	03/29/22	03/29/22	TO-15
Ethyl Acetate	SVM-6-13 DUP	<b>33</b>	20	ug/L	1000	03/29/22	03/29/22	TO-15
Heptane	SVM-6-13 DUP	<b>56</b>	20	ug/L	1000	03/29/22	03/29/22	TO-15

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

**ANALYTICAL DATA SUMMARY**

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
n-Hexane	SVM-6-13 DUP	<b>220</b>	120	ug/L	6000	03/29/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-6-13 DUP	<b>1400</b>	600	ug/L	30000	03/29/22	03/29/22	TO-15
Vinyl acetate	SVM-6-13 DUP	<b>46</b>	20	ug/L	1000	03/29/22	03/29/22	TO-15
Cyclohexane	SVM-10-15	<b>0.069</b>	0.020	ug/L	1	03/28/22	03/28/22	TO-15
Heptane	SVM-10-15	<b>0.029</b>	0.020	ug/L	1	03/28/22	03/28/22	TO-15
n-Hexane	SVM-10-15	<b>0.067</b>	0.020	ug/L	1	03/28/22	03/28/22	TO-15
Tetrachloroethylene (PCE)	SVM-10-15	<b>0.033</b>	0.010	ug/L	1	03/28/22	03/28/22	TO-15
Cyclohexane	SVM-15-7	<b>0.020</b>	0.020	ug/L	1	03/28/22	03/29/22	TO-15
n-Hexane	SVM-15-7	<b>0.020</b>	0.020	ug/L	1	03/28/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-15-7	<b>0.23</b>	0.020	ug/L	1	03/28/22	03/29/22	TO-15
2,2,4-Trimethylpentane	AMBIENT AIR	<b>0.024</b>	0.020	ug/L	1	03/28/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-16-16	<b>0.021</b>	0.020	ug/L	1	03/28/22	03/29/22	TO-15
Acetone	SVM-16-22	<b>0.029</b>	0.020	ug/L	1	03/31/22	03/31/22	TO-15
Tetrachloroethylene (PCE)	SVM-5-15	<b>0.035</b>	0.010	ug/L	1	03/31/22	03/31/22	TO-15

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Analyzed:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>AA ID No:</b>	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
<b>Client ID No:</b>	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	77%	77%	75%	76%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Analyzed:</b>	03/16/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
<b>Client ID No:</b>	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	74%	75%	78%	73%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
<b>Client ID No:</b>	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	77%	77%	79%	82%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
<b>Client ID No:</b>	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	78%	78%	81%	79%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
<b>Date Sampled:</b>	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
<b>Client ID No:</b>	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	81%	82%	79%	82%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/18/22	
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-22	2C14020-23	2C14020-24	2C14020-25	
<b>Client ID No:</b>	SVP-109-10	SVM-21-5	SVM-21-14.5	SVP-108-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	79%	80%	78%	82%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/17/22	03/23/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	04/05/22	03/23/22	04/05/22	04/05/22	
<b>AA ID No:</b>	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
<b>Client ID No:</b>	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	DUP Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

**TO-3 (TO-3)**

Gasoline Range Organics (GRO)	<b>5.9</b>	<b>0.66</b>	<0.50	<0.50	0.50
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**Surrogates**

4-Bromofluorobenzene	99%	110%	84%	80%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	04/05/22	04/05/22	04/05/22	04/05/22	
<b>AA ID No:</b>	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
<b>Client ID No:</b>	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	81%	85%	83%	81%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	04/05/22	04/05/22	04/05/22	04/05/22	
<b>AA ID No:</b>	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
<b>Client ID No:</b>	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	84%	84%	82%	82%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/23/22	03/24/22	
<b>AA ID No:</b>	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
<b>Client ID No:</b>	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	102%	102%	102%	103%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/24/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
<b>Client ID No:</b>	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

**TO-3 (TO-3)**

Gasoline Range Organics (GRO)	<0.50	<0.50	1.2	<0.50	0.50
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**Surrogates**

4-Bromofluorobenzene	103%	84%	79%	82%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
<b>Client ID No:</b>	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	77%	80%	82%	79%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/26/22	
<b>AA ID No:</b>	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
<b>Client ID No:</b>	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

#### TO-3 (TO-3)

Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<b>0.59</b>	0.50
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#### Surrogates

4-Bromofluorobenzene	74%	78%	79%	79%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/26/22	03/26/22	03/28/22	03/28/22	
<b>AA ID No:</b>	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
<b>Client ID No:</b>	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

**TO-3 (TO-3)**

Gasoline Range Organics (GRO)	<b>0.73</b>	<0.50	<0.50	<0.50	0.50
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**Surrogates**

4-Bromofluorobenzene	76%	77%	79%	79%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/31/22	03/31/22	03/28/22	
<b>Date Analyzed:</b>	03/28/22	03/31/22	03/31/22	03/28/22	
<b>AA ID No:</b>	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
<b>Client ID No:</b>	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	300	300	1	MRL

### TO-3 (TO-3)

Gasoline Range Organics (GRO)	<b>150</b>	<b>11000</b>	<b>11000</b>	<b>4.8</b>	0.50
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### Surrogates

4-Bromofluorobenzene	81%	83%	78%	90%	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/28/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/29/22	03/29/22	
<b>AA ID No:</b>	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
<b>Client ID No:</b>	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

**TO-3 (TO-3)**

Gasoline Range Organics (GRO)	<b>1.9</b>	<0.50	<0.50	<0.50	0.50
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**Surrogates**

4-Bromofluorobenzene	87%	87%	85%	88%	<b><u>%REC Limits</u></b> 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 EPA TO-3

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/28/22	03/31/22	03/31/22	
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/31/22	03/31/22	
<b>AA ID No:</b>	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
<b>Client ID No:</b>	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

**TO-3 (TO-3)**

Gasoline Range Organics (GRO)	<0.50	<0.50	<b>0.83</b>	<0.50	0.50
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**Surrogates**

4-Bromofluorobenzene	86%	82%	89%	87%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/31/22	03/31/22	03/31/22	
<b>Date Analyzed:</b>	03/31/22	03/31/22	03/31/22	
<b>AA ID No:</b>	2C14020-70	2C14020-71	2C14020-72	
<b>Client ID No:</b>	SVM-5-15	SVM-8-5	SVM-8-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	MRL

### TO-3 (TO-3)

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

4-Bromofluorobenzene	84%	85%	85%	<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 GCMS EPA TO-15 (Mid Level)

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Analyzed:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>AA ID No:</b>	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
<b>Client ID No:</b>	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22
<b>Date Analyzed:</b>	03/16/22	03/16/22	03/16/22	03/16/22
<b>AA ID No:</b>	2C14020-01	2C14020-02	2C14020-03	2C14020-04
<b>Client ID No:</b>	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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	<b>0.14 [1]</b>	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**

<b>Client:</b>	CH2M Hill, Inc.	<b>AA Project No:</b>	MB187343
<b>Project No:</b>	693142	<b>Date Received:</b>	03/14/22
<b>Project Name:</b>	KMEP Norwalk Biosparge Startup	<b>Date Reported:</b>	04/12/22
<b>Method:</b>	VOCs by GCMS EPA TO-15 (Mid Level)	<b>Units:</b>	ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22
<b>Date Analyzed:</b>	03/16/22	03/16/22	03/16/22	03/16/22
<b>AA ID No:</b>	2C14020-01	2C14020-02	2C14020-03	2C14020-04
<b>Client ID No:</b>	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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

<b>Surrogates</b>					<b>%REC Limits</b>
4-Bromofluorobenzene	75%	75%	73%	73%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22
<b>Date Analyzed:</b>	03/16/22	03/17/22	03/17/22	03/17/22
<b>AA ID No:</b>	2C14020-05	2C14020-06	2C14020-07	2C14020-08
<b>Client ID No:</b>	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	1	1	1	1

MRL

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

Acetone	<0.020	<b>0.034</b>	<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	<b>0.0073</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22
<b>Date Analyzed:</b>	03/16/22	03/17/22	03/17/22	03/17/22
<b>AA ID No:</b>	2C14020-05	2C14020-06	2C14020-07	2C14020-08
<b>Client ID No:</b>	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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	<b>0.036</b>	<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:** MB187343  
**Project No:** 693142 **Date Received:** 03/14/22  
**Project Name:** KMEP Norwalk Biosparge Startup **Date Reported:** 04/12/22  
**Method:** VOCs by GCMS EPA TO-15 (Mid Level) **Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Analyzed:</b>	03/16/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
<b>Client ID No:</b>	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b>Surrogates</b>					<b>%REC Limits</b>
4-Bromofluorobenzene	72%	74%	76%	72%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/17/22
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22
<b>AA ID No:</b>	2C14020-09	2C14020-10	2C14020-11	2C14020-12
<b>Client ID No:</b>	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/17/22
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22
<b>AA ID No:</b>	2C14020-09	2C14020-10	2C14020-11	2C14020-12
<b>Client ID No:</b>	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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)	<b>0.018</b>	<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

<b>Client:</b>	CH2M Hill, Inc.	<b>AA Project No:</b>	MB187343
<b>Project No:</b>	693142	<b>Date Received:</b>	03/14/22
<b>Project Name:</b>	KMEP Norwalk Biosparge Startup	<b>Date Reported:</b>	04/12/22
<b>Method:</b>	VOCs by GCMS EPA TO-15 (Mid Level)	<b>Units:</b>	ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/16/22	03/16/22	03/16/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
<b>Client ID No:</b>	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b><u>Surrogates</u></b>					<b><u>%REC Limits</u></b>
4-Bromofluorobenzene	75%	76%	77%	80%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
<b>Client ID No:</b>	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
<b>Client ID No:</b>	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.017</b>	<0.010	<b>0.013</b>	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:** MB187343  
**Project No:** 693142 **Date Received:** 03/14/22  
**Project Name:** KMEP Norwalk Biosparge Startup **Date Reported:** 04/12/22  
**Method:** VOCs by GCMS EPA TO-15 (Mid Level) **Units:** ug/L

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>AA ID No:</b>	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
<b>Client ID No:</b>	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b>Surrogates</b>					<b>%REC Limits</b>
4-Bromofluorobenzene	77%	77%	80%	77%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
<b>Client ID No:</b>	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.020</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
<b>Client ID No:</b>	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b>Client:</b>	CH2M Hill, Inc.	<b>AA Project No:</b>	MB187343
<b>Project No:</b>	693142	<b>Date Received:</b>	03/14/22
<b>Project Name:</b>	KMEP Norwalk Biosparge Startup	<b>Date Reported:</b>	04/12/22
<b>Method:</b>	VOCs by GCMS EPA TO-15 (Mid Level)	<b>Units:</b>	ug/L

<b>Date Sampled:</b>	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/17/22	
<b>Date Analyzed:</b>	03/17/22	03/17/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
<b>Client ID No:</b>	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b><u>Surrogates</u></b>					<b><u>%REC Limits</u></b>
4-Bromofluorobenzene	79%	82%	76%	80%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/18/22	
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-22	2C14020-23	2C14020-24	2C14020-25	
<b>Client ID No:</b>	SVP-109-10	SVM-21-5	SVM-21-14.5	SVP-108-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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: MB187343  
 Date Received: 03/14/22  
 Date Reported: 04/12/22  
 Units: ug/L

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/18/22	
Date Analyzed:	03/18/22	03/18/22	03/18/22	03/18/22	
AA ID No:	2C14020-22	2C14020-23	2C14020-24	2C14020-25	
Client ID No:	SVP-109-10	SVM-21-5	SVM-21-14.5	SVP-108-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL

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

1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<b>0.024</b>	<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)	<b>0.067</b>	<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**

<b>Client:</b>	CH2M Hill, Inc.	<b>AA Project No:</b>	MB187343
<b>Project No:</b>	693142	<b>Date Received:</b>	03/14/22
<b>Project Name:</b>	KMEP Norwalk Biosparge Startup	<b>Date Reported:</b>	04/12/22
<b>Method:</b>	VOCs by GCMS EPA TO-15 (Mid Level)	<b>Units:</b>	ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22
<b>Date Prepared:</b>	03/17/22	03/17/22	03/17/22	03/18/22
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/18/22	03/18/22
<b>AA ID No:</b>	2C14020-22	2C14020-23	2C14020-24	2C14020-25
<b>Client ID No:</b>	SVP-109-10	SVM-21-5	SVM-21-14.5	SVP-108-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	1	1	1	1
				<b>MRL</b>

**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

<b>Surrogates</b>					<b>%REC Limits</b>
4-Bromofluorobenzene	77%	79%	76%	79%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/22/22	03/23/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/22/22	03/23/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
<b>Client ID No:</b>	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	DUP Vapor	
<b>Dilution Factor:</b>	40	1	1	1	MRL

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

Acetone	<0.80	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.80	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.80	<0.020	<0.020	<0.020	0.020
Benzene	<0.12	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.80	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.10	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.80	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.80	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.80	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.80	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<80	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.80	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.80	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.80	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.80	<0.020	<0.020	<0.020	0.020
Chloroform	<0.16	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.80	<0.020	<0.020	<0.020	0.020
Cyclohexane	<b>1.7</b>	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.80	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.80	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.80	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.80	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.80	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.80	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.80	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.16	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/22/22	03/23/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/22/22	03/23/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
<b>Client ID No:</b>	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	DUP Vapor	
<b>Dilution Factor:</b>	40	1	1	1	MRL

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

cis-1,2-Dichloroethylene	<0.80	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethylene	<0.80	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.80	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.80	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.80	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.80	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.80	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.80	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.80	<0.020	<0.020	<0.020	0.020
Ethanol	<0.80	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.80	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.80	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.80	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.80	<0.020	<0.020	<0.020	0.020
Heptane	<0.80	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.80	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.80	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.80	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<8.0	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.80	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.80	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.80	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.12	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.80	<0.020	<0.020	<0.020	0.020
Styrene	<0.80	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.80	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.40	<0.010	<b>0.020</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/22/22	03/23/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/22/22	03/23/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
<b>Client ID No:</b>	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	DUP Vapor	
<b>Dilution Factor:</b>	40	1	1	1	MRL

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

Tetrahydrofuran (THF)	<0.80	<0.020	<0.020	<0.020	0.020
Toluene	<0.80	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.80	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.80	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.80	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.80	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.80	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.80	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.80	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.80	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.80	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.80	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.80	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.80	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.80	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.80	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.80	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.80	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.80	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.80	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.80	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.80	<0.020	<0.020	<0.020	0.020

<b>Surrogates</b>					<b>%REC Limits</b>
4-Bromofluorobenzene	76%	107%	84%	85%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/19/22	03/19/22
<b>AA ID No:</b>	2C14020-30	2C14020-31	2C14020-32	2C14020-33
<b>Client ID No:</b>	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	1	1	1	1
				MRL

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

Acetone	<b>0.027</b>	<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	<b>0.0082</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/19/22	03/19/22
<b>AA ID No:</b>	2C14020-30	2C14020-31	2C14020-32	2C14020-33
<b>Client ID No:</b>	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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	<b>0.025</b>	<0.020	<0.020	<b>0.021</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/19/22	03/19/22	
<b>AA ID No:</b>	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
<b>Client ID No:</b>	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	85%	85%	85%	81%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/19/22	03/19/22	03/19/22	03/19/22	
<b>AA ID No:</b>	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
<b>Client ID No:</b>	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.0062</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/19/22	03/19/22	03/19/22	03/19/22	
<b>AA ID No:</b>	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
<b>Client ID No:</b>	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.31 [8]</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/19/22	03/19/22	03/19/22	03/19/22	
<b>AA ID No:</b>	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
<b>Client ID No:</b>	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b>Surrogates</b>					<b>%REC Limits</b>
4-Bromofluorobenzene	86%	84%	85%	84%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/23/22	03/24/22	
<b>AA ID No:</b>	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
<b>Client ID No:</b>	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.0071</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22
<b>Date Prepared:</b>	03/23/22	03/23/22	03/23/22	03/23/22
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/23/22	03/24/22
<b>AA ID No:</b>	2C14020-38	2C14020-39	2C14020-40	2C14020-41
<b>Client ID No:</b>	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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	<b>0.031</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22
<b>Date Prepared:</b>	03/23/22	03/23/22	03/23/22	03/23/22
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/23/22	03/24/22
<b>AA ID No:</b>	2C14020-38	2C14020-39	2C14020-40	2C14020-41
<b>Client ID No:</b>	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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%	100%	99%	99%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/24/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
<b>Client ID No:</b>	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

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

Acetone	<b>0.024</b>	<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	<b>0.032</b>	<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	<b>0.0092</b>	<b>0.071</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/24/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
<b>Client ID No:</b>	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.021</b>	<b>0.021</b>	<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**

<b>Client:</b>	CH2M Hill, Inc.	<b>AA Project No:</b>	MB187343
<b>Project No:</b>	693142	<b>Date Received:</b>	03/14/22
<b>Project Name:</b>	KMEP Norwalk Biosparge Startup	<b>Date Reported:</b>	04/12/22
<b>Method:</b>	VOCs by GCMS EPA TO-15 (Mid Level)	<b>Units:</b>	ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22
<b>Date Prepared:</b>	03/23/22	03/25/22	03/25/22	03/25/22
<b>Date Analyzed:</b>	03/24/22	03/25/22	03/25/22	03/25/22
<b>AA ID No:</b>	2C14020-42	2C14020-43	2C14020-44	2C14020-45
<b>Client ID No:</b>	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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

<b>Surrogates</b>					<b>%REC Limits</b>
4-Bromofluorobenzene	100%	81%	78%	80%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
<b>Client ID No:</b>	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

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

Acetone	<b>0.025</b>	<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	<b>0.0056</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
<b>Client ID No:</b>	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.12</b>	<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	<b>0.029</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/15/22	03/15/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
<b>Client ID No:</b>	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	76%	78%	80%	78%	<b>%REC Limits</b> 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 GCMS EPA TO-15 (Mid Level)

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/26/22	
<b>AA ID No:</b>	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
<b>Client ID No:</b>	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.0053</b>	<b>0.015</b>	<0.0040	<b>0.033</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/26/22	
<b>AA ID No:</b>	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
<b>Client ID No:</b>	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b>Client:</b>	CH2M Hill, Inc.	<b>AA Project No:</b>	MB187343
<b>Project No:</b>	693142	<b>Date Received:</b>	03/14/22
<b>Project Name:</b>	KMEP Norwalk Biosparge Startup	<b>Date Reported:</b>	04/12/22
<b>Method:</b>	VOCs by GCMS EPA TO-15 (Mid Level)	<b>Units:</b>	ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/26/22	
<b>AA ID No:</b>	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
<b>Client ID No:</b>	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b><u>Surrogates</u></b>					<b><u>%REC Limits</u></b>
4-Bromofluorobenzene	72%	75%	78%	78%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/26/22	03/26/22	03/28/22	03/28/22	
<b>AA ID No:</b>	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
<b>Client ID No:</b>	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.0094</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/26/22	03/26/22	03/28/22	03/28/22	
<b>AA ID No:</b>	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
<b>Client ID No:</b>	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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)	<b>0.14</b>	<0.010	<0.010	<b>0.025</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/26/22	03/26/22	03/28/22	03/28/22	
<b>AA ID No:</b>	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
<b>Client ID No:</b>	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	74%	76%	79%	79%	<b><u>%REC Limits</u></b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/29/22	03/29/22	03/28/22	
<b>Date Analyzed:</b>	03/28/22	03/29/22	03/29/22	03/28/22	
<b>AA ID No:</b>	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
<b>Client ID No:</b>	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1.6	1000	1000	1	MRL

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

Acetone	<0.32	<20	<20	<0.020	0.020
Allyl chloride	<0.32	<20	<20	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.32	<20	<20	<0.020	0.020
Benzene	<0.048	<3.0	<3.0	<0.0030	0.0030
Benzyl chloride	<0.32	<20	<20	<0.020	0.020
Bromodichloromethane	<0.040	<b>44</b>	<b>44</b>	<0.0025	0.0025
Bromoform	<0.32	<20	<20	<0.020	0.020
Bromomethane	<0.32	<20	<20	<0.020	0.020
1,3-Butadiene	<0.32	<20	<20	<0.020	0.020
2-Butanone (MEK)	<0.32	<20	<20	<0.020	0.020
tert-Butyl Alcohol (TBA)	<32	<2000	<2000	<2.0	2.0
Carbon Disulfide	<0.32	<20	<20	<0.020	0.020
Carbon Tetrachloride	<0.32	<20	<20	<0.020	0.020
Chlorobenzene	<0.32	<20	<20	<0.020	0.020
Chloroethane	<0.32	<20	<20	<0.020	0.020
Chloroform	<0.064	<4.0	<4.0	<0.0040	0.0040
Chloromethane	<0.32	<20	<20	<0.020	0.020
Cyclohexane	<b>0.16</b>	<b>260</b>	<b>250</b>	<b>0.069</b>	0.020
Dibromochloromethane	<0.32	<20	<20	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.32	<20	<20	<0.020	0.020
1,2-Dichlorobenzene	<0.32	<20	<20	<0.020	0.020
1,3-Dichlorobenzene	<0.32	<20	<20	<0.020	0.020
1,4-Dichlorobenzene	<0.32	<20	<20	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.32	<20	<20	<0.020	0.020
1,1-Dichloroethane	<0.32	<20	<20	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.064	<4.0	<4.0	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.32	<20	<20	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/29/22	03/29/22	03/28/22	
<b>Date Analyzed:</b>	03/28/22	03/29/22	03/29/22	03/28/22	
<b>AA ID No:</b>	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
<b>Client ID No:</b>	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1.6	1000	1000	1	MRL

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

1,1-Dichloroethylene	<0.32	<20	<20	<0.020	0.020
trans-1,2-Dichloroethylene	<0.32	<20	<20	<0.020	0.020
1,2-Dichloropropane	<0.32	<20	<20	<0.020	0.020
trans-1,3-Dichloropropylene	<0.32	<20	<20	<0.020	0.020
cis-1,3-Dichloropropylene	<0.32	<20	<20	<0.020	0.020
Dichlorotetrafluoroethane	<0.32	<20	<20	<0.020	0.020
Diisopropyl ether (DIPE)	<0.32	<20	<20	<0.020	0.020
1,4-Dioxane	<0.32	<20	<20	<0.020	0.020
Ethanol	<0.32	<20	<20	<0.020	0.020
Ethyl Acetate	<0.32	<b>33</b>	<b>33</b>	<0.020	0.020
Ethylbenzene	<0.32	<20	<20	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.32	<20	<20	<0.020	0.020
4-Ethyltoluene	<0.32	<20	<20	<0.020	0.020
Heptane	<0.32	<b>58</b>	<b>56</b>	<b>0.029</b>	0.020
Hexachlorobutadiene	<0.32	<20	<20	<0.020	0.020
n-Hexane	<0.32	<b>230</b>	<b>220</b>	<b>0.067</b>	0.020
2-Hexanone (MBK)	<0.32	<20	<20	<0.020	0.020
Isopropanol (IPA)	<3.2	<200	<200	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.32	<20	<20	<0.020	0.020
Methylene Chloride	<0.32	<20	<20	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.32	<20	<20	<0.020	0.020
Naphthalene	<0.048	<3.0	<3.0	<0.0030	0.0030
Propylene	<0.32	<20	<20	<0.020	0.020
Styrene	<0.32	<20	<20	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.32	<20	<20	<0.020	0.020
Tetrachloroethylene (PCE)	<0.16	<10	<10	<b>0.033</b>	0.010
Tetrahydrofuran (THF)	<0.32	<20	<20	<0.020	0.020

**Allen Aminian**  
 QA/QC Manager



### LABORATORY ANALYSIS RESULTS

<b>Client:</b>	CH2M Hill, Inc.	<b>AA Project No:</b>	MB187343
<b>Project No:</b>	693142	<b>Date Received:</b>	03/14/22
<b>Project Name:</b>	KMEP Norwalk Biosparge Startup	<b>Date Reported:</b>	04/12/22
<b>Method:</b>	VOCs by GCMS EPA TO-15 (Mid Level)	<b>Units:</b>	ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/29/22	03/29/22	03/28/22	
<b>Date Analyzed:</b>	03/28/22	03/29/22	03/29/22	03/28/22	
<b>AA ID No:</b>	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
<b>Client ID No:</b>	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1.6	1000	1000	1	MRL

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

Toluene	<0.32	<20	<20	<0.020	0.020
1,2,4-Trichlorobenzene	<0.32	<20	<20	<0.020	0.020
1,1,2-Trichloroethane	<0.32	<20	<20	<0.020	0.020
1,1,1-Trichloroethane	<0.32	<20	<20	<0.020	0.020
Trichloroethylene (TCE)	<0.32	<20	<20	<0.020	0.020
Trichlorofluoromethane (R11)	<0.32	<20	<20	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.32	<20	<20	<0.020	0.020
1,3,5-Trimethylbenzene	<0.32	<20	<20	<0.020	0.020
1,2,4-Trimethylbenzene	<0.32	<20	<20	<0.020	0.020
2,2,4-Trimethylpentane	<0.32	<b>1500</b>	<b>1400</b>	<0.020	0.020
Vinyl acetate	<0.32	<b>45</b>	<b>46</b>	<0.020	0.020
Vinyl bromide	<0.32	<20	<20	<0.020	0.020
Vinyl chloride	<0.32	<20	<20	<0.020	0.020
o-Xylene	<0.32	<20	<20	<0.020	0.020
m,p-Xylenes	<0.32	<20	<20	<0.020	0.020
1,2,3-Trichloropropane	<0.32	<20	<20	<0.020	0.020
sec-Butylbenzene	<0.32	<20	<20	<0.020	0.020
Isopropylbenzene	<0.32	<20	<20	<0.020	0.020
n-Propylbenzene	<0.32	<20	<20	<0.020	0.020
4-Isopropyltoluene	<0.32	<20	<20	<0.020	0.020
n-Butylbenzene	<0.32	<20	<20	<0.020	0.020

<b><u>Surrogates</u></b>					<b><u>%REC Limits</u></b>
4-Bromofluorobenzene	81%	84%	79%	90%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/28/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/29/22	03/29/22	
<b>AA ID No:</b>	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
<b>Client ID No:</b>	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.020</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/28/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/29/22	03/29/22	
<b>AA ID No:</b>	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
<b>Client ID No:</b>	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.020</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/28/22	03/28/22	03/28/22	
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/29/22	03/29/22	
<b>AA ID No:</b>	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
<b>Client ID No:</b>	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.23</b>	<0.020	<0.020	<b>0.024</b>	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

<b><u>Surrogates</u></b>					<b><u>%REC Limits</u></b>
4-Bromofluorobenzene	87%	87%	85%	88%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/28/22	03/31/22	03/31/22	
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/31/22	03/31/22	
<b>AA ID No:</b>	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
<b>Client ID No:</b>	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	1	MRL

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

Acetone	<0.020	<0.020	<b>0.029</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22
<b>Date Prepared:</b>	03/28/22	03/28/22	03/31/22	03/31/22
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/31/22	03/31/22
<b>AA ID No:</b>	2C14020-66	2C14020-67	2C14020-68	2C14020-69
<b>Client ID No:</b>	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor
<b>Dilution Factor:</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/28/22	03/28/22	03/31/22	03/31/22	
<b>Date Analyzed:</b>	03/29/22	03/29/22	03/31/22	03/31/22	
<b>AA ID No:</b>	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
<b>Client ID No:</b>	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	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	<b>0.021</b>	<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	86%	82%	87%	85%	<b>%REC Limits</b> 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/31/22	03/31/22	03/31/22	
<b>Date Analyzed:</b>	03/31/22	03/31/22	03/31/22	
<b>AA ID No:</b>	2C14020-70	2C14020-71	2C14020-72	
<b>Client ID No:</b>	SVM-5-15	SVM-8-5	SVM-8-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	MRL

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

Acetone	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/31/22	03/31/22	03/31/22	
<b>Date Analyzed:</b>	03/31/22	03/31/22	03/31/22	
<b>AA ID No:</b>	2C14020-70	2C14020-71	2C14020-72	
<b>Client ID No:</b>	SVM-5-15	SVM-8-5	SVM-8-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	MRL

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

1,1-Dichloroethylene	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<b>0.035</b>	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** ug/L

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/31/22	03/31/22	03/31/22	
<b>Date Analyzed:</b>	03/31/22	03/31/22	03/31/22	
<b>AA ID No:</b>	2C14020-70	2C14020-71	2C14020-72	
<b>Client ID No:</b>	SVM-5-15	SVM-8-5	SVM-8-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	1	MRL

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

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

<b><u>Surrogates</u></b>				<b><u>%REC Limits</u></b>
4-Bromofluorobenzene	82%	83%	84%	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
<b>Client ID No:</b>	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>21</b>	<b>20</b>	<b>20</b>	<b>21</b>	0.10
Carbon Dioxide	<b>1.2</b>	<b>1.4</b>	<b>1.5</b>	<b>1.6</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
<b>Client ID No:</b>	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>21</b>	<b>22</b>	<b>20</b>	<b>16</b>	0.10
Carbon Dioxide	<b>0.90</b>	<0.20	<b>1.2</b>	<b>4.7</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>Date Analyzed:</b>	03/18/22	03/18/22	03/18/22	03/18/22	
<b>AA ID No:</b>	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
<b>Client ID No:</b>	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

#### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>8.1</b>	<b>20</b>	<b>20</b>	<b>19</b>	0.10
Carbon Dioxide	<b>14</b>	<b>1.5</b>	<b>1.3</b>	<b>0.84</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/14/22	03/14/22	03/14/22	03/14/22	
<b>Date Prepared:</b>	03/18/22	03/21/22	03/21/22	03/21/22	
<b>Date Analyzed:</b>	03/18/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
<b>Client ID No:</b>	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>19</b>	<b>9.0</b>	<b>21</b>	<b>14</b>	0.10
Carbon Dioxide	<b>1.7</b>	<b>8.9</b>	<0.20	<b>3.7</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
<b>Date Sampled:</b>	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
<b>Date Prepared:</b>	03/21/22	03/21/22	03/21/22	03/21/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
<b>Client ID No:</b>	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>19</b>	<b>17</b>	<b>6.5</b>	<b>20</b>	0.10
Carbon Dioxide	<b>1.1</b>	<b>2.2</b>	<b>11</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/21/22	03/21/22	03/21/22	03/22/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/22/22	
<b>AA ID No:</b>	2C14020-22	2C14020-23	2C14020-24	2C14020-25	
<b>Client ID No:</b>	SVP-109-10	SVM-21-5	SVM-21-14.5	SVP-108-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>22</b>	<b>21</b>	<b>22</b>	<b>17</b>	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	<b>3.8</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/23/22	03/22/22	03/22/22	
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/22/22	03/22/22	
<b>AA ID No:</b>	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
<b>Client ID No:</b>	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	DUP Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

**Fixed Gases (ASTM D1946M)**

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>11</b>	<b>20</b>	<b>20</b>	<b>21</b>	0.10
Carbon Dioxide	<b>9.2</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/22/22	03/22/22	03/22/22	03/22/22	
<b>Date Analyzed:</b>	03/22/22	03/22/22	03/22/22	03/22/22	
<b>AA ID No:</b>	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
<b>Client ID No:</b>	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>21</b>	<b>22</b>	<b>21</b>	<b>20</b>	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	<b>3.0</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/22/22	03/22/22	03/22/22	03/22/22	
<b>Date Analyzed:</b>	03/22/22	03/22/22	03/22/22	03/22/22	
<b>AA ID No:</b>	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
<b>Client ID No:</b>	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>21</b>	<b>21</b>	<b>21</b>	<b>25</b>	0.10
Carbon Dioxide	<b>0.92</b>	<b>0.93</b>	<b>0.51</b>	<b>0.46</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>AA ID No:</b>	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
<b>Client ID No:</b>	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

#### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>20</b>	<b>21</b>	<b>21</b>	<b>19</b>	0.10
Carbon Dioxide	<b>0.54</b>	<0.20	<0.20	<b>3.9</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/15/22	03/15/22	03/15/22	03/15/22	
<b>Date Prepared:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>AA ID No:</b>	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
<b>Client ID No:</b>	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>20</b>	<b>21</b>	<b>20</b>	<b>17</b>	0.10
Carbon Dioxide	<b>0.44</b>	<0.20	<0.20	<b>2.2</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

	03/15/22	03/15/22	03/16/22	03/16/22	
<b>Date Sampled:</b>	03/15/22	03/15/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>Date Analyzed:</b>	03/23/22	03/23/22	03/23/22	03/23/22	
<b>AA ID No:</b>	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
<b>Client ID No:</b>	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>20</b>	<b>17</b>	<b>20</b>	<b>19</b>	0.10
Carbon Dioxide	<b>0.62</b>	<b>2.5</b>	<b>2.0</b>	<b>2.7</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/23/22	03/24/22	03/24/22	03/24/22	
<b>Date Analyzed:</b>	03/23/22	03/24/22	03/24/22	03/24/22	
<b>AA ID No:</b>	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
<b>Client ID No:</b>	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>21</b>	<b>20</b>	<b>20</b>	<b>20</b>	0.10
Carbon Dioxide	<b>1.0</b>	<b>0.83</b>	<b>0.86</b>	<b>1.8</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/24/22	03/24/22	03/24/22	03/24/22	
<b>Date Analyzed:</b>	03/24/22	03/24/22	03/24/22	03/24/22	
<b>AA ID No:</b>	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
<b>Client ID No:</b>	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>20</b>	<b>20</b>	<b>20</b>	<b>16</b>	0.10
Carbon Dioxide	<b>1.8</b>	<b>1.7</b>	<b>2.2</b>	<b>4.3</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/24/22	03/24/22	03/24/22	03/24/22	
<b>Date Analyzed:</b>	03/24/22	03/24/22	03/24/22	03/24/22	
<b>AA ID No:</b>	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
<b>Client ID No:</b>	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>13</b>	<b>4.1</b>	<b>1.5</b>	<b>20</b>	0.10
Carbon Dioxide	<0.20	<b>9.9</b>	<b>11</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/24/22	03/24/22	03/24/22	03/24/22	
<b>Date Analyzed:</b>	03/24/22	03/24/22	03/24/22	03/24/22	
<b>AA ID No:</b>	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
<b>Client ID No:</b>	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	<b>19</b>	<b>19</b>	<b>16</b>	<b>21</b>	0.10
Carbon Dioxide	<b>1.3</b>	<b>1.5</b>	<b>2.8</b>	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
<b>Client ID No:</b>	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
<b>Matrix:</b>	Vapor	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	1	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.10	<0.20	0.10
Oxygen	<b>22</b>	<b>20</b>	<b>21</b>	<b>20</b>	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22  
**Units:** % by Volume

<b>Date Sampled:</b>	03/16/22	03/16/22	03/16/22	
<b>Date Prepared:</b>	03/25/22	03/25/22	03/25/22	
<b>Date Analyzed:</b>	03/25/22	03/25/22	03/25/22	
<b>AA ID No:</b>	2C14020-70	2C14020-71	2C14020-72	
<b>Client ID No:</b>	SVM-5-15	SVM-8-5	SVM-8-15	
<b>Matrix:</b>	Vapor	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	2	MRL

### Fixed Gases (ASTM D1946M)

Methane	<0.20	<0.20	<0.20	0.10
Oxygen	<b>21</b>	<b>20</b>	<b>21</b>	0.10
Carbon Dioxide	<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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC Limits	RPD	RPD Limit	Notes
<b>VOCs by EPA TO-3 - Quality Control</b>									
Batch B2C1717 - *** DEFAULT PREP ***									
<b>Blank (B2C1717-BLK1)</b>				Prepared & Analyzed: 03/16/22					
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L						
Surrogate: 4-Bromofluorobenzene	0.0281		ug/L	0.0358	78.4	70-130			
<b>LCS (B2C1717-BS1)</b>				Prepared: 03/16/22 Analyzed: 03/17/22					
Gasoline Range Organics (GRO)	<b>0.977</b>	0.50	ug/L	0.802	122	70-130			
Surrogate: 4-Bromofluorobenzene	0.0276		ug/L	0.0358	77.2	70-130			
<b>LCS Dup (B2C1717-BSD1)</b>				Prepared: 03/16/22 Analyzed: 03/17/22					
Gasoline Range Organics (GRO)	<b>1.02</b>	0.50	ug/L	0.802	128	70-130	4.56	30	
Surrogate: 4-Bromofluorobenzene	0.0281		ug/L	0.0358	78.6	70-130			
<b>Duplicate (B2C1717-DUP1)</b>				Source: 2C14016-01 Prepared & Analyzed: 03/16/22					
Gasoline Range Organics (GRO)	<b>17.0</b>	0.50	ug/L		2700000		200	30	
Surrogate: 4-Bromofluorobenzene	0.0290		ug/L	0.0358	81.0	70-130			
Batch B2C2132 - *** DEFAULT PREP ***									
<b>Blank (B2C2132-BLK1)</b>				Prepared & Analyzed: 03/17/22					
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L						
Surrogate: 4-Bromofluorobenzene	0.0277		ug/L	0.0358	77.4	70-130			
<b>LCS (B2C2132-BS1)</b>				Prepared: 03/17/22 Analyzed: 03/18/22					
Gasoline Range Organics (GRO)	<b>1.04</b>	0.50	ug/L	0.802	130	70-130			
Surrogate: 4-Bromofluorobenzene	0.0296		ug/L	0.0358	82.6	70-130			
<b>LCS Dup (B2C2132-BSD1)</b>				Prepared: 03/17/22 Analyzed: 03/18/22					
Gasoline Range Organics (GRO)	<b>1.03</b>	0.50	ug/L	0.802	129	70-130	1.10	30	
Surrogate: 4-Bromofluorobenzene	0.0286		ug/L	0.0358	79.8	70-130			
Batch B2C2133 - *** DEFAULT PREP ***									
<b>Blank (B2C2133-BLK1)</b>				Prepared: 03/18/22 Analyzed: 04/05/22					
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L						
Surrogate: 4-Bromofluorobenzene	0.0281		ug/L	0.0358	78.4	70-130			
<b>LCS (B2C2133-BS1)</b>				Prepared: 03/18/22 Analyzed: 04/06/22					
Gasoline Range Organics (GRO)	<b>0.755</b>	0.50	ug/L	0.802	94.1	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by EPA TO-3 - Quality Control</b>										
<i>Batch B2C2133 - *** DEFAULT PREP ***</i>										
<b>LCS (B2C2133-BS1) Continued</b>				Prepared: 03/18/22 Analyzed: 04/06/22						
<i>Surrogate: 4-Bromofluorobenzene 0.0311 ug/L 0.0358 87.0 70-130</i>										
<b>LCS Dup (B2C2133-BSD1)</b>				Prepared: 03/21/22 Analyzed: 04/05/22						
<i>Gasoline Range Organics (GRO) 0.917 0.50 ug/L 0.802 114 70-130 19.4 30</i>										
<i>Surrogate: 4-Bromofluorobenzene 0.0295 ug/L 0.0358 82.4 70-130</i>										
<i>Batch B2C2406 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2406-BLK1)</b>				Prepared & Analyzed: 03/23/22						
<i>Gasoline Range Organics (GRO) &lt;0.50 0.50 ug/L</i>										
<i>Surrogate: 4-Bromofluorobenzene 0.0353 ug/L 0.0358 98.6 70-130</i>										
<b>LCS (B2C2406-BS1)</b>				Prepared: 03/23/22 Analyzed: 03/24/22						
<i>Gasoline Range Organics (GRO) 0.712 0.50 ug/L 0.802 88.8 70-130</i>										
<i>Surrogate: 4-Bromofluorobenzene 0.0371 ug/L 0.0358 104 70-130</i>										
<b>LCS Dup (B2C2406-BSD1)</b>				Prepared: 03/23/22 Analyzed: 03/24/22						
<i>Gasoline Range Organics (GRO) 0.688 0.50 ug/L 0.802 85.8 70-130 3.39 30</i>										
<i>Surrogate: 4-Bromofluorobenzene 0.0372 ug/L 0.0358 104 70-130</i>										
<i>Batch B2C2920 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2920-BLK1)</b>				Prepared & Analyzed: 03/25/22						
<i>Gasoline Range Organics (GRO) &lt;0.50 0.50 ug/L</i>										
<i>Surrogate: 4-Bromofluorobenzene 0.0295 ug/L 0.0358 82.4 70-130</i>										
<b>LCS (B2C2920-BS1)</b>				Prepared: 03/25/22 Analyzed: 03/26/22						
<i>Gasoline Range Organics (GRO) 0.910 0.50 ug/L 0.802 114 70-130</i>										
<i>Surrogate: 4-Bromofluorobenzene 0.0288 ug/L 0.0358 80.4 70-130</i>										
<b>LCS Dup (B2C2920-BSD1)</b>				Prepared: 03/25/22 Analyzed: 03/26/22						
<i>Gasoline Range Organics (GRO) 0.817 0.50 ug/L 0.802 102 70-130 10.9 30</i>										
<i>Surrogate: 4-Bromofluorobenzene 0.0288 ug/L 0.0358 80.4 70-130</i>										
<i>Batch B2C2921 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2921-BLK1)</b>				Prepared & Analyzed: 03/28/22						
<i>Gasoline Range Organics (GRO) &lt;0.50 0.50 ug/L</i>										

**Allen Aminian**  
 QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187343  
Date Received: 03/14/22  
Date Reported: 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by EPA TO-3 - Quality Control</b>										
<i>Batch B2C2921 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2921-BLK1) Continued</b>				Prepared & Analyzed: 03/28/22						
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0273		ug/L	0.0358		76.4	70-130			
<b>LCS (B2C2921-BS1)</b>				Prepared & Analyzed: 03/28/22						
Gasoline Range Organics (GRO)	<b>0.701</b>	0.50	ug/L	0.802		87.4	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0297		ug/L	0.0358		83.0	70-130			
<b>LCS Dup (B2C2921-BSD1)</b>				Prepared: 03/28/22 Analyzed: 03/29/22						
Gasoline Range Organics (GRO)	<b>0.840</b>	0.50	ug/L	0.802		105	70-130	18.1	30	
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0309		ug/L	0.0358		86.4	70-130			
<i>Batch B2D0108 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D0108-BLK1)</b>				Prepared & Analyzed: 03/31/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0330		ug/L	0.0358		92.2	70-130			
<b>LCS (B2D0108-BS1)</b>				Prepared: 03/31/22 Analyzed: 04/01/22						
Gasoline Range Organics (GRO)	<b>0.726</b>	0.50	ug/L	0.802		90.6	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0298		ug/L	0.0358		83.4	70-130			
<b>LCS Dup (B2D0108-BSD1)</b>				Prepared: 03/31/22 Analyzed: 04/01/22						
Gasoline Range Organics (GRO)	<b>0.742</b>	0.50	ug/L	0.802		92.6	70-130	2.19	30	
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0298		ug/L	0.0358		83.4	70-130			
<i>Batch B2D0626 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D0626-BLK1)</b>				Prepared & Analyzed: 03/18/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0334		ug/L	0.0358		93.2	70-130			
<b>LCS (B2D0626-BS1)</b>				Prepared & Analyzed: 03/18/22						
Gasoline Range Organics (GRO)	<b>1.06</b>	0.50	ug/L	0.802		132	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0283		ug/L	0.0358		79.0	70-130			

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

*Batch B2C1716 - \*\*\* DEFAULT PREP \*\*\**

**Blank (B2C1716-BLK1)**

Prepared & Analyzed: 03/16/22

**Allen Aminian**  
QA/QC Manager



**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1716 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C1716-BLK1) Continued</b>										
Prepared & Analyzed: 03/16/22										
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: MB187343  
Date Received: 03/14/22  
Date Reported: 04/12/22

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 B2C1716 - \*\*\* DEFAULT PREP \*\*\*

#### Blank (B2C1716-BLK1) Continued

Prepared & Analyzed: 03/16/22

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							
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							
2,2,4-Trimethylpentane	<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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1716 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C1716-BLK1) Continued</b>										
Prepared & Analyzed: 03/16/22										
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>0.112</i>		<i>ug/L</i>	<i>0.143</i>		<i>77.9</i>	<i>70-130</i>			
<b>LCS (B2C1716-BS1)</b>										
Prepared & Analyzed: 03/16/22										
Acetone	<b>0.123</b>	0.020	ug/L	0.0950		129	70-130			
Benzene	<b>0.115</b>	0.0030	ug/L	0.128		90.0	70-130			
Benzyl chloride	<b>0.195</b>	0.020	ug/L	0.178		110	70-130			
Bromodichloromethane	<b>0.330</b>	0.0025	ug/L	0.268		123	70-130			
Bromoform	<b>0.524</b>	0.020	ug/L	0.413		127	70-130			
Bromomethane	<b>0.183</b>	0.020	ug/L	0.155		118	70-130			
2-Butanone (MEK)	<b>0.135</b>	0.020	ug/L	0.118		114	70-130			
Carbon Disulfide	<b>0.129</b>	0.020	ug/L	0.125		103	70-130			
Carbon Tetrachloride	<b>0.323</b>	0.020	ug/L	0.252		128	70-130			
Chlorobenzene	<b>0.227</b>	0.020	ug/L	0.184		123	70-130			
Chloroethane	<b>0.124</b>	0.020	ug/L	0.106		118	70-130			
Chloroform	<b>0.200</b>	0.0040	ug/L	0.195		102	70-130			
Chloromethane	<b>0.0966</b>	0.020	ug/L	0.0826		117	70-130			
Dibromochloromethane	<b>0.363</b>	0.020	ug/L	0.341		106	70-130			
1,2-Dibromoethane (EDB)	<b>0.309</b>	0.020	ug/L	0.307		101	70-130			
1,2-Dichlorobenzene	<b>0.277</b>	0.020	ug/L	0.240		115	70-130			
1,3-Dichlorobenzene	<b>0.294</b>	0.020	ug/L	0.240		122	70-130			
1,4-Dichlorobenzene	<b>0.279</b>	0.020	ug/L	0.240		116	70-130			

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1716 - *** DEFAULT PREP ***</i>										
<b>LCS (B2C1716-BS1) Continued</b>						Prepared & Analyzed: 03/16/22				
Dichlorodifluoromethane (R12)	<b>0.237</b>	0.020	ug/L	0.198		120	70-130			
1,1-Dichloroethane	<b>0.176</b>	0.020	ug/L	0.162		109	70-130			
1,2-Dichloroethane (EDC)	<b>0.164</b>	0.0040	ug/L	0.162		101	70-130			
cis-1,2-Dichloroethylene	<b>0.164</b>	0.020	ug/L	0.159		104	70-130			
1,1-Dichloroethylene	<b>0.196</b>	0.020	ug/L	0.159		123	70-130			
trans-1,2-Dichloroethylene	<b>0.167</b>	0.020	ug/L	0.159		105	70-130			
1,2-Dichloropropane	<b>0.214</b>	0.020	ug/L	0.185		116	70-130			
trans-1,3-Dichloropropylene	<b>0.194</b>	0.020	ug/L	0.182		107	70-130			
cis-1,3-Dichloropropylene	<b>0.197</b>	0.020	ug/L	0.182		108	70-130			
Dichlorotetrafluoroethane	<b>0.356</b>	0.020	ug/L	0.280		127	70-130			
Ethylbenzene	<b>0.198</b>	0.020	ug/L	0.174		114	70-130			
4-Ethyltoluene	<b>0.197</b>	0.020	ug/L	0.197		100	70-130			
Hexachlorobutadiene	<b>0.521</b>	0.020	ug/L	0.427		122	70-130			
2-Hexanone (MBK)	<b>0.189</b>	0.020	ug/L	0.164		115	70-130			
Isopropanol (IPA)	<b>0.119</b>	0.20	ug/L	0.0865		138	70-130			QL-02
Methylene Chloride	<b>0.178</b>	0.020	ug/L	0.139		128	70-130			
4-Methyl-2-pentanone (MIBK)	<b>0.204</b>	0.020	ug/L	0.164		125	70-130			
Styrene	<b>0.193</b>	0.020	ug/L	0.170		113	70-130			
1,1,2,2-Tetrachloroethane	<b>0.360</b>	0.020	ug/L	0.275		131	70-130			QL-02
Tetrachloroethylene (PCE)	<b>0.281</b>	0.010	ug/L	0.271		104	70-130			
Toluene	<b>0.150</b>	0.020	ug/L	0.151		99.5	70-130			
1,2,4-Trichlorobenzene	<b>0.361</b>	0.020	ug/L	0.297		122	70-130			
1,1,2-Trichloroethane	<b>0.221</b>	0.020	ug/L	0.218		101	70-130			
1,1,1-Trichloroethane	<b>0.214</b>	0.020	ug/L	0.218		98.2	70-130			
Trichloroethylene (TCE)	<b>0.247</b>	0.020	ug/L	0.215		115	70-130			
Trichlorofluoromethane (R11)	<b>0.314</b>	0.020	ug/L	0.225		140	70-130			QL-02
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<b>0.378</b>	0.020	ug/L	0.307		123	70-130			
1,3,5-Trimethylbenzene	<b>0.218</b>	0.020	ug/L	0.197		111	70-130			
1,2,4-Trimethylbenzene	<b>0.204</b>	0.020	ug/L	0.197		104	70-130			
Vinyl acetate	<b>0.160</b>	0.020	ug/L	0.118		136	70-130			QL-02
Vinyl chloride	<b>0.129</b>	0.020	ug/L	0.102		126	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C1716 - *** DEFAULT PREP ***										
<b>LCS (B2C1716-BS1) Continued</b>					Prepared & Analyzed: 03/16/22					
o-Xylene	0.208	0.020	ug/L	0.174		120	70-130			
m,p-Xylenes	0.433	0.020	ug/L	0.347		125	70-130			
1,2,3-Trichloropropane	0.172	0.020	ug/L	0.241		71.4	70-130			
sec-Butylbenzene	0.147	0.020	ug/L	0.220		67.0	70-130			QL-07
Isopropylbenzene	0.148	0.020	ug/L	0.197		75.4	70-130			
n-Propylbenzene	0.141	0.020	ug/L	0.197		71.6	70-130			
4-Isopropyltoluene	0.145	0.020	ug/L	0.220		66.1	70-130			QL-07
Surrogate: 4-Bromofluorobenzene	0.120		ug/L	0.143		83.7	70-130			
<b>LCS Dup (B2C1716-BS1)</b>					Prepared: 03/16/22 Analyzed: 03/17/22					
Acetone	0.107	0.020	ug/L	0.0950		113	70-130	13.3	30	
Benzene	0.0980	0.0030	ug/L	0.128		76.7	70-130	15.9	30	
Benzyl chloride	0.156	0.020	ug/L	0.178		87.8	70-130	22.1	30	
Bromodichloromethane	0.285	0.0025	ug/L	0.268		106	70-130	14.5	30	
Bromoform	0.441	0.020	ug/L	0.413		107	70-130	17.2	30	
Bromomethane	0.156	0.020	ug/L	0.155		101	70-130	15.8	30	
2-Butanone (MEK)	0.114	0.020	ug/L	0.118		96.7	70-130	16.5	30	
Carbon Disulfide	0.109	0.020	ug/L	0.125		87.9	70-130	16.3	30	
Carbon Tetrachloride	0.287	0.020	ug/L	0.252		114	70-130	11.8	30	
Chlorobenzene	0.195	0.020	ug/L	0.184		106	70-130	15.2	30	
Chloroethane	0.104	0.020	ug/L	0.106		98.9	70-130	17.4	30	
Chloroform	0.171	0.0040	ug/L	0.195		87.4	70-130	15.6	30	
Chloromethane	0.0852	0.020	ug/L	0.0826		103	70-130	12.4	30	
Dibromochloromethane	0.315	0.020	ug/L	0.341		92.4	70-130	14.1	30	
1,2-Dibromoethane (EDB)	0.266	0.020	ug/L	0.307		86.6	70-130	15.0	30	
1,2-Dichlorobenzene	0.225	0.020	ug/L	0.240		93.7	70-130	20.6	30	
1,3-Dichlorobenzene	0.238	0.020	ug/L	0.240		98.9	70-130	21.2	30	
1,4-Dichlorobenzene	0.220	0.020	ug/L	0.240		91.6	70-130	23.7	30	
Dichlorodifluoromethane (R12)	0.177	0.020	ug/L	0.198		89.5	70-130	28.8	30	
1,1-Dichloroethane	0.144	0.020	ug/L	0.162		89.0	70-130	19.7	30	
1,2-Dichloroethane (EDC)	0.143	0.0040	ug/L	0.162		88.4	70-130	13.6	30	
cis-1,2-Dichloroethylene	0.141	0.020	ug/L	0.159		89.1	70-130	15.0	30	

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C1716 - *** DEFAULT PREP ***										
<b>LCS Dup (B2C1716-BSD1) Continued</b>										
					Prepared: 03/16/22 Analyzed: 03/17/22					
1,1-Dichloroethylene	0.169	0.020	ug/L	0.159		107	70-130	14.3	30	
trans-1,2-Dichloroethylene	0.144	0.020	ug/L	0.159		91.0	70-130	14.6	30	
1,2-Dichloropropane	0.186	0.020	ug/L	0.185		101	70-130	14.0	30	
trans-1,3-Dichloropropylene	0.174	0.020	ug/L	0.182		96.0	70-130	10.7	30	
cis-1,3-Dichloropropylene	0.176	0.020	ug/L	0.182		96.9	70-130	11.1	30	
Dichlorotetrafluoroethane	0.278	0.020	ug/L	0.280		99.4	70-130	24.7	30	
Ethylbenzene	0.170	0.020	ug/L	0.174		98.2	70-130	15.2	30	
4-Ethyltoluene	0.163	0.020	ug/L	0.197		83.0	70-130	18.6	30	
Hexachlorobutadiene	0.392	0.020	ug/L	0.427		91.9	70-130	28.2	30	
2-Hexanone (MBK)	0.164	0.020	ug/L	0.164		100	70-130	14.1	30	
Isopropanol (IPA)	0.101	0.20	ug/L	0.0865		116	70-130	17.2	30	
Methylene Chloride	0.154	0.020	ug/L	0.139		111	70-130	14.1	30	
4-Methyl-2-pentanone (MIBK)	0.175	0.020	ug/L	0.164		107	70-130	15.7	30	
Styrene	0.161	0.020	ug/L	0.170		94.3	70-130	18.5	30	
1,1,2,2-Tetrachloroethane	0.302	0.020	ug/L	0.275		110	70-130	17.6	30	
Tetrachloroethylene (PCE)	0.245	0.010	ug/L	0.271		90.3	70-130	13.7	30	
Toluene	0.132	0.020	ug/L	0.151		87.4	70-130	13.0	30	
1,2,4-Trichlorobenzene	0.273	0.020	ug/L	0.297		92.1	70-130	27.6	30	
1,1,2-Trichloroethane	0.193	0.020	ug/L	0.218		88.4	70-130	13.7	30	
1,1,1-Trichloroethane	0.186	0.020	ug/L	0.218		85.1	70-130	14.2	30	
Trichloroethylene (TCE)	0.215	0.020	ug/L	0.215		100	70-130	13.8	30	
Trichlorofluoromethane (R11)	0.262	0.020	ug/L	0.225		117	70-130	18.0	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.324	0.020	ug/L	0.307		106	70-130	15.1	30	
1,3,5-Trimethylbenzene	0.179	0.020	ug/L	0.197		91.1	70-130	19.5	30	
1,2,4-Trimethylbenzene	0.167	0.020	ug/L	0.197		85.2	70-130	19.7	30	
Vinyl acetate	0.138	0.020	ug/L	0.118		117	70-130	14.9	30	
Vinyl chloride	0.108	0.020	ug/L	0.102		105	70-130	18.1	30	
o-Xylene	0.172	0.020	ug/L	0.174		99.2	70-130	18.6	30	
m,p-Xylenes	0.355	0.020	ug/L	0.347		102	70-130	19.6	30	
1,2,3-Trichloropropane	0.151	0.020	ug/L	0.241		62.7	70-130	13.1	30	QL-03
sec-Butylbenzene	0.120	0.020	ug/L	0.220		54.6	70-130	20.3	30	QL-07

**Allen Aminian**  
QA/QC Manager



**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C1716 - \*\*\* DEFAULT PREP \*\*\*

**LCS Dup (B2C1716-BSD1) Continued**

Prepared: 03/16/22 Analyzed: 03/17/22

Isopropylbenzene	0.128	0.020	ug/L	0.197	65.0	70-130	14.9	30	QL-03
n-Propylbenzene	0.118	0.020	ug/L	0.197	60.1	70-130	17.4	30	QL-03
4-Isopropyltoluene	0.123	0.020	ug/L	0.220	55.9	70-130	16.8	30	QL-07

Surrogate: 4-Bromofluorobenzene 0.122 ug/L 0.143 85.1 70-130

**Duplicate (B2C1716-DUP1)**

Source: 2C14016-01 Prepared & Analyzed: 03/16/22

Acetone	<0.040	0.040	ug/L	0.0289			2.59	30	
Allyl chloride	<0.040	0.040	ug/L					30	
tert-Amyl-Methyl Ether (TAME)	<0.040	0.040	ug/L					30	
Benzene	<0.0060	0.0060	ug/L					30	
Benzyl chloride	<0.040	0.040	ug/L					30	
Bromodichloromethane	<0.0050	0.0050	ug/L					30	
Bromoform	<0.040	0.040	ug/L					30	
Bromomethane	<0.040	0.040	ug/L					30	
1,3-Butadiene	<0.040	0.040	ug/L					30	
2-Butanone (MEK)	<0.040	0.040	ug/L					30	
tert-Butyl Alcohol (TBA)	<4.0	4.0	ug/L					30	
Carbon Disulfide	<0.040	0.040	ug/L					30	
Carbon Tetrachloride	<0.040	0.040	ug/L					30	
Chlorobenzene	<0.040	0.040	ug/L					30	
Chloroethane	<0.040	0.040	ug/L					30	
Chloroform	<0.0080	0.0080	ug/L					30	
Chloromethane	<0.040	0.040	ug/L					30	
Cyclohexane	<0.040	0.040	ug/L					30	
Dibromochloromethane	<0.040	0.040	ug/L					30	
1,2-Dibromoethane (EDB)	<0.040	0.040	ug/L					30	
1,2-Dichlorobenzene	<0.040	0.040	ug/L					30	
1,3-Dichlorobenzene	<0.040	0.040	ug/L					30	
1,4-Dichlorobenzene	<0.040	0.040	ug/L					30	
Dichlorodifluoromethane (R12)	<0.040	0.040	ug/L					30	
1,1-Dichloroethane	0.0446	0.040	ug/L		0.0449		0.723	30	
1,2-Dichloroethane (EDC)	<0.0080	0.0080	ug/L					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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1716 - *** DEFAULT PREP ***</i>										
<b>Duplicate (B2C1716-DUP1) Continued Source: 2C14016-01 Prepared: 03/16/22 Analyzed: 03/17/22</b>										
cis-1,2-Dichloroethylene	0.488	0.40	ug/L		0.494			1.29	30	
1,1-Dichloroethylene	<0.040	0.040	ug/L						30	
trans-1,2-Dichloroethylene	<0.040	0.040	ug/L						30	
1,2-Dichloropropane	<0.040	0.040	ug/L						30	
trans-1,3-Dichloropropylene	<0.040	0.040	ug/L						30	
cis-1,3-Dichloropropylene	<0.040	0.040	ug/L						30	
Dichlorotetrafluoroethane	<0.040	0.040	ug/L						30	
Diisopropyl ether (DIPE)	<0.040	0.040	ug/L						30	
1,4-Dioxane	<0.040	0.040	ug/L						30	
Ethyl Acetate	<0.040	0.040	ug/L						30	
Ethylbenzene	<0.040	0.040	ug/L						30	
Ethyl-tert-Butyl Ether (ETBE)	<0.040	0.040	ug/L						30	
4-Ethyltoluene	<0.040	0.040	ug/L						30	
Heptane	<0.040	0.040	ug/L						30	
Hexachlorobutadiene	<0.040	0.040	ug/L						30	
n-Hexane	<0.040	0.040	ug/L						30	
2-Hexanone (MBK)	<0.040	0.040	ug/L						30	
Isopropanol (IPA)	<0.40	0.40	ug/L						30	
Methyl-tert-Butyl Ether (MTBE)	<0.040	0.040	ug/L						30	
Methylene Chloride	<0.040	0.040	ug/L						30	
4-Methyl-2-pentanone (MIBK)	<0.040	0.040	ug/L						30	
Naphthalene	<0.0060	0.0060	ug/L						30	
Propylene	<0.040	0.040	ug/L						30	
Styrene	<0.040	0.040	ug/L						30	
1,1,2,2-Tetrachloroethane	<0.040	0.040	ug/L						30	
Tetrachloroethylene (PCE)	2.38	0.20	ug/L		2.40			1.02	30	
Tetrahydrofuran (THF)	<0.040	0.040	ug/L						30	
Toluene	<0.040	0.040	ug/L		0.0425			10.4	30	
1,2,4-Trichlorobenzene	<0.040	0.040	ug/L						30	
1,1,2-Trichloroethane	<0.040	0.040	ug/L						30	
1,1,1-Trichloroethane	0.144	0.040	ug/L		0.154			7.18	30	
Trichloroethylene (TCE)	1.35	0.40	ug/L		1.42			4.58	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1716 - *** DEFAULT PREP ***</i>										
<b>Duplicate (B2C1716-DUP1) Continued Source: 2C14016-01 Prepared &amp; Analyzed: 03/16/22</b>										
Trichlorofluoromethane (R11)	<0.040	0.040	ug/L						30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.040	0.040	ug/L						30	
1,3,5-Trimethylbenzene	<0.040	0.040	ug/L						30	
1,2,4-Trimethylbenzene	<0.040	0.040	ug/L						30	
2,2,4-Trimethylpentane	<0.040	0.040	ug/L						30	
Vinyl acetate	<0.040	0.040	ug/L						30	
Vinyl bromide	<0.040	0.040	ug/L						30	
Vinyl chloride	<0.040	0.040	ug/L		0.0314			1.64	30	
o-Xylene	<0.040	0.040	ug/L						30	
m,p-Xylenes	<0.040	0.040	ug/L						30	
1,2,3-Trichloropropane	<0.040	0.040	ug/L						30	
sec-Butylbenzene	<0.040	0.040	ug/L						30	
Isopropylbenzene	<0.040	0.040	ug/L						30	
n-Propylbenzene	<0.040	0.040	ug/L						30	
4-Isopropyltoluene	<0.040	0.040	ug/L						30	
n-Butylbenzene	<0.040	0.040	ug/L						30	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.116</i>		<i>ug/L</i>	<i>0.143</i>		<i>81.2</i>	<i>70-130</i>			
<i>Batch B2C1807 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C1807-BLK1) Prepared &amp; Analyzed: 03/17/22</b>										
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1807 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C1807-BLK1) Continued</b>										
Prepared & Analyzed: 03/17/22										
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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1807 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C1807-BLK1) Continued</b>										
Prepared & Analyzed: 03/17/22										
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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1807 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C1807-BLK1) Continued</b>										
Prepared & Analyzed: 03/17/22										
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	0.0270		ug/L	0.0358		75.4	70-130			
<b>LCS (B2C1807-BS1)</b>										
Prepared: 03/17/22 Analyzed: 03/18/22										
Acetone	<b>0.0277</b>	0.020	ug/L	0.0238		116	70-130			
Benzene	<b>0.0254</b>	0.0030	ug/L	0.0319		79.5	70-130			
Benzyl chloride	<b>0.0399</b>	0.020	ug/L	0.0445		89.7	70-130			
Bromodichloromethane	<b>0.0735</b>	0.0025	ug/L	0.0670		110	70-130			
Bromoform	<b>0.117</b>	0.020	ug/L	0.103		114	70-130			
Bromomethane	<b>0.0424</b>	0.020	ug/L	0.0388		109	70-130			
2-Butanone (MEK)	<b>0.0304</b>	0.020	ug/L	0.0295		103	70-130			
Carbon Disulfide	<b>0.0301</b>	0.020	ug/L	0.0311		96.6	70-130			
Carbon Tetrachloride	<b>0.0718</b>	0.020	ug/L	0.0629		114	70-130			
Chlorobenzene	<b>0.0497</b>	0.020	ug/L	0.0460		108	70-130			
Chloroethane	<b>0.0283</b>	0.020	ug/L	0.0264		107	70-130			
Chloroform	<b>0.0451</b>	0.0040	ug/L	0.0488		92.3	70-130			
Chloromethane	<b>0.0224</b>	0.020	ug/L	0.0207		108	70-130			
Dibromochloromethane	<b>0.0807</b>	0.020	ug/L	0.0852		94.7	70-130			
1,2-Dibromoethane (EDB)	<b>0.0686</b>	0.020	ug/L	0.0768		89.3	70-130			
1,2-Dichlorobenzene	<b>0.0566</b>	0.020	ug/L	0.0601		94.1	70-130			
1,3-Dichlorobenzene	<b>0.0610</b>	0.020	ug/L	0.0601		102	70-130			
1,4-Dichlorobenzene	<b>0.0559</b>	0.020	ug/L	0.0601		93.0	70-130			
Dichlorodifluoromethane (R12)	<b>0.0436</b>	0.020	ug/L	0.0495		88.2	70-130			
1,1-Dichloroethane	<b>0.0393</b>	0.020	ug/L	0.0405		97.0	70-130			
1,2-Dichloroethane (EDC)	<b>0.0363</b>	0.0040	ug/L	0.0405		89.7	70-130			
cis-1,2-Dichloroethylene	<b>0.0364</b>	0.020	ug/L	0.0396		91.8	70-130			
1,1-Dichloroethylene	<b>0.0456</b>	0.020	ug/L	0.0396		115	70-130			
trans-1,2-Dichloroethylene	<b>0.0378</b>	0.020	ug/L	0.0396		95.3	70-130			
1,2-Dichloropropane	<b>0.0492</b>	0.020	ug/L	0.0462		106	70-130			
trans-1,3-Dichloropropylene	<b>0.0442</b>	0.020	ug/L	0.0454		97.3	70-130			
cis-1,3-Dichloropropylene	<b>0.0448</b>	0.020	ug/L	0.0454		98.6	70-130			
Dichlorotetrafluoroethane	<b>0.0718</b>	0.020	ug/L	0.0699		103	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C1807 - *** DEFAULT PREP ***										
<b>LCS (B2C1807-BS1) Continued</b>										
Prepared: 03/17/22 Analyzed: 03/18/22										
Ethylbenzene	0.0433	0.020	ug/L	0.0434		99.8	70-130			
4-Ethyltoluene	0.0440	0.020	ug/L	0.0492		89.6	70-130			
Hexachlorobutadiene	0.0994	0.020	ug/L	0.107		93.2	70-130			
2-Hexanone (MBK)	0.0419	0.020	ug/L	0.0410		102	70-130			
Isopropanol (IPA)	0.0285	0.20	ug/L	0.0216		132	70-130			QL-02
Methylene Chloride	0.0401	0.020	ug/L	0.0347		115	70-130			
4-Methyl-2-pentanone (MIBK)	0.0456	0.020	ug/L	0.0410		111	70-130			
Styrene	0.0414	0.020	ug/L	0.0426		97.1	70-130			
1,1,2,2-Tetrachloroethane	0.0800	0.020	ug/L	0.0687		117	70-130			
Tetrachloroethylene (PCE)	0.0632	0.010	ug/L	0.0679		93.2	70-130			
Toluene	0.0330	0.020	ug/L	0.0377		87.7	70-130			
1,2,4-Trichlorobenzene	0.0657	0.020	ug/L	0.0742		88.5	70-130			
1,1,2-Trichloroethane	0.0504	0.020	ug/L	0.0546		92.3	70-130			
1,1,1-Trichloroethane	0.0469	0.020	ug/L	0.0546		85.9	70-130			
Trichloroethylene (TCE)	0.0554	0.020	ug/L	0.0537		103	70-130			
Trichlorofluoromethane (R11)	0.0716	0.020	ug/L	0.0562		128	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0921	0.020	ug/L	0.0766		120	70-130			
1,3,5-Trimethylbenzene	0.0469	0.020	ug/L	0.0492		95.4	70-130			
1,2,4-Trimethylbenzene	0.0432	0.020	ug/L	0.0492		87.9	70-130			
Vinyl acetate	0.0355	0.020	ug/L	0.0296		120	70-130			
Vinyl chloride	0.0291	0.020	ug/L	0.0256		114	70-130			
o-Xylene	0.0453	0.020	ug/L	0.0434		104	70-130			
m,p-Xylenes	0.0914	0.020	ug/L	0.0868		105	70-130			
1,2,3-Trichloropropane	0.0399	0.020	ug/L	0.0603		66.2	70-130			QL-07
sec-Butylbenzene	0.0316	0.020	ug/L	0.0549		57.5	70-130			QL-07
Isopropylbenzene	0.0316	0.020	ug/L	0.0492		64.2	70-130			QL-07
n-Propylbenzene	0.0307	0.020	ug/L	0.0492		62.5	70-130			QL-07
4-Isopropyltoluene	0.0316	0.020	ug/L	0.0549		57.6	70-130			QL-07
Surrogate: 4-Bromofluorobenzene	0.0306		ug/L	0.0358		85.6	70-130			
<b>LCS Dup (B2C1807-BSD1)</b>										
Prepared: 03/17/22 Analyzed: 03/18/22										

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C1807 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2C1807-BSD1) Continued</b>										
					Prepared: 03/17/22 Analyzed: 03/18/22					
Acetone	0.0283	0.020	ug/L	0.0238	119	70-130	2.37	30		
Benzene	0.0263	0.0030	ug/L	0.0319	82.3	70-130	3.46	30		
Benzyl chloride	0.0395	0.020	ug/L	0.0445	88.7	70-130	1.04	30		
Bromodichloromethane	0.0754	0.0025	ug/L	0.0670	112	70-130	2.52	30		
Bromoform	0.117	0.020	ug/L	0.103	113	70-130	0.795	30		
Bromomethane	0.0433	0.020	ug/L	0.0388	111	70-130	2.09	30		
2-Butanone (MEK)	0.0305	0.020	ug/L	0.0295	103	70-130	0.194	30		
Carbon Disulfide	0.0295	0.020	ug/L	0.0311	94.6	70-130	2.09	30		
Carbon Tetrachloride	0.0739	0.020	ug/L	0.0629	118	70-130	2.94	30		
Chlorobenzene	0.0499	0.020	ug/L	0.0460	108	70-130	0.462	30		
Chloroethane	0.0283	0.020	ug/L	0.0264	107	70-130	0.00	30		
Chloroform	0.0463	0.0040	ug/L	0.0488	94.9	70-130	2.78	30		
Chloromethane	0.0230	0.020	ug/L	0.0207	112	70-130	2.91	30		
Dibromochloromethane	0.0819	0.020	ug/L	0.0852	96.2	70-130	1.57	30		
1,2-Dibromoethane (EDB)	0.0700	0.020	ug/L	0.0768	91.1	70-130	2.00	30		
1,2-Dichlorobenzene	0.0581	0.020	ug/L	0.0601	96.6	70-130	2.62	30		
1,3-Dichlorobenzene	0.0614	0.020	ug/L	0.0601	102	70-130	0.687	30		
1,4-Dichlorobenzene	0.0569	0.020	ug/L	0.0601	94.7	70-130	1.81	30		
Dichlorodifluoromethane (R12)	0.0406	0.020	ug/L	0.0495	82.0	70-130	7.29	30		
1,1-Dichloroethane	0.0408	0.020	ug/L	0.0405	101	70-130	3.74	30		
1,2-Dichloroethane (EDC)	0.0374	0.0040	ug/L	0.0405	92.3	70-130	2.86	30		
cis-1,2-Dichloroethylene	0.0372	0.020	ug/L	0.0396	93.7	70-130	2.05	30		
1,1-Dichloroethylene	0.0459	0.020	ug/L	0.0396	116	70-130	0.520	30		
trans-1,2-Dichloroethylene	0.0382	0.020	ug/L	0.0396	96.4	70-130	1.15	30		
1,2-Dichloropropane	0.0499	0.020	ug/L	0.0462	108	70-130	1.40	30		
trans-1,3-Dichloropropylene	0.0461	0.020	ug/L	0.0454	102	70-130	4.32	30		
cis-1,3-Dichloropropylene	0.0457	0.020	ug/L	0.0454	101	70-130	2.01	30		
Dichlorotetrafluoroethane	0.0678	0.020	ug/L	0.0699	97.0	70-130	5.71	30		
Ethylbenzene	0.0437	0.020	ug/L	0.0434	101	70-130	0.898	30		
4-Ethyltoluene	0.0415	0.020	ug/L	0.0492	84.5	70-130	5.86	30		
Hexachlorobutadiene	0.104	0.020	ug/L	0.107	97.9	70-130	4.92	30		
2-Hexanone (MBK)	0.0425	0.020	ug/L	0.0410	104	70-130	1.36	30		

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C1807 - \*\*\* DEFAULT PREP \*\*\*

**LCS Dup (B2C1807-BSD1) Continued**

Prepared: 03/17/22 Analyzed: 03/18/22

Isopropanol (IPA)	0.0276	0.20	ug/L	0.0216	127	70-130	3.33	30	
Methylene Chloride	0.0393	0.020	ug/L	0.0347	113	70-130	1.84	30	
4-Methyl-2-pentanone (MIBK)	0.0459	0.020	ug/L	0.0410	112	70-130	0.627	30	
Styrene	0.0419	0.020	ug/L	0.0426	98.4	70-130	1.33	30	
1,1,2,2-Tetrachloroethane	0.0785	0.020	ug/L	0.0687	114	70-130	1.90	30	
Tetrachloroethylene (PCE)	0.0643	0.010	ug/L	0.0679	94.8	70-130	1.70	30	
Toluene	0.0342	0.020	ug/L	0.0377	90.7	70-130	3.36	30	
1,2,4-Trichlorobenzene	0.0684	0.020	ug/L	0.0742	92.2	70-130	4.10	30	
1,1,2-Trichloroethane	0.0509	0.020	ug/L	0.0546	93.2	70-130	0.970	30	
1,1,1-Trichloroethane	0.0494	0.020	ug/L	0.0546	90.5	70-130	5.22	30	
Trichloroethylene (TCE)	0.0565	0.020	ug/L	0.0537	105	70-130	2.02	30	
Trichlorofluoromethane (R11)	0.0715	0.020	ug/L	0.0562	127	70-130	0.236	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0876	0.020	ug/L	0.0766	114	70-130	5.03	30	
1,3,5-Trimethylbenzene	0.0470	0.020	ug/L	0.0492	95.6	70-130	0.209	30	
1,2,4-Trimethylbenzene	0.0433	0.020	ug/L	0.0492	88.0	70-130	0.114	30	
Vinyl acetate	0.0366	0.020	ug/L	0.0296	124	70-130	3.22	30	
Vinyl chloride	0.0301	0.020	ug/L	0.0256	118	70-130	3.63	30	
o-Xylene	0.0447	0.020	ug/L	0.0434	103	70-130	1.25	30	
m,p-Xylenes	0.0935	0.020	ug/L	0.0868	108	70-130	2.30	30	
1,2,3-Trichloropropane	0.0395	0.020	ug/L	0.0603	65.5	70-130	1.06	30	QL-07
sec-Butylbenzene	0.0313	0.020	ug/L	0.0549	57.0	70-130	0.873	30	QL-07
Isopropylbenzene	0.0319	0.020	ug/L	0.0492	64.9	70-130	1.08	30	QL-07
n-Propylbenzene	0.0304	0.020	ug/L	0.0492	61.8	70-130	1.13	30	QL-07
4-Isopropyltoluene	0.0317	0.020	ug/L	0.0549	57.7	70-130	0.173	30	QL-07

Surrogate: 4-Bromofluorobenzene 0.0317 ug/L 0.0358 88.6 70-130

Batch B2C2131 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C2131-BLK1)**

Prepared &amp; Analyzed: 03/18/22

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						

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C2131 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C2131-BLK1) Continued**

Prepared &amp; Analyzed: 03/18/22

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							
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							

**Allen Aminian**  
QA/QC Manager



**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2131 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2131-BLK1) Continued</b>										
Prepared & Analyzed: 03/18/22										
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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2131 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2131-BLK1) Continued</b>										
Prepared & Analyzed: 03/18/22										
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>0.0178</i>		<i>ug/L</i>	<i>0.0358</i>		<i>49.8</i>	<i>70-130</i>			
<b>LCS (B2C2131-BS1)</b>										
Prepared: 03/18/22 Analyzed: 03/19/22										
Acetone	<b>0.0303</b>	0.020	ug/L	0.0238		127	70-130			
Benzene	<b>0.0304</b>	0.0030	ug/L	0.0319		95.1	70-130			
Benzyl chloride	<b>0.0419</b>	0.020	ug/L	0.0445		94.1	70-130			
Bromodichloromethane	<b>0.0836</b>	0.0025	ug/L	0.0670		125	70-130			
Bromoform	<b>0.121</b>	0.020	ug/L	0.103		117	70-130			
Bromomethane	<b>0.0454</b>	0.020	ug/L	0.0388		117	70-130			
2-Butanone (MEK)	<b>0.0350</b>	0.020	ug/L	0.0295		119	70-130			
Carbon Disulfide	<b>0.0330</b>	0.020	ug/L	0.0311		106	70-130			
Carbon Tetrachloride	<b>0.0816</b>	0.020	ug/L	0.0629		130	70-130			
Chlorobenzene	<b>0.0522</b>	0.020	ug/L	0.0460		113	70-130			
Chloroethane	<b>0.0303</b>	0.020	ug/L	0.0264		115	70-130			
Chloroform	<b>0.0531</b>	0.0040	ug/L	0.0488		109	70-130			
Chloromethane	<b>0.0244</b>	0.020	ug/L	0.0207		118	70-130			
Dibromochloromethane	<b>0.0949</b>	0.020	ug/L	0.0852		111	70-130			
1,2-Dibromoethane (EDB)	<b>0.0819</b>	0.020	ug/L	0.0768		107	70-130			
1,2-Dichlorobenzene	<b>0.0619</b>	0.020	ug/L	0.0601		103	70-130			
1,3-Dichlorobenzene	<b>0.0634</b>	0.020	ug/L	0.0601		105	70-130			
1,4-Dichlorobenzene	<b>0.0602</b>	0.020	ug/L	0.0601		100	70-130			
Dichlorodifluoromethane (R12)	<b>0.0406</b>	0.020	ug/L	0.0495		82.1	70-130			
1,1-Dichloroethane	<b>0.0455</b>	0.020	ug/L	0.0405		112	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2131 - *** DEFAULT PREP ***										
<b>LCS (B2C2131-BS1) Continued</b>										
Prepared: 03/18/22 Analyzed: 03/19/22										
1,2-Dichloroethane (EDC)	0.0458	0.0040	ug/L	0.0405		113	70-130			
cis-1,2-Dichloroethylene	0.0432	0.020	ug/L	0.0396		109	70-130			
1,1-Dichloroethylene	0.0497	0.020	ug/L	0.0396		125	70-130			
trans-1,2-Dichloroethylene	0.0440	0.020	ug/L	0.0396		111	70-130			
1,2-Dichloropropane	0.0536	0.020	ug/L	0.0462		116	70-130			
trans-1,3-Dichloropropylene	0.0531	0.020	ug/L	0.0454		117	70-130			
cis-1,3-Dichloropropylene	0.0519	0.020	ug/L	0.0454		114	70-130			
Dichlorotetrafluoroethane	0.0650	0.020	ug/L	0.0699		93.0	70-130			
Ethylbenzene	0.0463	0.020	ug/L	0.0434		107	70-130			
4-Ethyltoluene	0.0455	0.020	ug/L	0.0492		92.5	70-130			
Hexachlorobutadiene	0.120	0.020	ug/L	0.107		112	70-130			
2-Hexanone (MBK)	0.0479	0.020	ug/L	0.0410		117	70-130			
Isopropanol (IPA)	0.0310	0.20	ug/L	0.0216		143	70-130			QL-04
Methylene Chloride	0.0427	0.020	ug/L	0.0347		123	70-130			
4-Methyl-2-pentanone (MIBK)	0.0502	0.020	ug/L	0.0410		122	70-130			
Styrene	0.0441	0.020	ug/L	0.0426		104	70-130			
1,1,2,2-Tetrachloroethane	0.0802	0.020	ug/L	0.0687		117	70-130			
Tetrachloroethylene (PCE)	0.0749	0.010	ug/L	0.0679		110	70-130			
Toluene	0.0395	0.020	ug/L	0.0377		105	70-130			
1,2,4-Trichlorobenzene	0.0700	0.020	ug/L	0.0742		94.3	70-130			
1,1,2-Trichloroethane	0.0590	0.020	ug/L	0.0546		108	70-130			
1,1,1-Trichloroethane	0.0584	0.020	ug/L	0.0546		107	70-130			
Trichloroethylene (TCE)	0.0604	0.020	ug/L	0.0537		112	70-130			
Trichlorofluoromethane (R11)	0.0762	0.020	ug/L	0.0562		136	70-130			QL-04
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0980	0.020	ug/L	0.0766		128	70-130			
1,3,5-Trimethylbenzene	0.0507	0.020	ug/L	0.0492		103	70-130			
1,2,4-Trimethylbenzene	0.0476	0.020	ug/L	0.0492		96.8	70-130			
Vinyl acetate	0.0416	0.020	ug/L	0.0296		141	70-130			QL-04
Vinyl chloride	0.0318	0.020	ug/L	0.0256		124	70-130			
o-Xylene	0.0478	0.020	ug/L	0.0434		110	70-130			
m,p-Xylenes	0.0948	0.020	ug/L	0.0868		109	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2131 - *** DEFAULT PREP ***</i>										
<b>LCS (B2C2131-BS1) Continued</b>					Prepared: 03/18/22 Analyzed: 03/19/22					
1,2,3-Trichloropropane	<b>0.0424</b>	0.020	ug/L	0.0603	70.3	70-130				
sec-Butylbenzene	<b>0.0335</b>	0.020	ug/L	0.0549	61.1	70-130				QL-07
Isopropylbenzene	<b>0.0351</b>	0.020	ug/L	0.0492	71.4	70-130				
n-Propylbenzene	<b>0.0334</b>	0.020	ug/L	0.0492	68.0	70-130				QL-07
4-Isopropyltoluene	<b>0.0339</b>	0.020	ug/L	0.0549	61.7	70-130				QL-07
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0331</i>		<i>ug/L</i>	<i>0.0358</i>	<i>92.4</i>	<i>70-130</i>				
<b>LCS Dup (B2C2131-BS1)</b>					Prepared: 03/18/22 Analyzed: 03/19/22					
Acetone	<b>0.0306</b>	0.020	ug/L	0.0238	129	70-130	1.02	30		
Benzene	<b>0.0303</b>	0.0030	ug/L	0.0319	94.7	70-130	0.422	30		
Benzyl chloride	<b>0.0437</b>	0.020	ug/L	0.0445	98.3	70-130	4.35	30		
Bromodichloromethane	<b>0.0859</b>	0.0025	ug/L	0.0670	128	70-130	2.77	30		
Bromoform	<b>0.124</b>	0.020	ug/L	0.103	120	70-130	2.11	30		
Bromomethane	<b>0.0462</b>	0.020	ug/L	0.0388	119	70-130	1.69	30		
2-Butanone (MEK)	<b>0.0347</b>	0.020	ug/L	0.0295	118	70-130	0.930	30		
Carbon Disulfide	<b>0.0328</b>	0.020	ug/L	0.0311	105	70-130	0.663	30		
Carbon Tetrachloride	<b>0.0852</b>	0.020	ug/L	0.0629	136	70-130	4.37	30		QL-03
Chlorobenzene	<b>0.0529</b>	0.020	ug/L	0.0460	115	70-130	1.23	30		
Chloroethane	<b>0.0310</b>	0.020	ug/L	0.0264	117	70-130	2.24	30		
Chloroform	<b>0.0531</b>	0.0040	ug/L	0.0488	109	70-130	0.00	30		
Chloromethane	<b>0.0249</b>	0.020	ug/L	0.0207	121	70-130	2.01	30		
Dibromochloromethane	<b>0.0963</b>	0.020	ug/L	0.0852	113	70-130	1.51	30		
1,2-Dibromoethane (EDB)	<b>0.0849</b>	0.020	ug/L	0.0768	110	70-130	3.59	30		
1,2-Dichlorobenzene	<b>0.0649</b>	0.020	ug/L	0.0601	108	70-130	4.74	30		
1,3-Dichlorobenzene	<b>0.0655</b>	0.020	ug/L	0.0601	109	70-130	3.27	30		
1,4-Dichlorobenzene	<b>0.0618</b>	0.020	ug/L	0.0601	103	70-130	2.56	30		
Dichlorodifluoromethane (R12)	<b>0.0399</b>	0.020	ug/L	0.0495	80.6	70-130	1.84	30		
1,1-Dichloroethane	<b>0.0438</b>	0.020	ug/L	0.0405	108	70-130	3.72	30		
1,2-Dichloroethane (EDC)	<b>0.0456</b>	0.0040	ug/L	0.0405	113	70-130	0.354	30		
cis-1,2-Dichloroethylene	<b>0.0428</b>	0.020	ug/L	0.0396	108	70-130	0.830	30		
1,1-Dichloroethylene	<b>0.0500</b>	0.020	ug/L	0.0396	126	70-130	0.636	30		
trans-1,2-Dichloroethylene	<b>0.0440</b>	0.020	ug/L	0.0396	111	70-130	0.0901	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2131 - *** DEFAULT PREP ***										
<b>LCS Dup (B2C2131-BSD1) Continued</b>										
					Prepared: 03/18/22 Analyzed: 03/19/22					
1,2-Dichloropropane	0.0548	0.020	ug/L	0.0462	119	70-130	2.22	30		
trans-1,3-Dichloropropylene	0.0541	0.020	ug/L	0.0454	119	70-130	1.95	30		
cis-1,3-Dichloropropylene	0.0520	0.020	ug/L	0.0454	115	70-130	0.175	30		
Dichlorotetrafluoroethane	0.0601	0.020	ug/L	0.0699	86.0	70-130	7.82	30		
Ethylbenzene	0.0476	0.020	ug/L	0.0434	110	70-130	2.68	30		
4-Ethyltoluene	0.0456	0.020	ug/L	0.0492	92.8	70-130	0.324	30		
Hexachlorobutadiene	0.116	0.020	ug/L	0.107	108	70-130	3.36	30		
2-Hexanone (MBK)	0.0460	0.020	ug/L	0.0410	112	70-130	4.10	30		
Isopropanol (IPA)	0.0308	0.20	ug/L	0.0216	143	70-130	0.398	30		QL-04
Methylene Chloride	0.0438	0.020	ug/L	0.0347	126	70-130	2.73	30		
4-Methyl-2-pentanone (MIBK)	0.0508	0.020	ug/L	0.0410	124	70-130	1.30	30		
Styrene	0.0460	0.020	ug/L	0.0426	108	70-130	4.07	30		
1,1,2,2-Tetrachloroethane	0.0816	0.020	ug/L	0.0687	119	70-130	1.70	30		
Tetrachloroethylene (PCE)	0.0752	0.010	ug/L	0.0679	111	70-130	0.362	30		
Toluene	0.0401	0.020	ug/L	0.0377	106	70-130	1.51	30		
1,2,4-Trichlorobenzene	0.0741	0.020	ug/L	0.0742	99.8	70-130	5.67	30		
1,1,2-Trichloroethane	0.0607	0.020	ug/L	0.0546	111	70-130	2.73	30		
1,1,1-Trichloroethane	0.0578	0.020	ug/L	0.0546	106	70-130	1.03	30		
Trichloroethylene (TCE)	0.0612	0.020	ug/L	0.0537	114	70-130	1.24	30		
Trichlorofluoromethane (R11)	0.0752	0.020	ug/L	0.0562	134	70-130	1.34	30		QL-04
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0954	0.020	ug/L	0.0766	124	70-130	2.69	30		
1,3,5-Trimethylbenzene	0.0513	0.020	ug/L	0.0492	104	70-130	1.16	30		
1,2,4-Trimethylbenzene	0.0492	0.020	ug/L	0.0492	100	70-130	3.25	30		
Vinyl acetate	0.0414	0.020	ug/L	0.0296	140	70-130	0.509	30		QL-04
Vinyl chloride	0.0319	0.020	ug/L	0.0256	125	70-130	0.482	30		
o-Xylene	0.0482	0.020	ug/L	0.0434	111	70-130	0.815	30		
m,p-Xylenes	0.0970	0.020	ug/L	0.0868	112	70-130	2.31	30		
1,2,3-Trichloropropane	0.0428	0.020	ug/L	0.0603	70.9	70-130	0.850	30		
sec-Butylbenzene	0.0351	0.020	ug/L	0.0549	63.9	70-130	4.48	30		QL-07
Isopropylbenzene	0.0352	0.020	ug/L	0.0492	71.7	70-130	0.419	30		
n-Propylbenzene	0.0337	0.020	ug/L	0.0492	68.5	70-130	0.733	30		QL-07

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2131 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2C2131-BSD1) Continued</b>										
					Prepared: 03/18/22 Analyzed: 03/19/22					
4-Isopropyltoluene	<b>0.0345</b>	0.020	ug/L	0.0549	62.9	70-130	1.93	30	QL-07	
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0344</i>		<i>ug/L</i>	<i>0.0358</i>	<i>96.2</i>	<i>70-130</i>				
<i>Batch B2C2326 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2326-BLK1)</b>										
					Prepared & Analyzed: 03/22/22					
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2326 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2326-BLK1) Continued</b>										
Prepared & Analyzed: 03/22/22										
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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2326 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2326-BLK1) Continued</b>										
Prepared & Analyzed: 03/22/22										
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>0.125</i>		<i>ug/L</i>	<i>0.143</i>		<i>87.5</i>	<i>70-130</i>			
<b>LCS (B2C2326-BS1)</b>										
Prepared & Analyzed: 03/22/22										
Acetone	<b>0.0942</b>	0.020	ug/L	0.0950		99.1	70-130			
Benzene	<b>0.0992</b>	0.0030	ug/L	0.128		77.6	70-130			
Benzyl chloride	<b>0.168</b>	0.020	ug/L	0.178		94.6	70-130			
Bromodichloromethane	<b>0.260</b>	0.0025	ug/L	0.268		97.1	70-130			
Bromoform	<b>0.414</b>	0.020	ug/L	0.413		100	70-130			
Bromomethane	<b>0.141</b>	0.020	ug/L	0.155		90.6	70-130			
2-Butanone (MEK)	<b>0.107</b>	0.020	ug/L	0.118		90.5	70-130			
Carbon Disulfide	<b>0.105</b>	0.020	ug/L	0.125		84.3	70-130			
Carbon Tetrachloride	<b>0.256</b>	0.020	ug/L	0.252		102	70-130			
Chlorobenzene	<b>0.179</b>	0.020	ug/L	0.184		97.1	70-130			
Chloroethane	<b>0.0955</b>	0.020	ug/L	0.106		90.5	70-130			
Chloroform	<b>0.169</b>	0.0040	ug/L	0.195		86.8	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2326 - *** DEFAULT PREP ***</i>										
<b>LCS (B2C2326-BS1) Continued</b>										
Prepared & Analyzed: 03/22/22										
Chloromethane	<b>0.0829</b>	0.020	ug/L	0.0826		100	70-130			
Dibromochloromethane	<b>0.295</b>	0.020	ug/L	0.341		86.5	70-130			
1,2-Dibromoethane (EDB)	<b>0.249</b>	0.020	ug/L	0.307		81.2	70-130			
1,2-Dichlorobenzene	<b>0.224</b>	0.020	ug/L	0.240		93.2	70-130			
1,3-Dichlorobenzene	<b>0.226</b>	0.020	ug/L	0.240		93.8	70-130			
1,4-Dichlorobenzene	<b>0.226</b>	0.020	ug/L	0.240		93.8	70-130			
Dichlorodifluoromethane (R12)	<b>0.197</b>	0.020	ug/L	0.198		99.6	70-130			
1,1-Dichloroethane	<b>0.143</b>	0.020	ug/L	0.162		88.3	70-130			
1,2-Dichloroethane (EDC)	<b>0.141</b>	0.0040	ug/L	0.162		87.2	70-130			
cis-1,2-Dichloroethylene	<b>0.134</b>	0.020	ug/L	0.159		84.5	70-130			
1,1-Dichloroethylene	<b>0.150</b>	0.020	ug/L	0.159		94.5	70-130			
trans-1,2-Dichloroethylene	<b>0.137</b>	0.020	ug/L	0.159		86.6	70-130			
1,2-Dichloropropane	<b>0.176</b>	0.020	ug/L	0.185		95.1	70-130			
trans-1,3-Dichloropropylene	<b>0.158</b>	0.020	ug/L	0.182		87.1	70-130			
cis-1,3-Dichloropropylene	<b>0.159</b>	0.020	ug/L	0.182		87.8	70-130			
Dichlorotetrafluoroethane	<b>0.272</b>	0.020	ug/L	0.280		97.1	70-130			
Ethylbenzene	<b>0.158</b>	0.020	ug/L	0.174		91.0	70-130			
4-Ethyltoluene	<b>0.164</b>	0.020	ug/L	0.197		83.4	70-130			
Hexachlorobutadiene	<b>0.349</b>	0.020	ug/L	0.427		81.8	70-130			
2-Hexanone (MBK)	<b>0.149</b>	0.020	ug/L	0.164		91.1	70-130			
Isopropanol (IPA)	<b>0.0863</b>	0.20	ug/L	0.0865		99.7	70-130			
Methylene Chloride	<b>0.132</b>	0.020	ug/L	0.139		95.2	70-130			
4-Methyl-2-pentanone (MIBK)	<b>0.157</b>	0.020	ug/L	0.164		95.7	70-130			
Styrene	<b>0.153</b>	0.020	ug/L	0.170		89.9	70-130			
1,1,2,2-Tetrachloroethane	<b>0.277</b>	0.020	ug/L	0.275		101	70-130			
Tetrachloroethylene (PCE)	<b>0.224</b>	0.010	ug/L	0.271		82.7	70-130			
Toluene	<b>0.128</b>	0.020	ug/L	0.151		84.7	70-130			
1,2,4-Trichlorobenzene	<b>0.290</b>	0.020	ug/L	0.297		97.7	70-130			
1,1,2-Trichloroethane	<b>0.189</b>	0.020	ug/L	0.218		86.7	70-130			
1,1,1-Trichloroethane	<b>0.183</b>	0.020	ug/L	0.218		83.6	70-130			
Trichloroethylene (TCE)	<b>0.187</b>	0.020	ug/L	0.215		86.8	70-130			
Trichlorofluoromethane (R11)	<b>0.228</b>	0.020	ug/L	0.225		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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2326 - *** DEFAULT PREP ***										
<b>LCS (B2C2326-BS1) Continued</b>										
Prepared & Analyzed: 03/22/22										
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.294	0.020	ug/L	0.307		95.9	70-130			
1,3,5-Trimethylbenzene	0.175	0.020	ug/L	0.197		89.1	70-130			
1,2,4-Trimethylbenzene	0.165	0.020	ug/L	0.197		83.8	70-130			
Vinyl acetate	0.131	0.020	ug/L	0.118		111	70-130			
Vinyl chloride	0.0995	0.020	ug/L	0.102		97.3	70-130			
o-Xylene	0.162	0.020	ug/L	0.174		93.1	70-130			
m,p-Xylenes	0.325	0.020	ug/L	0.347		93.5	70-130			
1,2,3-Trichloropropane	0.161	0.020	ug/L	0.241		67.0	70-130			QL-02
sec-Butylbenzene	0.125	0.020	ug/L	0.220		56.8	70-130			QL-07
Isopropylbenzene	0.132	0.020	ug/L	0.197		67.0	70-130			QL-02
n-Propylbenzene	0.123	0.020	ug/L	0.197		62.6	70-130			QL-07
4-Isopropyltoluene	0.122	0.020	ug/L	0.220		55.8	70-130			QL-07
Surrogate: 4-Bromofluorobenzene	0.127		ug/L	0.143		88.8	70-130			
<b>LCS Dup (B2C2326-BS1)</b>										
Prepared: 03/22/22 Analyzed: 03/23/22										
Acetone	0.0970	0.020	ug/L	0.0950		102	70-130	3.01	30	
Benzene	0.102	0.0030	ug/L	0.128		80.1	70-130	3.07	30	
Benzyl chloride	0.176	0.020	ug/L	0.178		98.7	70-130	4.30	30	
Bromodichloromethane	0.275	0.0025	ug/L	0.268		102	70-130	5.36	30	
Bromoform	0.452	0.020	ug/L	0.413		109	70-130	8.70	30	
Bromomethane	0.151	0.020	ug/L	0.155		97.2	70-130	7.03	30	
2-Butanone (MEK)	0.112	0.020	ug/L	0.118		94.8	70-130	4.61	30	
Carbon Disulfide	0.110	0.020	ug/L	0.125		88.6	70-130	5.03	30	
Carbon Tetrachloride	0.269	0.020	ug/L	0.252		107	70-130	5.00	30	
Chlorobenzene	0.190	0.020	ug/L	0.184		103	70-130	6.14	30	
Chloroethane	0.100	0.020	ug/L	0.106		95.1	70-130	4.98	30	
Chloroform	0.173	0.0040	ug/L	0.195		88.7	70-130	2.25	30	
Chloromethane	0.0912	0.020	ug/L	0.0826		110	70-130	9.44	30	
Dibromochloromethane	0.319	0.020	ug/L	0.341		93.7	70-130	8.05	30	
1,2-Dibromoethane (EDB)	0.273	0.020	ug/L	0.307		88.8	70-130	9.03	30	
1,2-Dichlorobenzene	0.240	0.020	ug/L	0.240		99.8	70-130	6.87	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2326 - *** DEFAULT PREP ***										
<b>LCS Dup (B2C2326-BSD1) Continued</b>										
Prepared: 03/22/22 Analyzed: 03/23/22										
1,3-Dichlorobenzene	0.247	0.020	ug/L	0.240		103	70-130	9.05	30	
1,4-Dichlorobenzene	0.242	0.020	ug/L	0.240		101	70-130	7.07	30	
Dichlorodifluoromethane (R12)	0.204	0.020	ug/L	0.198		103	70-130	3.40	30	
1,1-Dichloroethane	0.152	0.020	ug/L	0.162		93.8	70-130	6.12	30	
1,2-Dichloroethane (EDC)	0.139	0.0040	ug/L	0.162		85.6	70-130	1.94	30	
cis-1,2-Dichloroethylene	0.139	0.020	ug/L	0.159		87.6	70-130	3.54	30	
1,1-Dichloroethylene	0.160	0.020	ug/L	0.159		101	70-130	6.68	30	
trans-1,2-Dichloroethylene	0.143	0.020	ug/L	0.159		90.2	70-130	4.07	30	
1,2-Dichloropropane	0.188	0.020	ug/L	0.185		102	70-130	6.53	30	
trans-1,3-Dichloropropylene	0.171	0.020	ug/L	0.182		94.0	70-130	7.59	30	
cis-1,3-Dichloropropylene	0.170	0.020	ug/L	0.182		93.7	70-130	6.47	30	
Dichlorotetrafluoroethane	0.290	0.020	ug/L	0.280		104	70-130	6.57	30	
Ethylbenzene	0.167	0.020	ug/L	0.174		96.1	70-130	5.40	30	
4-Ethyltoluene	0.171	0.020	ug/L	0.197		87.0	70-130	4.34	30	
Hexachlorobutadiene	0.396	0.020	ug/L	0.427		92.9	70-130	12.7	30	
2-Hexanone (MBK)	0.160	0.020	ug/L	0.164		97.7	70-130	6.89	30	
Isopropanol (IPA)	0.0961	0.20	ug/L	0.0865		111	70-130	10.8	30	
Methylene Chloride	0.137	0.020	ug/L	0.139		98.3	70-130	3.23	30	
4-Methyl-2-pentanone (MIBK)	0.168	0.020	ug/L	0.164		102	70-130	6.76	30	
Styrene	0.165	0.020	ug/L	0.170		96.8	70-130	7.45	30	
1,1,2,2-Tetrachloroethane	0.304	0.020	ug/L	0.275		111	70-130	9.32	30	
Tetrachloroethylene (PCE)	0.243	0.010	ug/L	0.271		89.4	70-130	7.82	30	
Toluene	0.134	0.020	ug/L	0.151		89.2	70-130	5.15	30	
1,2,4-Trichlorobenzene	0.292	0.020	ug/L	0.297		98.3	70-130	0.536	30	
1,1,2-Trichloroethane	0.197	0.020	ug/L	0.218		90.4	70-130	4.18	30	
1,1,1-Trichloroethane	0.186	0.020	ug/L	0.218		85.2	70-130	1.84	30	
Trichloroethylene (TCE)	0.204	0.020	ug/L	0.215		94.7	70-130	8.70	30	
Trichlorofluoromethane (R11)	0.242	0.020	ug/L	0.225		108	70-130	5.78	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.313	0.020	ug/L	0.307		102	70-130	6.26	30	
1,3,5-Trimethylbenzene	0.191	0.020	ug/L	0.197		97.0	70-130	8.43	30	
1,2,4-Trimethylbenzene	0.170	0.020	ug/L	0.197		86.7	70-130	3.43	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C2326 - \*\*\* DEFAULT PREP \*\*\*

**LCS Dup (B2C2326-BSD1) Continued**

Prepared: 03/22/22 Analyzed: 03/23/22

Vinyl acetate	0.135	0.020	ug/L	0.118		114	70-130	3.12	30	
Vinyl chloride	0.105	0.020	ug/L	0.102		103	70-130	5.74	30	
o-Xylene	0.172	0.020	ug/L	0.174		98.8	70-130	5.99	30	
m,p-Xylenes	0.348	0.020	ug/L	0.347		100	70-130	7.04	30	
1,2,3-Trichloropropane	0.170	0.020	ug/L	0.241		70.3	70-130	4.88	30	
sec-Butylbenzene	0.136	0.020	ug/L	0.220		61.9	70-130	8.55	30	QL-07
Isopropylbenzene	0.141	0.020	ug/L	0.197		71.6	70-130	6.71	30	
n-Propylbenzene	0.131	0.020	ug/L	0.197		66.6	70-130	6.19	30	QL-07
4-Isopropyltoluene	0.132	0.020	ug/L	0.220		60.2	70-130	7.67	30	QL-07

Surrogate: 4-Bromofluorobenzene 0.129 ug/L 0.143 90.3 70-130

Batch B2C2405 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C2405-BLK1)**

Prepared &amp; Analyzed: 03/23/22

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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2405 - *** DEFAULT PREP ***										
<b>Blank (B2C2405-BLK1) Continued</b>										
Prepared & Analyzed: 03/23/22										
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							
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							

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2405 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2405-BLK1) Continued</b>					Prepared & Analyzed: 03/23/22					
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>0.0343</i>		<i>ug/L</i>	<i>0.0358</i>		<i>95.8</i>	<i>70-130</i>			
<b>LCS (B2C2405-BS1)</b>					Prepared & Analyzed: 03/23/22					
Acetone	<b>0.0233</b>	0.020	ug/L	0.0238		98.2	70-130			
Benzene	<b>0.0313</b>	0.0030	ug/L	0.0319		98.1	70-130			
Benzyl chloride	<b>0.0646</b>	0.020	ug/L	0.0445		145	70-130			QL-04
Bromodichloromethane	<b>0.0695</b>	0.0025	ug/L	0.0670		104	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2405 - *** DEFAULT PREP ***										
<b>LCS (B2C2405-BS1) Continued</b>										
Prepared & Analyzed: 03/23/22										
Bromoform	0.112	0.020	ug/L	0.103		108	70-130			
Bromomethane	0.0382	0.020	ug/L	0.0388		98.5	70-130			
2-Butanone (MEK)	0.0310	0.020	ug/L	0.0295		105	70-130			
Carbon Disulfide	0.0318	0.020	ug/L	0.0311		102	70-130			
Carbon Tetrachloride	0.0606	0.020	ug/L	0.0629		96.4	70-130			
Chlorobenzene	0.0452	0.020	ug/L	0.0460		98.2	70-130			
Chloroethane	0.0261	0.020	ug/L	0.0264		98.8	70-130			
Chloroform	0.0483	0.0040	ug/L	0.0488		99.0	70-130			
Chloromethane	0.0204	0.020	ug/L	0.0207		98.8	70-130			
Dibromochloromethane	0.0922	0.020	ug/L	0.0852		108	70-130			
1,2-Dibromoethane (EDB)	0.0781	0.020	ug/L	0.0768		102	70-130			
1,2-Dichlorobenzene	0.0586	0.020	ug/L	0.0601		97.4	70-130			
1,3-Dichlorobenzene	0.0496	0.020	ug/L	0.0601		82.5	70-130			
1,4-Dichlorobenzene	0.0571	0.020	ug/L	0.0601		95.0	70-130			
Dichlorodifluoromethane (R12)	0.0332	0.020	ug/L	0.0495		67.1	70-130			QL-02
1,1-Dichloroethane	0.0401	0.020	ug/L	0.0405		99.1	70-130			
1,2-Dichloroethane (EDC)	0.0398	0.0040	ug/L	0.0405		98.3	70-130			
cis-1,2-Dichloroethylene	0.0383	0.020	ug/L	0.0396		96.7	70-130			
1,1-Dichloroethylene	0.0371	0.020	ug/L	0.0396		93.5	70-130			
trans-1,2-Dichloroethylene	0.0427	0.020	ug/L	0.0396		108	70-130			
1,2-Dichloropropane	0.0458	0.020	ug/L	0.0462		99.1	70-130			
trans-1,3-Dichloropropylene	0.0457	0.020	ug/L	0.0454		101	70-130			
cis-1,3-Dichloropropylene	0.0458	0.020	ug/L	0.0454		101	70-130			
Dichlorotetrafluoroethane	0.0497	0.020	ug/L	0.0699		71.1	70-130			
Ethylbenzene	0.0403	0.020	ug/L	0.0434		92.7	70-130			
4-Ethyltoluene	0.0497	0.020	ug/L	0.0492		101	70-130			
Hexachlorobutadiene	0.0904	0.020	ug/L	0.107		84.8	70-130			
2-Hexanone (MBK)	0.0433	0.020	ug/L	0.0410		106	70-130			
Isopropanol (IPA)	0.0251	0.20	ug/L	0.0216		116	70-130			
Methylene Chloride	0.0273	0.020	ug/L	0.0347		78.6	70-130			
4-Methyl-2-pentanone (MIBK)	0.0420	0.020	ug/L	0.0410		102	70-130			
Styrene	0.0417	0.020	ug/L	0.0426		98.0	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2405 - *** DEFAULT PREP ***										
<b>LCS (B2C2405-BS1) Continued</b>										
Prepared & Analyzed: 03/23/22										
1,1,2,2-Tetrachloroethane	0.0620	0.020	ug/L	0.0687		90.3	70-130			
Tetrachloroethylene (PCE)	0.0660	0.010	ug/L	0.0679		97.3	70-130			
Toluene	0.0375	0.020	ug/L	0.0377		99.5	70-130			
1,2,4-Trichlorobenzene	0.0693	0.020	ug/L	0.0742		93.4	70-130			
1,1,2-Trichloroethane	0.0557	0.020	ug/L	0.0546		102	70-130			
1,1,1-Trichloroethane	0.0524	0.020	ug/L	0.0546		96.1	70-130			
Trichloroethylene (TCE)	0.0516	0.020	ug/L	0.0537		96.0	70-130			
Trichlorofluoromethane (R11)	0.0530	0.020	ug/L	0.0562		94.3	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0714	0.020	ug/L	0.0766		93.2	70-130			
1,3,5-Trimethylbenzene	0.0407	0.020	ug/L	0.0492		82.8	70-130			
1,2,4-Trimethylbenzene	0.0447	0.020	ug/L	0.0492		91.0	70-130			
Vinyl acetate	0.0436	0.020	ug/L	0.0296		147	70-130			QL-04
Vinyl chloride	0.0248	0.020	ug/L	0.0256		96.9	70-130			
o-Xylene	0.0390	0.020	ug/L	0.0434		89.9	70-130			
m,p-Xylenes	0.0761	0.020	ug/L	0.0868		87.7	70-130			
1,2,3-Trichloropropane	0.0613	0.020	ug/L	0.0603		102	70-130			
sec-Butylbenzene	0.0581	0.020	ug/L	0.0549		106	70-130			
Isopropylbenzene	0.0498	0.020	ug/L	0.0492		101	70-130			
n-Propylbenzene	0.0499	0.020	ug/L	0.0492		102	70-130			
4-Isopropyltoluene	0.0595	0.020	ug/L	0.0549		108	70-130			
Surrogate: 4-Bromofluorobenzene	0.0360		ug/L	0.0358		101	70-130			
<b>LCS Dup (B2C2405-BSD1)</b>										
Prepared: 03/23/22 Analyzed: 03/24/22										
Acetone	0.0250	0.020	ug/L	0.0238		105	70-130	6.79	30	
Benzene	0.0340	0.0030	ug/L	0.0319		106	70-130	8.12	30	
Benzyl chloride	0.0701	0.020	ug/L	0.0445		157	70-130	8.23	30	QL-04
Bromodichloromethane	0.0740	0.0025	ug/L	0.0670		110	70-130	6.35	30	
Bromoform	0.122	0.020	ug/L	0.103		118	70-130	8.50	30	
Bromomethane	0.0413	0.020	ug/L	0.0388		106	70-130	7.62	30	
2-Butanone (MEK)	0.0333	0.020	ug/L	0.0295		113	70-130	7.07	30	
Carbon Disulfide	0.0343	0.020	ug/L	0.0311		110	70-130	7.55	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2405 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2C2405-BSD1) Continued</b>										
					Prepared: 03/23/22 Analyzed: 03/24/22					
Carbon Tetrachloride	0.0653	0.020	ug/L	0.0629		104	70-130	7.39	30	
Chlorobenzene	0.0490	0.020	ug/L	0.0460		106	70-130	8.11	30	
Chloroethane	0.0281	0.020	ug/L	0.0264		106	70-130	7.41	30	
Chloroform	0.0523	0.0040	ug/L	0.0488		107	70-130	7.95	30	
Chloromethane	0.0220	0.020	ug/L	0.0207		107	70-130	7.69	30	
Dibromochloromethane	0.0990	0.020	ug/L	0.0852		116	70-130	7.13	30	
1,2-Dibromoethane (EDB)	0.0854	0.020	ug/L	0.0768		111	70-130	8.92	30	
1,2-Dichlorobenzene	0.0645	0.020	ug/L	0.0601		107	70-130	9.58	30	
1,3-Dichlorobenzene	0.0616	0.020	ug/L	0.0601		102	70-130	21.5	30	
1,4-Dichlorobenzene	0.0619	0.020	ug/L	0.0601		103	70-130	8.08	30	
Dichlorodifluoromethane (R12)	0.0380	0.020	ug/L	0.0495		76.8	70-130	13.5	30	
1,1-Dichloroethane	0.0408	0.020	ug/L	0.0405		101	70-130	1.60	30	
1,2-Dichloroethane (EDC)	0.0432	0.0040	ug/L	0.0405		107	70-130	8.29	30	
cis-1,2-Dichloroethylene	0.0418	0.020	ug/L	0.0396		105	70-130	8.61	30	
1,1-Dichloroethylene	0.0404	0.020	ug/L	0.0396		102	70-130	8.70	30	
trans-1,2-Dichloroethylene	0.0455	0.020	ug/L	0.0396		115	70-130	6.39	30	
1,2-Dichloropropane	0.0489	0.020	ug/L	0.0462		106	70-130	6.63	30	
trans-1,3-Dichloropropylene	0.0482	0.020	ug/L	0.0454		106	70-130	5.32	30	
cis-1,3-Dichloropropylene	0.0485	0.020	ug/L	0.0454		107	70-130	5.58	30	
Dichlorotetrafluoroethane	0.0604	0.020	ug/L	0.0699		86.4	70-130	19.4	30	
Ethylbenzene	0.0436	0.020	ug/L	0.0434		100	70-130	7.98	30	
4-Ethyltoluene	0.0544	0.020	ug/L	0.0492		111	70-130	8.97	30	
Hexachlorobutadiene	0.0981	0.020	ug/L	0.107		92.0	70-130	8.14	30	
2-Hexanone (MBK)	0.0460	0.020	ug/L	0.0410		112	70-130	6.24	30	
Isopropanol (IPA)	0.0261	0.20	ug/L	0.0216		120	70-130	3.85	30	
Methylene Chloride	0.0297	0.020	ug/L	0.0347		85.4	70-130	8.29	30	
4-Methyl-2-pentanone (MIBK)	0.0447	0.020	ug/L	0.0410		109	70-130	6.24	30	
Styrene	0.0455	0.020	ug/L	0.0426		107	70-130	8.69	30	
1,1,2,2-Tetrachloroethane	0.0672	0.020	ug/L	0.0687		97.9	70-130	8.08	30	
Tetrachloroethylene (PCE)	0.0718	0.010	ug/L	0.0679		106	70-130	8.37	30	
Toluene	0.0402	0.020	ug/L	0.0377		107	70-130	6.89	30	
1,2,4-Trichlorobenzene	0.0781	0.020	ug/L	0.0742		105	70-130	11.9	30	

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C2405 - \*\*\* DEFAULT PREP \*\*\*

**LCS Dup (B2C2405-BSD1) Continued**

Prepared: 03/23/22 Analyzed: 03/24/22

1,1,2-Trichloroethane	0.0599	0.020	ug/L	0.0546	110	70-130	7.37	30	
1,1,1-Trichloroethane	0.0571	0.020	ug/L	0.0546	105	70-130	8.47	30	
Trichloroethylene (TCE)	0.0558	0.020	ug/L	0.0537	104	70-130	7.90	30	
Trichlorofluoromethane (R11)	0.0582	0.020	ug/L	0.0562	104	70-130	9.40	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0786	0.020	ug/L	0.0766	103	70-130	9.60	30	
1,3,5-Trimethylbenzene	0.0478	0.020	ug/L	0.0492	97.3	70-130	16.1	30	
1,2,4-Trimethylbenzene	0.0488	0.020	ug/L	0.0492	99.3	70-130	8.72	30	
Vinyl acetate	0.0461	0.020	ug/L	0.0296	156	70-130	5.73	30	QL-04
Vinyl chloride	0.0269	0.020	ug/L	0.0256	105	70-130	8.31	30	
o-Xylene	0.0422	0.020	ug/L	0.0434	97.2	70-130	7.80	30	
m,p-Xylenes	0.0826	0.020	ug/L	0.0868	95.2	70-130	8.21	30	
1,2,3-Trichloropropane	0.0660	0.020	ug/L	0.0603	110	70-130	7.39	30	
sec-Butylbenzene	0.0636	0.020	ug/L	0.0549	116	70-130	8.93	30	
Isopropylbenzene	0.0543	0.020	ug/L	0.0492	110	70-130	8.69	30	
n-Propylbenzene	0.0541	0.020	ug/L	0.0492	110	70-130	8.13	30	
4-Isopropyltoluene	0.0643	0.020	ug/L	0.0549	117	70-130	7.81	30	

Surrogate: 4-Bromofluorobenzene 0.0356

ug/L 0.0358 99.4 70-130

Batch B2C2919 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C2919-BLK1)**

Prepared &amp; Analyzed: 03/25/22

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						

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2919 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2919-BLK1) Continued</b>										
Prepared & Analyzed: 03/25/22										
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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2919 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2919-BLK1) Continued</b>										
Prepared & Analyzed: 03/25/22										
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							
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							

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187343  
Date Received: 03/14/22  
Date Reported: 04/12/22

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 B2C2919 - \*\*\* DEFAULT PREP \*\*\*

##### Blank (B2C2919-BLK1) Continued

Prepared & Analyzed: 03/25/22

n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	0.0292		ug/L	0.0358		81.6	70-130			

##### LCS (B2C2919-BS1)

Prepared & Analyzed: 03/25/22

Acetone	0.0302	0.020	ug/L	0.0238		127	70-130			
Benzene	0.0295	0.0030	ug/L	0.0319		92.3	70-130			
Benzyl chloride	0.0448	0.020	ug/L	0.0445		101	70-130			
Bromodichloromethane	0.0796	0.0025	ug/L	0.0670		119	70-130			
Bromoform	0.124	0.020	ug/L	0.103		120	70-130			
Bromomethane	0.0457	0.020	ug/L	0.0388		118	70-130			
2-Butanone (MEK)	0.0331	0.020	ug/L	0.0295		112	70-130			
Carbon Disulfide	0.0321	0.020	ug/L	0.0311		103	70-130			
Carbon Tetrachloride	0.0783	0.020	ug/L	0.0629		124	70-130			
Chlorobenzene	0.0534	0.020	ug/L	0.0460		116	70-130			
Chloroethane	0.0313	0.020	ug/L	0.0264		119	70-130			
Chloroform	0.0508	0.0040	ug/L	0.0488		104	70-130			
Chloromethane	0.0260	0.020	ug/L	0.0207		126	70-130			
Dibromochloromethane	0.0891	0.020	ug/L	0.0852		105	70-130			
1,2-Dibromoethane (EDB)	0.0774	0.020	ug/L	0.0768		101	70-130			
1,2-Dichlorobenzene	0.0617	0.020	ug/L	0.0601		103	70-130			
1,3-Dichlorobenzene	0.0661	0.020	ug/L	0.0601		110	70-130			
1,4-Dichlorobenzene	0.0636	0.020	ug/L	0.0601		106	70-130			
Dichlorodifluoromethane (R12)	0.0494	0.020	ug/L	0.0495		99.8	70-130			
1,1-Dichloroethane	0.0438	0.020	ug/L	0.0405		108	70-130			
1,2-Dichloroethane (EDC)	0.0406	0.0040	ug/L	0.0405		100	70-130			
cis-1,2-Dichloroethylene	0.0403	0.020	ug/L	0.0396		102	70-130			
1,1-Dichloroethylene	0.0487	0.020	ug/L	0.0396		123	70-130			
trans-1,2-Dichloroethylene	0.0415	0.020	ug/L	0.0396		105	70-130			
1,2-Dichloropropane	0.0526	0.020	ug/L	0.0462		114	70-130			
trans-1,3-Dichloropropylene	0.0486	0.020	ug/L	0.0454		107	70-130			
cis-1,3-Dichloropropylene	0.0492	0.020	ug/L	0.0454		108	70-130			
Dichlorotetrafluoroethane	0.0812	0.020	ug/L	0.0699		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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2919 - *** DEFAULT PREP ***</i>										
<b>LCS (B2C2919-BS1) Continued</b>						Prepared & Analyzed: 03/25/22				
Ethylbenzene	0.0461	0.020	ug/L	0.0434		106	70-130			
4-Ethyltoluene	0.0475	0.020	ug/L	0.0492		96.6	70-130			
Hexachlorobutadiene	0.106	0.020	ug/L	0.107		99.0	70-130			
2-Hexanone (MBK)	0.0457	0.020	ug/L	0.0410		112	70-130			
Isopropanol (IPA)	0.0314	0.20	ug/L	0.0216		145	70-130			QL-02
Methylene Chloride	0.0418	0.020	ug/L	0.0347		120	70-130			
4-Methyl-2-pentanone (MIBK)	0.0488	0.020	ug/L	0.0410		119	70-130			
Styrene	0.0438	0.020	ug/L	0.0426		103	70-130			
1,1,2,2-Tetrachloroethane	0.0825	0.020	ug/L	0.0687		120	70-130			
Tetrachloroethylene (PCE)	0.0693	0.010	ug/L	0.0679		102	70-130			
Toluene	0.0379	0.020	ug/L	0.0377		100	70-130			
1,2,4-Trichlorobenzene	0.0732	0.020	ug/L	0.0742		98.6	70-130			
1,1,2-Trichloroethane	0.0559	0.020	ug/L	0.0546		102	70-130			
1,1,1-Trichloroethane	0.0536	0.020	ug/L	0.0546		98.2	70-130			
Trichloroethylene (TCE)	0.0593	0.020	ug/L	0.0537		110	70-130			
Trichlorofluoromethane (R11)	0.0765	0.020	ug/L	0.0562		136	70-130			QL-02
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0931	0.020	ug/L	0.0766		122	70-130			
1,3,5-Trimethylbenzene	0.0506	0.020	ug/L	0.0492		103	70-130			
1,2,4-Trimethylbenzene	0.0461	0.020	ug/L	0.0492		93.8	70-130			
Vinyl acetate	0.0405	0.020	ug/L	0.0296		137	70-130			QL-02
Vinyl chloride	0.0332	0.020	ug/L	0.0256		130	70-130			
o-Xylene	0.0479	0.020	ug/L	0.0434		110	70-130			
m,p-Xylenes	0.101	0.020	ug/L	0.0868		116	70-130			
1,2,3-Trichloropropane	0.0469	0.020	ug/L	0.0603		77.8	70-130			
sec-Butylbenzene	0.0358	0.020	ug/L	0.0549		65.2	70-130			QL-07
Isopropylbenzene	0.0392	0.020	ug/L	0.0492		79.8	70-130			
n-Propylbenzene	0.0353	0.020	ug/L	0.0492		71.9	70-130			
4-Isopropyltoluene	0.0358	0.020	ug/L	0.0549		65.2	70-130			QL-07
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0333</i>		<i>ug/L</i>	<i>0.0358</i>		<i>93.0</i>	<i>70-130</i>			
<b>LCS Dup (B2C2919-BS1)</b>						Prepared: 03/25/22 Analyzed: 03/26/22				

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2919 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2C2919-BSD1) Continued</b>										
					Prepared: 03/25/22 Analyzed: 03/26/22					
Acetone	0.0275	0.020	ug/L	0.0238		116	70-130	9.56	30	
Benzene	0.0274	0.0030	ug/L	0.0319		85.9	70-130	7.18	30	
Benzyl chloride	0.0393	0.020	ug/L	0.0445		88.4	70-130	12.9	30	
Bromodichloromethane	0.0740	0.0025	ug/L	0.0670		110	70-130	7.33	30	
Bromoform	0.118	0.020	ug/L	0.103		114	70-130	5.29	30	
Bromomethane	0.0425	0.020	ug/L	0.0388		110	70-130	7.22	30	
2-Butanone (MEK)	0.0312	0.020	ug/L	0.0295		106	70-130	5.97	30	
Carbon Disulfide	0.0307	0.020	ug/L	0.0311		98.6	70-130	4.46	30	
Carbon Tetrachloride	0.0724	0.020	ug/L	0.0629		115	70-130	7.85	30	
Chlorobenzene	0.0501	0.020	ug/L	0.0460		109	70-130	6.31	30	
Chloroethane	0.0287	0.020	ug/L	0.0264		109	70-130	8.70	30	
Chloroform	0.0464	0.0040	ug/L	0.0488		95.1	70-130	8.94	30	
Chloromethane	0.0231	0.020	ug/L	0.0207		112	70-130	11.9	30	
Dibromochloromethane	0.0854	0.020	ug/L	0.0852		100	70-130	4.20	30	
1,2-Dibromoethane (EDB)	0.0718	0.020	ug/L	0.0768		93.4	70-130	7.52	30	
1,2-Dichlorobenzene	0.0565	0.020	ug/L	0.0601		93.9	70-130	8.85	30	
1,3-Dichlorobenzene	0.0592	0.020	ug/L	0.0601		98.5	70-130	11.0	30	
1,4-Dichlorobenzene	0.0561	0.020	ug/L	0.0601		93.3	70-130	12.6	30	
Dichlorodifluoromethane (R12)	0.0414	0.020	ug/L	0.0495		83.8	70-130	17.4	30	
1,1-Dichloroethane	0.0408	0.020	ug/L	0.0405		101	70-130	6.99	30	
1,2-Dichloroethane (EDC)	0.0364	0.0040	ug/L	0.0405		90.0	70-130	10.9	30	
cis-1,2-Dichloroethylene	0.0375	0.020	ug/L	0.0396		94.6	70-130	7.23	30	
1,1-Dichloroethylene	0.0447	0.020	ug/L	0.0396		113	70-130	8.57	30	
trans-1,2-Dichloroethylene	0.0389	0.020	ug/L	0.0396		98.0	70-130	6.61	30	
1,2-Dichloropropane	0.0503	0.020	ug/L	0.0462		109	70-130	4.58	30	
trans-1,3-Dichloropropylene	0.0449	0.020	ug/L	0.0454		99.0	70-130	7.77	30	
cis-1,3-Dichloropropylene	0.0460	0.020	ug/L	0.0454		101	70-130	6.77	30	
Dichlorotetrafluoroethane	0.0707	0.020	ug/L	0.0699		101	70-130	13.9	30	
Ethylbenzene	0.0433	0.020	ug/L	0.0434		99.8	70-130	6.21	30	
4-Ethyltoluene	0.0437	0.020	ug/L	0.0492		88.9	70-130	8.30	30	
Hexachlorobutadiene	0.0896	0.020	ug/L	0.107		84.0	70-130	16.4	30	
2-Hexanone (MBK)	0.0434	0.020	ug/L	0.0410		106	70-130	5.24	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C2919 - \*\*\* DEFAULT PREP \*\*\*

**LCS Dup (B2C2919-BSD1) Continued**

Prepared: 03/25/22 Analyzed: 03/26/22

Isopropanol (IPA)	0.0263	0.20	ug/L	0.0216		122	70-130	17.7	30	
Methylene Chloride	0.0406	0.020	ug/L	0.0347		117	70-130	2.78	30	
4-Methyl-2-pentanone (MIBK)	0.0472	0.020	ug/L	0.0410		115	70-130	3.50	30	
Styrene	0.0456	0.020	ug/L	0.0426		107	70-130	4.10	30	
1,1,2,2-Tetrachloroethane	0.0778	0.020	ug/L	0.0687		113	70-130	5.91	30	
Tetrachloroethylene (PCE)	0.0660	0.010	ug/L	0.0679		97.2	70-130	5.02	30	
Toluene	0.0356	0.020	ug/L	0.0377		94.5	70-130	6.15	30	
1,2,4-Trichlorobenzene	0.0608	0.020	ug/L	0.0742		81.9	70-130	18.5	30	
1,1,2-Trichloroethane	0.0541	0.020	ug/L	0.0546		99.1	70-130	3.37	30	
1,1,1-Trichloroethane	0.0483	0.020	ug/L	0.0546		88.6	70-130	10.3	30	
Trichloroethylene (TCE)	0.0588	0.020	ug/L	0.0537		110	70-130	0.728	30	
Trichlorofluoromethane (R11)	0.0690	0.020	ug/L	0.0562		123	70-130	10.3	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0891	0.020	ug/L	0.0766		116	70-130	4.46	30	
1,3,5-Trimethylbenzene	0.0473	0.020	ug/L	0.0492		96.3	70-130	6.72	30	
1,2,4-Trimethylbenzene	0.0430	0.020	ug/L	0.0492		87.4	70-130	7.06	30	
Vinyl acetate	0.0371	0.020	ug/L	0.0296		125	70-130	8.71	30	
Vinyl chloride	0.0295	0.020	ug/L	0.0256		116	70-130	11.6	30	
o-Xylene	0.0449	0.020	ug/L	0.0434		104	70-130	6.36	30	
m,p-Xylenes	0.0901	0.020	ug/L	0.0868		104	70-130	11.5	30	
1,2,3-Trichloropropane	0.0439	0.020	ug/L	0.0603		72.8	70-130	6.64	30	
sec-Butylbenzene	0.0335	0.020	ug/L	0.0549		61.1	70-130	6.49	30	QL-07
Isopropylbenzene	0.0365	0.020	ug/L	0.0492		74.3	70-130	7.14	30	
n-Propylbenzene	0.0339	0.020	ug/L	0.0492		69.0	70-130	4.12	30	QL-03
4-Isopropyltoluene	0.0322	0.020	ug/L	0.0549		58.6	70-130	10.7	30	QL-07

Surrogate: 4-Bromofluorobenzene 0.0304 ug/L 0.0358 85.0 70-130

Batch B2C2922 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C2922-BLK1)**

Prepared &amp; Analyzed: 03/28/22

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							

**Allen Aminian**  
QA/QC Manager



**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C2922 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C2922-BLK1) Continued**

Prepared &amp; Analyzed: 03/28/22

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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2922 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2922-BLK1) Continued</b>										
Prepared & Analyzed: 03/28/22										
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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C2922 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C2922-BLK1) Continued**

Prepared &amp; Analyzed: 03/28/22

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 0.0273

ug/L 0.0358 76.4 70-130

**LCS (B2C2922-BS1)**

Prepared &amp; Analyzed: 03/28/22

Acetone	<b>0.0301</b>	0.020	ug/L	0.0238	127	70-130
Benzene	<b>0.0285</b>	0.0030	ug/L	0.0319	89.1	70-130
Benzyl chloride	<b>0.0362</b>	0.020	ug/L	0.0445	81.3	70-130
Bromodichloromethane	<b>0.0752</b>	0.0025	ug/L	0.0670	112	70-130
Bromoform	<b>0.110</b>	0.020	ug/L	0.103	107	70-130
Bromomethane	<b>0.0436</b>	0.020	ug/L	0.0388	112	70-130
2-Butanone (MEK)	<b>0.0331</b>	0.020	ug/L	0.0295	112	70-130
Carbon Disulfide	<b>0.0318</b>	0.020	ug/L	0.0311	102	70-130
Carbon Tetrachloride	<b>0.0746</b>	0.020	ug/L	0.0629	118	70-130
Chlorobenzene	<b>0.0480</b>	0.020	ug/L	0.0460	104	70-130
Chloroethane	<b>0.0296</b>	0.020	ug/L	0.0264	112	70-130
Chloroform	<b>0.0496</b>	0.0040	ug/L	0.0488	102	70-130
Chloromethane	<b>0.0249</b>	0.020	ug/L	0.0207	120	70-130
Dibromochloromethane	<b>0.0837</b>	0.020	ug/L	0.0852	98.2	70-130
1,2-Dibromoethane (EDB)	<b>0.0725</b>	0.020	ug/L	0.0768	94.3	70-130
1,2-Dichlorobenzene	<b>0.0533</b>	0.020	ug/L	0.0601	88.6	70-130
1,3-Dichlorobenzene	<b>0.0554</b>	0.020	ug/L	0.0601	92.2	70-130
1,4-Dichlorobenzene	<b>0.0510</b>	0.020	ug/L	0.0601	84.8	70-130
Dichlorodifluoromethane (R12)	<b>0.0384</b>	0.020	ug/L	0.0495	77.6	70-130
1,1-Dichloroethane	<b>0.0432</b>	0.020	ug/L	0.0405	107	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: MB187343  
 Date Received: 03/14/22  
 Date Reported: 04/12/22

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 B2C2922 - \*\*\* DEFAULT PREP \*\*\*

#### LCS (B2C2922-BS1) Continued

Prepared & Analyzed: 03/28/22

1,2-Dichloroethane (EDC)	0.0410	0.0040	ug/L	0.0405		101	70-130			
cis-1,2-Dichloroethylene	0.0401	0.020	ug/L	0.0396		101	70-130			
1,1-Dichloroethylene	0.0475	0.020	ug/L	0.0396		120	70-130			
trans-1,2-Dichloroethylene	0.0416	0.020	ug/L	0.0396		105	70-130			
1,2-Dichloropropane	0.0510	0.020	ug/L	0.0462		110	70-130			
trans-1,3-Dichloropropylene	0.0446	0.020	ug/L	0.0454		98.3	70-130			
cis-1,3-Dichloropropylene	0.0459	0.020	ug/L	0.0454		101	70-130			
Dichlorotetrafluoroethane	0.0633	0.020	ug/L	0.0699		90.5	70-130			
Ethylbenzene	0.0422	0.020	ug/L	0.0434		97.2	70-130			
4-Ethyltoluene	0.0428	0.020	ug/L	0.0492		87.0	70-130			
Hexachlorobutadiene	0.0891	0.020	ug/L	0.107		83.5	70-130			
2-Hexanone (MBK)	0.0433	0.020	ug/L	0.0410		106	70-130			
Isopropanol (IPA)	0.0309	0.20	ug/L	0.0216		143	70-130			QL-02
Methylene Chloride	0.0406	0.020	ug/L	0.0347		117	70-130			
4-Methyl-2-pentanone (MIBK)	0.0465	0.020	ug/L	0.0410		114	70-130			
Styrene	0.0451	0.020	ug/L	0.0426		106	70-130			
1,1,2,2-Tetrachloroethane	0.0743	0.020	ug/L	0.0687		108	70-130			
Tetrachloroethylene (PCE)	0.0652	0.010	ug/L	0.0679		96.1	70-130			
Toluene	0.0357	0.020	ug/L	0.0377		94.6	70-130			
1,2,4-Trichlorobenzene	0.0547	0.020	ug/L	0.0742		73.7	70-130			
1,1,2-Trichloroethane	0.0537	0.020	ug/L	0.0546		98.4	70-130			
1,1,1-Trichloroethane	0.0531	0.020	ug/L	0.0546		97.3	70-130			
Trichloroethylene (TCE)	0.0572	0.020	ug/L	0.0537		106	70-130			
Trichlorofluoromethane (R11)	0.0730	0.020	ug/L	0.0562		130	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0904	0.020	ug/L	0.0766		118	70-130			
1,3,5-Trimethylbenzene	0.0459	0.020	ug/L	0.0492		93.4	70-130			
1,2,4-Trimethylbenzene	0.0415	0.020	ug/L	0.0492		84.4	70-130			
Vinyl acetate	0.0408	0.020	ug/L	0.0296		138	70-130			QL-02
Vinyl chloride	0.0316	0.020	ug/L	0.0256		124	70-130			
o-Xylene	0.0435	0.020	ug/L	0.0434		100	70-130			
m,p-Xylenes	0.0928	0.020	ug/L	0.0868		107	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2922 - *** DEFAULT PREP ***</i>										
<b>LCS (B2C2922-BS1) Continued</b>					Prepared & Analyzed: 03/28/22					
1,2,3-Trichloropropane	<b>0.0421</b>	0.020	ug/L	0.0603	69.8	70-130				QL-07
sec-Butylbenzene	<b>0.0324</b>	0.020	ug/L	0.0549	59.1	70-130				QL-07
Isopropylbenzene	<b>0.0353</b>	0.020	ug/L	0.0492	71.9	70-130				
n-Propylbenzene	<b>0.0330</b>	0.020	ug/L	0.0492	67.2	70-130				QL-07
4-Isopropyltoluene	<b>0.0316</b>	0.020	ug/L	0.0549	57.6	70-130				QL-07
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0319</i>		<i>ug/L</i>	<i>0.0358</i>	<i>89.0</i>	<i>70-130</i>				
<b>LCS Dup (B2C2922-BSD1)</b>					Prepared: 03/28/22 Analyzed: 03/29/22					
Acetone	<b>0.0244</b>	0.020	ug/L	0.0238	103	70-130	20.9	30		
Benzene	<b>0.0250</b>	0.0030	ug/L	0.0319	78.4	70-130	12.8	30		
Benzyl chloride	<b>0.0327</b>	0.020	ug/L	0.0445	73.5	70-130	10.1	30		
Bromodichloromethane	<b>0.0652</b>	0.0025	ug/L	0.0670	97.3	70-130	14.2	30		
Bromoform	<b>0.0964</b>	0.020	ug/L	0.103	93.3	70-130	13.2	30		
Bromomethane	<b>0.0363</b>	0.020	ug/L	0.0388	93.4	70-130	18.5	30		
2-Butanone (MEK)	<b>0.0282</b>	0.020	ug/L	0.0295	95.5	70-130	16.2	30		
Carbon Disulfide	<b>0.0270</b>	0.020	ug/L	0.0311	86.6	70-130	16.5	30		
Carbon Tetrachloride	<b>0.0662</b>	0.020	ug/L	0.0629	105	70-130	11.8	30		
Chlorobenzene	<b>0.0425</b>	0.020	ug/L	0.0460	92.3	70-130	12.2	30		
Chloroethane	<b>0.0245</b>	0.020	ug/L	0.0264	93.0	70-130	18.5	30		
Chloroform	<b>0.0431</b>	0.0040	ug/L	0.0488	88.3	70-130	13.9	30		
Chloromethane	<b>0.0198</b>	0.020	ug/L	0.0207	96.0	70-130	22.6	30		
Dibromochloromethane	<b>0.0745</b>	0.020	ug/L	0.0852	87.4	70-130	11.6	30		
1,2-Dibromoethane (EDB)	<b>0.0660</b>	0.020	ug/L	0.0768	85.9	70-130	9.32	30		
1,2-Dichlorobenzene	<b>0.0488</b>	0.020	ug/L	0.0601	81.2	70-130	8.72	30		
1,3-Dichlorobenzene	<b>0.0489</b>	0.020	ug/L	0.0601	81.4	70-130	12.4	30		
1,4-Dichlorobenzene	<b>0.0461</b>	0.020	ug/L	0.0601	76.6	70-130	10.2	30		
Dichlorodifluoromethane (R12)	<b>0.0324</b>	0.020	ug/L	0.0495	65.6	70-130	16.8	30		QL-03
1,1-Dichloroethane	<b>0.0370</b>	0.020	ug/L	0.0405	91.4	70-130	15.4	30		
1,2-Dichloroethane (EDC)	<b>0.0365</b>	0.0040	ug/L	0.0405	90.3	70-130	11.6	30		
cis-1,2-Dichloroethylene	<b>0.0347</b>	0.020	ug/L	0.0396	87.5	70-130	14.4	30		
1,1-Dichloroethylene	<b>0.0395</b>	0.020	ug/L	0.0396	99.5	70-130	18.4	30		
trans-1,2-Dichloroethylene	<b>0.0362</b>	0.020	ug/L	0.0396	91.4	70-130	13.8	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C2922 - *** DEFAULT PREP ***										
<b>LCS Dup (B2C2922-BSD1) Continued</b>										
					Prepared: 03/28/22 Analyzed: 03/29/22					
1,2-Dichloropropane	0.0429	0.020	ug/L	0.0462		92.9	70-130	17.1	30	
trans-1,3-Dichloropropylene	0.0413	0.020	ug/L	0.0454		90.9	70-130	7.82	30	
cis-1,3-Dichloropropylene	0.0411	0.020	ug/L	0.0454		90.5	70-130	11.1	30	
Dichlorotetrafluoroethane	0.0531	0.020	ug/L	0.0699		75.9	70-130	17.5	30	
Ethylbenzene	0.0374	0.020	ug/L	0.0434		86.2	70-130	12.0	30	
4-Ethyltoluene	0.0376	0.020	ug/L	0.0492		76.4	70-130	13.0	30	
Hexachlorobutadiene	0.0818	0.020	ug/L	0.107		76.7	70-130	8.49	30	
2-Hexanone (MBK)	0.0373	0.020	ug/L	0.0410		91.0	70-130	14.9	30	
Isopropanol (IPA)	0.0268	0.20	ug/L	0.0216		124	70-130	14.3	30	
Methylene Chloride	0.0342	0.020	ug/L	0.0347		98.5	70-130	17.1	30	
4-Methyl-2-pentanone (MIBK)	0.0394	0.020	ug/L	0.0410		96.2	70-130	16.5	30	
Styrene	0.0356	0.020	ug/L	0.0426		83.5	70-130	23.6	30	
1,1,2,2-Tetrachloroethane	0.0630	0.020	ug/L	0.0687		91.7	70-130	16.5	30	
Tetrachloroethylene (PCE)	0.0576	0.010	ug/L	0.0679		84.9	70-130	12.4	30	
Toluene	0.0318	0.020	ug/L	0.0377		84.5	70-130	11.3	30	
1,2,4-Trichlorobenzene	0.0508	0.020	ug/L	0.0742		68.4	70-130	7.46	30	QL-03
1,1,2-Trichloroethane	0.0476	0.020	ug/L	0.0546		87.2	70-130	12.1	30	
1,1,1-Trichloroethane	0.0469	0.020	ug/L	0.0546		85.9	70-130	12.4	30	
Trichloroethylene (TCE)	0.0477	0.020	ug/L	0.0537		88.8	70-130	18.0	30	
Trichlorofluoromethane (R11)	0.0594	0.020	ug/L	0.0562		106	70-130	20.4	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0774	0.020	ug/L	0.0766		101	70-130	15.5	30	
1,3,5-Trimethylbenzene	0.0402	0.020	ug/L	0.0492		81.8	70-130	13.2	30	
1,2,4-Trimethylbenzene	0.0380	0.020	ug/L	0.0492		77.2	70-130	8.91	30	
Vinyl acetate	0.0344	0.020	ug/L	0.0296		116	70-130	17.0	30	
Vinyl chloride	0.0255	0.020	ug/L	0.0256		99.6	70-130	21.4	30	
o-Xylene	0.0378	0.020	ug/L	0.0434		87.0	70-130	14.1	30	
m,p-Xylenes	0.0754	0.020	ug/L	0.0868		86.8	70-130	20.7	30	
1,2,3-Trichloropropane	0.0370	0.020	ug/L	0.0603		61.3	70-130	13.0	30	QL-07
sec-Butylbenzene	0.0287	0.020	ug/L	0.0549		52.2	70-130	12.4	30	QL-07
Isopropylbenzene	0.0307	0.020	ug/L	0.0492		62.5	70-130	14.0	30	QL-03
n-Propylbenzene	0.0282	0.020	ug/L	0.0492		57.4	70-130	15.7	30	QL-07

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C2922 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2C2922-BSD1) Continued</b>										
					Prepared: 03/28/22 Analyzed: 03/29/22					
4-Isopropyltoluene	0.0282	0.020	ug/L	0.0549	51.3	70-130	11.6	30	30	QL-07
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0345</i>		<i>ug/L</i>	<i>0.0358</i>	<i>96.4</i>	<i>70-130</i>				
<i>Batch B2C3024 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C3024-BLK1)</b>										
					Prepared & Analyzed: 03/29/22					
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C3024 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C3024-BLK1) Continued</b>										
Prepared & Analyzed: 03/29/22										
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							
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							

**Allen Aminian**  
QA/QC Manager



**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C3024 - *** DEFAULT PREP ***										
<b>Blank (B2C3024-BLK1) Continued</b>										
Prepared & Analyzed: 03/29/22										
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>0.124</i>		<i>ug/L</i>	<i>0.143</i>		<i>86.5</i>	<i>70-130</i>			
<b>LCS (B2C3024-BS1)</b>										
Prepared: 03/29/22 Analyzed: 03/30/22										
Acetone	<b>0.115</b>	0.020	ug/L	0.0950		121	70-130			
Benzene	<b>0.114</b>	0.0030	ug/L	0.128		89.3	70-130			
Benzyl chloride	<b>0.220</b>	0.020	ug/L	0.178		124	70-130			
Bromodichloromethane	<b>0.320</b>	0.0025	ug/L	0.268		119	70-130			
Bromoform	<b>0.537</b>	0.020	ug/L	0.413		130	70-130			
Bromomethane	<b>0.166</b>	0.020	ug/L	0.155		107	70-130			
2-Butanone (MEK)	<b>0.133</b>	0.020	ug/L	0.118		112	70-130			
Carbon Disulfide	<b>0.131</b>	0.020	ug/L	0.125		105	70-130			
Carbon Tetrachloride	<b>0.302</b>	0.020	ug/L	0.252		120	70-130			
Chlorobenzene	<b>0.212</b>	0.020	ug/L	0.184		115	70-130			
Chloroethane	<b>0.112</b>	0.020	ug/L	0.106		106	70-130			
Chloroform	<b>0.192</b>	0.0040	ug/L	0.195		98.3	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C3024 - *** DEFAULT PREP ***										
<b>LCS (B2C3024-BS1) Continued</b>										
Prepared: 03/29/22 Analyzed: 03/30/22										
Chloromethane	0.0898	0.020	ug/L	0.0826		109	70-130			
Dibromochloromethane	0.385	0.020	ug/L	0.341		113	70-130			
1,2-Dibromoethane (EDB)	0.307	0.020	ug/L	0.307		99.9	70-130			
1,2-Dichlorobenzene	0.258	0.020	ug/L	0.240		107	70-130			
1,3-Dichlorobenzene	0.270	0.020	ug/L	0.240		112	70-130			
1,4-Dichlorobenzene	0.267	0.020	ug/L	0.240		111	70-130			
Dichlorodifluoromethane (R12)	0.173	0.020	ug/L	0.198		87.4	70-130			
1,1-Dichloroethane	0.164	0.020	ug/L	0.162		101	70-130			
1,2-Dichloroethane (EDC)	0.157	0.0040	ug/L	0.162		97.3	70-130			
cis-1,2-Dichloroethylene	0.154	0.020	ug/L	0.159		97.2	70-130			
1,1-Dichloroethylene	0.178	0.020	ug/L	0.159		112	70-130			
trans-1,2-Dichloroethylene	0.171	0.020	ug/L	0.159		108	70-130			
1,2-Dichloropropane	0.200	0.020	ug/L	0.185		108	70-130			
trans-1,3-Dichloropropylene	0.185	0.020	ug/L	0.182		102	70-130			
cis-1,3-Dichloropropylene	0.189	0.020	ug/L	0.182		104	70-130			
Dichlorotetrafluoroethane	0.282	0.020	ug/L	0.280		101	70-130			
Ethylbenzene	0.188	0.020	ug/L	0.174		108	70-130			
4-Ethyltoluene	0.218	0.020	ug/L	0.197		111	70-130			
Hexachlorobutadiene	0.409	0.020	ug/L	0.427		95.9	70-130			
2-Hexanone (MBK)	0.189	0.020	ug/L	0.164		115	70-130			
Isopropanol (IPA)	0.115	0.20	ug/L	0.0865		133	70-130			QL-06
Methylene Chloride	0.154	0.020	ug/L	0.139		111	70-130			
4-Methyl-2-pentanone (MIBK)	0.196	0.020	ug/L	0.164		120	70-130			
Styrene	0.181	0.020	ug/L	0.170		106	70-130			
1,1,2,2-Tetrachloroethane	0.316	0.020	ug/L	0.275		115	70-130			
Tetrachloroethylene (PCE)	0.278	0.010	ug/L	0.271		103	70-130			
Toluene	0.151	0.020	ug/L	0.151		100	70-130			
1,2,4-Trichlorobenzene	0.333	0.020	ug/L	0.297		112	70-130			
1,1,2-Trichloroethane	0.226	0.020	ug/L	0.218		104	70-130			
1,1,1-Trichloroethane	0.213	0.020	ug/L	0.218		97.7	70-130			
Trichloroethylene (TCE)	0.225	0.020	ug/L	0.215		105	70-130			
Trichlorofluoromethane (R11)	0.264	0.020	ug/L	0.225		118	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2C3024 - *** DEFAULT PREP ***</i>										
<b>LCS (B2C3024-BS1) Continued</b>										
					Prepared: 03/29/22 Analyzed: 03/30/22					
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.347	0.020	ug/L	0.307		113	70-130			
1,3,5-Trimethylbenzene	0.209	0.020	ug/L	0.197		106	70-130			
1,2,4-Trimethylbenzene	0.193	0.020	ug/L	0.197		98.1	70-130			
Vinyl acetate	0.154	0.020	ug/L	0.118		130	70-130			
Vinyl chloride	0.115	0.020	ug/L	0.102		112	70-130			
o-Xylene	0.189	0.020	ug/L	0.174		109	70-130			
m,p-Xylenes	0.384	0.020	ug/L	0.347		110	70-130			
1,2,3-Trichloropropane	0.171	0.020	ug/L	0.241		71.1	70-130			
sec-Butylbenzene	0.149	0.020	ug/L	0.220		67.8	70-130			QL-07
Isopropylbenzene	0.153	0.020	ug/L	0.197		77.9	70-130			
n-Propylbenzene	0.142	0.020	ug/L	0.197		72.0	70-130			
4-Isopropyltoluene	0.146	0.020	ug/L	0.220		66.4	70-130			QL-07
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.124</i>		<i>ug/L</i>	<i>0.143</i>		<i>86.6</i>	<i>70-130</i>			
<b>LCS Dup (B2C3024-BS1)</b>										
					Prepared: 03/29/22 Analyzed: 03/30/22					
Acetone	0.115	0.020	ug/L	0.0950		121	70-130	0.620	30	
Benzene	0.113	0.0030	ug/L	0.128		88.1	70-130	1.35	30	
Benzyl chloride	0.219	0.020	ug/L	0.178		123	70-130	0.424	30	
Bromodichloromethane	0.321	0.0025	ug/L	0.268		120	70-130	0.376	30	
Bromoform	0.548	0.020	ug/L	0.413		132	70-130	1.91	30	QL-03
Bromomethane	0.167	0.020	ug/L	0.155		108	70-130	1.10	30	
2-Butanone (MEK)	0.131	0.020	ug/L	0.118		111	70-130	1.25	30	
Carbon Disulfide	0.129	0.020	ug/L	0.125		103	70-130	1.59	30	
Carbon Tetrachloride	0.297	0.020	ug/L	0.252		118	70-130	1.74	30	
Chlorobenzene	0.210	0.020	ug/L	0.184		114	70-130	0.830	30	
Chloroethane	0.112	0.020	ug/L	0.106		106	70-130	0.00	30	
Chloroform	0.188	0.0040	ug/L	0.195		96.3	70-130	2.08	30	
Chloromethane	0.0901	0.020	ug/L	0.0826		109	70-130	0.276	30	
Dibromochloromethane	0.385	0.020	ug/L	0.341		113	70-130	0.133	30	
1,2-Dibromoethane (EDB)	0.304	0.020	ug/L	0.307		99.0	70-130	0.905	30	
1,2-Dichlorobenzene	0.259	0.020	ug/L	0.240		108	70-130	0.209	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C3024 - *** DEFAULT PREP ***										
<b>LCS Dup (B2C3024-BSD1) Continued</b>										
					Prepared: 03/29/22 Analyzed: 03/30/22					
1,3-Dichlorobenzene	0.273	0.020	ug/L	0.240		113	70-130	0.753	30	
1,4-Dichlorobenzene	0.271	0.020	ug/L	0.240		113	70-130	1.61	30	
Dichlorodifluoromethane (R12)	0.158	0.020	ug/L	0.198		79.7	70-130	9.24	30	
1,1-Dichloroethane	0.162	0.020	ug/L	0.162		100	70-130	1.07	30	
1,2-Dichloroethane (EDC)	0.157	0.0040	ug/L	0.162		96.9	70-130	0.335	30	
cis-1,2-Dichloroethylene	0.152	0.020	ug/L	0.159		96.0	70-130	1.16	30	
1,1-Dichloroethylene	0.174	0.020	ug/L	0.159		109	70-130	2.48	30	
trans-1,2-Dichloroethylene	0.168	0.020	ug/L	0.159		106	70-130	1.83	30	
1,2-Dichloropropane	0.194	0.020	ug/L	0.185		105	70-130	2.60	30	
trans-1,3-Dichloropropylene	0.182	0.020	ug/L	0.182		101	70-130	1.28	30	
cis-1,3-Dichloropropylene	0.188	0.020	ug/L	0.182		104	70-130	0.0722	30	
Dichlorotetrafluoroethane	0.262	0.020	ug/L	0.280		93.7	70-130	7.50	30	
Ethylbenzene	0.187	0.020	ug/L	0.174		108	70-130	0.464	30	
4-Ethyltoluene	0.217	0.020	ug/L	0.197		110	70-130	0.408	30	
Hexachlorobutadiene	0.417	0.020	ug/L	0.427		97.8	70-130	1.91	30	
2-Hexanone (MBK)	0.184	0.020	ug/L	0.164		112	70-130	2.61	30	
Isopropanol (IPA)	0.114	0.20	ug/L	0.0865		132	70-130	0.343	30	QL-06
Methylene Chloride	0.153	0.020	ug/L	0.139		110	70-130	1.15	30	
4-Methyl-2-pentanone (MIBK)	0.193	0.020	ug/L	0.164		118	70-130	1.56	30	
Styrene	0.180	0.020	ug/L	0.170		106	70-130	0.660	30	
1,1,2,2-Tetrachloroethane	0.313	0.020	ug/L	0.275		114	70-130	0.852	30	
Tetrachloroethylene (PCE)	0.280	0.010	ug/L	0.271		103	70-130	0.704	30	
Toluene	0.149	0.020	ug/L	0.151		98.9	70-130	1.23	30	
1,2,4-Trichlorobenzene	0.334	0.020	ug/L	0.297		113	70-130	0.423	30	
1,1,2-Trichloroethane	0.225	0.020	ug/L	0.218		103	70-130	0.775	30	
1,1,1-Trichloroethane	0.210	0.020	ug/L	0.218		96.4	70-130	1.37	30	
Trichloroethylene (TCE)	0.225	0.020	ug/L	0.215		105	70-130	0.0239	30	
Trichlorofluoromethane (R11)	0.264	0.020	ug/L	0.225		117	70-130	0.106	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.342	0.020	ug/L	0.307		111	70-130	1.60	30	
1,3,5-Trimethylbenzene	0.207	0.020	ug/L	0.197		105	70-130	1.04	30	
1,2,4-Trimethylbenzene	0.191	0.020	ug/L	0.197		96.9	70-130	1.26	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C3024 - \*\*\* DEFAULT PREP \*\*\*

**LCS Dup (B2C3024-BSD1) Continued**

Prepared: 03/29/22 Analyzed: 03/30/22

Vinyl acetate	0.152	0.020	ug/L	0.118		128	70-130	1.15	30	
Vinyl chloride	0.118	0.020	ug/L	0.102		115	70-130	2.51	30	
o-Xylene	0.189	0.020	ug/L	0.174		109	70-130	0.253	30	
m,p-Xylenes	0.375	0.020	ug/L	0.347		108	70-130	2.16	30	
1,2,3-Trichloropropane	0.183	0.020	ug/L	0.241		75.9	70-130	6.56	30	
sec-Butylbenzene	0.148	0.020	ug/L	0.220		67.5	70-130	0.406	30	QL-07
Isopropylbenzene	0.152	0.020	ug/L	0.197		77.4	70-130	0.580	30	
n-Propylbenzene	0.141	0.020	ug/L	0.197		71.8	70-130	0.382	30	
4-Isopropyltoluene	0.143	0.020	ug/L	0.220		65.3	70-130	1.59	30	QL-07

Surrogate: 4-Bromofluorobenzene 0.124 ug/L 0.143 86.5 70-130

**Duplicate (B2C3024-DUP1)**

Source: 2C28013-02 Prepared: 03/29/22 Analyzed: 04/11/22

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	
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	

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2C3024 - *** DEFAULT PREP ***										
<b>Duplicate (B2C3024-DUP1) Continued Source: 2C28013-02 Prepared: 03/29/22 Analyzed: 04/11/22</b>										
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	<0.020	0.020	ug/L		0.0537				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	
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	

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2C3024 - \*\*\* DEFAULT PREP \*\*\*

**Duplicate (B2C3024-DUP1) Continued** Source: 2C28013-02 Prepared: 03/29/22 Analyzed: 04/11/22

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						200	

Surrogate: 4-Bromofluorobenzene 0.126 ug/L 0.143 87.7 70-130

Batch B2D0107 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2D0107-BLK1)**

Prepared &amp; Analyzed: 03/31/22

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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0107 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D0107-BLK1) Continued</b>										
Prepared & Analyzed: 03/31/22										
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							
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							

**Allen Aminian**  
QA/QC Manager



**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limit	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0107 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D0107-BLK1) Continued</b>										
Prepared & Analyzed: 03/31/22										
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							
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							

**Allen Aminian**  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0107 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D0107-BLK1) Continued</b>										
Prepared & Analyzed: 03/31/22										
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>0.0323</i>		<i>ug/L</i>	<i>0.0358</i>		<i>90.2</i>	<i>70-130</i>			
<b>LCS (B2D0107-BS1)</b>										
Prepared & Analyzed: 03/31/22										
Acetone	<b>0.0245</b>	0.020	ug/L	0.0238		103	70-130			
Benzene	<b>0.0259</b>	0.0030	ug/L	0.0319		81.0	70-130			
Benzyl chloride	<b>0.0368</b>	0.020	ug/L	0.0445		82.6	70-130			
Bromodichloromethane	<b>0.0658</b>	0.0025	ug/L	0.0670		98.2	70-130			
Bromoform	<b>0.103</b>	0.020	ug/L	0.103		99.6	70-130			
Bromomethane	<b>0.0370</b>	0.020	ug/L	0.0388		95.3	70-130			
2-Butanone (MEK)	<b>0.0277</b>	0.020	ug/L	0.0295		93.8	70-130			
Carbon Disulfide	<b>0.0274</b>	0.020	ug/L	0.0311		87.9	70-130			
Carbon Tetrachloride	<b>0.0660</b>	0.020	ug/L	0.0629		105	70-130			
Chlorobenzene	<b>0.0462</b>	0.020	ug/L	0.0460		100	70-130			
Chloroethane	<b>0.0249</b>	0.020	ug/L	0.0264		94.5	70-130			
Chloroform	<b>0.0428</b>	0.0040	ug/L	0.0488		87.7	70-130			
Chloromethane	<b>0.0201</b>	0.020	ug/L	0.0207		97.4	70-130			
Dibromochloromethane	<b>0.0777</b>	0.020	ug/L	0.0852		91.2	70-130			
1,2-Dibromoethane (EDB)	<b>0.0684</b>	0.020	ug/L	0.0768		89.0	70-130			
1,2-Dichlorobenzene	<b>0.0569</b>	0.020	ug/L	0.0601		94.7	70-130			
1,3-Dichlorobenzene	<b>0.0577</b>	0.020	ug/L	0.0601		95.9	70-130			
1,4-Dichlorobenzene	<b>0.0559</b>	0.020	ug/L	0.0601		92.9	70-130			
Dichlorodifluoromethane (R12)	<b>0.0499</b>	0.020	ug/L	0.0495		101	70-130			
1,1-Dichloroethane	<b>0.0364</b>	0.020	ug/L	0.0405		90.0	70-130			
1,2-Dichloroethane (EDC)	<b>0.0355</b>	0.0040	ug/L	0.0405		87.6	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0107 - *** DEFAULT PREP ***</i>										
<b>LCS (B2D0107-BS1) Continued</b>										
Prepared & Analyzed: 03/31/22										
cis-1,2-Dichloroethylene	<b>0.0344</b>	0.020	ug/L	0.0396		86.8	70-130			
1,1-Dichloroethylene	<b>0.0389</b>	0.020	ug/L	0.0396		98.1	70-130			
trans-1,2-Dichloroethylene	<b>0.0355</b>	0.020	ug/L	0.0396		89.5	70-130			
1,2-Dichloropropane	<b>0.0440</b>	0.020	ug/L	0.0462		95.3	70-130			
trans-1,3-Dichloropropylene	<b>0.0412</b>	0.020	ug/L	0.0454		90.8	70-130			
cis-1,3-Dichloropropylene	<b>0.0413</b>	0.020	ug/L	0.0454		91.1	70-130			
Dichlorotetrafluoroethane	<b>0.0700</b>	0.020	ug/L	0.0699		100	70-130			
Ethylbenzene	<b>0.0407</b>	0.020	ug/L	0.0434		93.8	70-130			
4-Ethyltoluene	<b>0.0396</b>	0.020	ug/L	0.0492		80.5	70-130			
Hexachlorobutadiene	<b>0.0878</b>	0.020	ug/L	0.107		82.3	70-130			
2-Hexanone (MBK)	<b>0.0368</b>	0.020	ug/L	0.0410		89.8	70-130			
Isopropanol (IPA)	<b>0.0228</b>	0.20	ug/L	0.0216		105	70-130			
Methylene Chloride	<b>0.0348</b>	0.020	ug/L	0.0347		100	70-130			
4-Methyl-2-pentanone (MIBK)	<b>0.0392</b>	0.020	ug/L	0.0410		95.6	70-130			
Styrene	<b>0.0399</b>	0.020	ug/L	0.0426		93.6	70-130			
1,1,2,2-Tetrachloroethane	<b>0.0676</b>	0.020	ug/L	0.0687		98.5	70-130			
Tetrachloroethylene (PCE)	<b>0.0622</b>	0.010	ug/L	0.0679		91.7	70-130			
Toluene	<b>0.0334</b>	0.020	ug/L	0.0377		88.6	70-130			
1,2,4-Trichlorobenzene	<b>0.0660</b>	0.020	ug/L	0.0742		89.0	70-130			
1,1,2-Trichloroethane	<b>0.0494</b>	0.020	ug/L	0.0546		90.6	70-130			
1,1,1-Trichloroethane	<b>0.0475</b>	0.020	ug/L	0.0546		87.1	70-130			
Trichloroethylene (TCE)	<b>0.0493</b>	0.020	ug/L	0.0537		91.7	70-130			
Trichlorofluoromethane (R11)	<b>0.0588</b>	0.020	ug/L	0.0562		105	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<b>0.0780</b>	0.020	ug/L	0.0766		102	70-130			
1,3,5-Trimethylbenzene	<b>0.0451</b>	0.020	ug/L	0.0492		91.8	70-130			
1,2,4-Trimethylbenzene	<b>0.0418</b>	0.020	ug/L	0.0492		85.1	70-130			
Vinyl acetate	<b>0.0335</b>	0.020	ug/L	0.0296		113	70-130			
Vinyl chloride	<b>0.0257</b>	0.020	ug/L	0.0256		101	70-130			
o-Xylene	<b>0.0416</b>	0.020	ug/L	0.0434		95.7	70-130			
m,p-Xylenes	<b>0.0875</b>	0.020	ug/L	0.0868		101	70-130			
1,2,3-Trichloropropane	<b>0.0475</b>	0.020	ug/L	0.0603		78.8	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0107 - *** DEFAULT PREP ***</i>										
<b>LCS (B2D0107-BS1) Continued</b>					Prepared & Analyzed: 03/31/22					
sec-Butylbenzene	<b>0.0480</b>	0.020	ug/L	0.0549		87.5	70-130			
Isopropylbenzene	<b>0.0427</b>	0.020	ug/L	0.0492		86.9	70-130			
n-Propylbenzene	<b>0.0412</b>	0.020	ug/L	0.0492		83.9	70-130			
4-Isopropyltoluene	<b>0.0501</b>	0.020	ug/L	0.0549		91.2	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0319</i>		<i>ug/L</i>	<i>0.0358</i>		<i>89.2</i>	<i>70-130</i>			
<b>LCS Dup (B2D0107-BSD1)</b>					Prepared: 03/31/22 Analyzed: 04/01/22					
Acetone	<b>0.0245</b>	0.020	ug/L	0.0238		103	70-130	0.0970	30	
Benzene	<b>0.0258</b>	0.0030	ug/L	0.0319		80.7	70-130	0.371	30	
Benzyl chloride	<b>0.0366</b>	0.020	ug/L	0.0445		82.2	70-130	0.423	30	
Bromodichloromethane	<b>0.0662</b>	0.0025	ug/L	0.0670		98.8	70-130	0.609	30	
Bromoform	<b>0.101</b>	0.020	ug/L	0.103		98.0	70-130	1.62	30	
Bromomethane	<b>0.0369</b>	0.020	ug/L	0.0388		95.1	70-130	0.210	30	
2-Butanone (MEK)	<b>0.0277</b>	0.020	ug/L	0.0295		94.0	70-130	0.213	30	
Carbon Disulfide	<b>0.0272</b>	0.020	ug/L	0.0311		87.5	70-130	0.456	30	
Carbon Tetrachloride	<b>0.0678</b>	0.020	ug/L	0.0629		108	70-130	2.73	30	
Chlorobenzene	<b>0.0464</b>	0.020	ug/L	0.0460		101	70-130	0.398	30	
Chloroethane	<b>0.0251</b>	0.020	ug/L	0.0264		95.3	70-130	0.843	30	
Chloroform	<b>0.0432</b>	0.0040	ug/L	0.0488		88.5	70-130	0.908	30	
Chloromethane	<b>0.0196</b>	0.020	ug/L	0.0207		94.9	70-130	2.60	30	
Dibromochloromethane	<b>0.0787</b>	0.020	ug/L	0.0852		92.4	70-130	1.31	30	
1,2-Dibromoethane (EDB)	<b>0.0688</b>	0.020	ug/L	0.0768		89.6	70-130	0.672	30	
1,2-Dichlorobenzene	<b>0.0582</b>	0.020	ug/L	0.0601		96.8	70-130	2.19	30	
1,3-Dichlorobenzene	<b>0.0588</b>	0.020	ug/L	0.0601		97.8	70-130	1.96	30	
1,4-Dichlorobenzene	<b>0.0566</b>	0.020	ug/L	0.0601		94.2	70-130	1.39	30	
Dichlorodifluoromethane (R12)	<b>0.0487</b>	0.020	ug/L	0.0495		98.5	70-130	2.41	30	
1,1-Dichloroethane	<b>0.0369</b>	0.020	ug/L	0.0405		91.1	70-130	1.21	30	
1,2-Dichloroethane (EDC)	<b>0.0357</b>	0.0040	ug/L	0.0405		88.2	70-130	0.683	30	
cis-1,2-Dichloroethylene	<b>0.0346</b>	0.020	ug/L	0.0396		87.3	70-130	0.574	30	
1,1-Dichloroethylene	<b>0.0388</b>	0.020	ug/L	0.0396		97.9	70-130	0.204	30	
trans-1,2-Dichloroethylene	<b>0.0355</b>	0.020	ug/L	0.0396		89.6	70-130	0.112	30	
1,2-Dichloropropane	<b>0.0445</b>	0.020	ug/L	0.0462		96.3	70-130	1.04	30	

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0107 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2D0107-BSD1) Continued</b>										
					Prepared: 03/31/22 Analyzed: 04/01/22					
trans-1,3-Dichloropropylene	0.0420	0.020	ug/L	0.0454		92.5	70-130	1.85	30	
cis-1,3-Dichloropropylene	0.0413	0.020	ug/L	0.0454		90.9	70-130	0.220	30	
Dichlorotetrafluoroethane	0.0707	0.020	ug/L	0.0699		101	70-130	0.993	30	
Ethylbenzene	0.0412	0.020	ug/L	0.0434		94.9	70-130	1.17	30	
4-Ethyltoluene	0.0399	0.020	ug/L	0.0492		81.2	70-130	0.866	30	
Hexachlorobutadiene	0.0868	0.020	ug/L	0.107		81.4	70-130	1.10	30	
2-Hexanone (MBK)	0.0370	0.020	ug/L	0.0410		90.2	70-130	0.444	30	
Isopropanol (IPA)	0.0234	0.20	ug/L	0.0216		108	70-130	2.66	30	
Methylene Chloride	0.0348	0.020	ug/L	0.0347		100	70-130	0.00	30	
4-Methyl-2-pentanone (MIBK)	0.0391	0.020	ug/L	0.0410		95.4	70-130	0.209	30	
Styrene	0.0397	0.020	ug/L	0.0426		93.1	70-130	0.536	30	
1,1,2,2-Tetrachloroethane	0.0667	0.020	ug/L	0.0687		97.2	70-130	1.33	30	
Tetrachloroethylene (PCE)	0.0626	0.010	ug/L	0.0679		92.3	70-130	0.652	30	
Toluene	0.0333	0.020	ug/L	0.0377		88.4	70-130	0.226	30	
1,2,4-Trichlorobenzene	0.0672	0.020	ug/L	0.0742		90.5	70-130	1.67	30	
1,1,2-Trichloroethane	0.0497	0.020	ug/L	0.0546		91.0	70-130	0.441	30	
1,1,1-Trichloroethane	0.0481	0.020	ug/L	0.0546		88.1	70-130	1.14	30	
Trichloroethylene (TCE)	0.0490	0.020	ug/L	0.0537		91.1	70-130	0.656	30	
Trichlorofluoromethane (R11)	0.0592	0.020	ug/L	0.0562		105	70-130	0.762	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0782	0.020	ug/L	0.0766		102	70-130	0.196	30	
1,3,5-Trimethylbenzene	0.0456	0.020	ug/L	0.0492		92.7	70-130	0.976	30	
1,2,4-Trimethylbenzene	0.0421	0.020	ug/L	0.0492		85.6	70-130	0.586	30	
Vinyl acetate	0.0337	0.020	ug/L	0.0296		114	70-130	0.629	30	
Vinyl chloride	0.0270	0.020	ug/L	0.0256		106	70-130	4.84	30	
o-Xylene	0.0415	0.020	ug/L	0.0434		95.5	70-130	0.209	30	
m,p-Xylenes	0.0831	0.020	ug/L	0.0868		95.7	70-130	5.09	30	
1,2,3-Trichloropropane	0.0473	0.020	ug/L	0.0603		78.4	70-130	0.509	30	
sec-Butylbenzene	0.0477	0.020	ug/L	0.0549		86.9	70-130	0.688	30	
Isopropylbenzene	0.0427	0.020	ug/L	0.0492		86.8	70-130	0.115	30	
n-Propylbenzene	0.0415	0.020	ug/L	0.0492		84.5	70-130	0.713	30	
4-Isopropyltoluene	0.0500	0.020	ug/L	0.0549		91.1	70-130	0.110	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0107 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2D0107-BSD1) Continued</b>										
Prepared: 03/31/22 Analyzed: 04/01/22										
<i>Surrogate: 4-Bromofluorobenzene</i>	0.0321		ug/L	0.0358		89.8	70-130			
<i>Batch B2D0625 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D0625-BLK1)</b>										
Prepared & Analyzed: 04/05/22										
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							

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

AA Project No: MB187343  
 Date Received: 03/14/22  
 Date Reported: 04/12/22

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 B2D0625 - \*\*\* DEFAULT PREP \*\*\*

#### Blank (B2D0625-BLK1) Continued

Prepared & Analyzed: 04/05/22

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							
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							

Allen Aminian  
QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0625 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D0625-BLK1) Continued</b>										
Prepared & Analyzed: 04/05/22										
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>0.0274</i>		<i>ug/L</i>	<i>0.0358</i>		<i>76.6</i>	<i>70-130</i>			
<b>LCS (B2D0625-BS1)</b>										
Prepared & Analyzed: 04/06/22										
Acetone	<b>0.0241</b>	0.020	ug/L	0.0238		102	70-130			
Benzene	<b>0.0231</b>	0.0030	ug/L	0.0319		72.4	70-130			
Benzyl chloride	<b>0.0317</b>	0.020	ug/L	0.0445		71.2	70-130			
Bromodichloromethane	<b>0.0634</b>	0.0025	ug/L	0.0670		94.6	70-130			
Bromoform	<b>0.0926</b>	0.020	ug/L	0.103		89.6	70-130			
Bromomethane	<b>0.0343</b>	0.020	ug/L	0.0388		88.4	70-130			
2-Butanone (MEK)	<b>0.0263</b>	0.020	ug/L	0.0295		89.2	70-130			
Carbon Disulfide	<b>0.0256</b>	0.020	ug/L	0.0311		82.1	70-130			
Carbon Tetrachloride	<b>0.0628</b>	0.020	ug/L	0.0629		99.8	70-130			
Chlorobenzene	<b>0.0409</b>	0.020	ug/L	0.0460		88.9	70-130			
Chloroethane	<b>0.0236</b>	0.020	ug/L	0.0264		89.4	70-130			
Chloroform	<b>0.0395</b>	0.0040	ug/L	0.0488		80.9	70-130			
Chloromethane	<b>0.0163</b>	0.020	ug/L	0.0207		78.7	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0625 - *** DEFAULT PREP ***</i>										
<b>LCS (B2D0625-BS1) Continued</b>										
Prepared & Analyzed: 04/06/22										
Dibromochloromethane	0.0741	0.020	ug/L	0.0852		87.0	70-130			
1,2-Dibromoethane (EDB)	0.0645	0.020	ug/L	0.0768		83.9	70-130			
1,2-Dichlorobenzene	0.0522	0.020	ug/L	0.0601		86.8	70-130			
1,3-Dichlorobenzene	0.0514	0.020	ug/L	0.0601		85.5	70-130			
1,4-Dichlorobenzene	0.0488	0.020	ug/L	0.0601		81.1	70-130			
Dichlorodifluoromethane (R12)	0.0390	0.020	ug/L	0.0495		78.9	70-130			
1,1-Dichloroethane	0.0294	0.020	ug/L	0.0405		72.6	70-130			
1,2-Dichloroethane (EDC)	0.0329	0.0040	ug/L	0.0405		81.2	70-130			
cis-1,2-Dichloroethylene	0.0319	0.020	ug/L	0.0396		80.5	70-130			
1,1-Dichloroethylene	0.0375	0.020	ug/L	0.0396		94.6	70-130			
trans-1,2-Dichloroethylene	0.0333	0.020	ug/L	0.0396		84.1	70-130			
1,2-Dichloropropane	0.0425	0.020	ug/L	0.0462		91.9	70-130			
trans-1,3-Dichloropropylene	0.0388	0.020	ug/L	0.0454		85.5	70-130			
cis-1,3-Dichloropropylene	0.0391	0.020	ug/L	0.0454		86.1	70-130			
Dichlorotetrafluoroethane	0.0646	0.020	ug/L	0.0699		92.4	70-130			
Ethylbenzene	0.0362	0.020	ug/L	0.0434		83.4	70-130			
4-Ethyltoluene	0.0350	0.020	ug/L	0.0492		71.2	70-130			
Hexachlorobutadiene	0.0742	0.020	ug/L	0.107		69.6	70-130			QL-07
2-Hexanone (MBK)	0.0362	0.020	ug/L	0.0410		88.4	70-130			
Isopropanol (IPA)	0.0233	0.20	ug/L	0.0216		108	70-130			
Methylene Chloride	0.0325	0.020	ug/L	0.0347		93.5	70-130			
4-Methyl-2-pentanone (MIBK)	0.0386	0.020	ug/L	0.0410		94.3	70-130			
Styrene	0.0351	0.020	ug/L	0.0426		82.5	70-130			
1,1,2,2-Tetrachloroethane	0.0621	0.020	ug/L	0.0687		90.5	70-130			
Tetrachloroethylene (PCE)	0.0579	0.010	ug/L	0.0679		85.3	70-130			
Toluene	0.0309	0.020	ug/L	0.0377		82.1	70-130			
1,2,4-Trichlorobenzene	0.0533	0.020	ug/L	0.0742		71.8	70-130			
1,1,2-Trichloroethane	0.0464	0.020	ug/L	0.0546		85.0	70-130			
1,1,1-Trichloroethane	0.0437	0.020	ug/L	0.0546		80.1	70-130			
Trichloroethylene (TCE)	0.0472	0.020	ug/L	0.0537		87.9	70-130			
Trichlorofluoromethane (R11)	0.0569	0.020	ug/L	0.0562		101	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D0625 - *** DEFAULT PREP ***</i>										
<b>LCS (B2D0625-BS1) Continued</b>					Prepared & Analyzed: 04/06/22					
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<b>0.0729</b>	0.020	ug/L	0.0766		95.1	70-130			
1,3,5-Trimethylbenzene	<b>0.0399</b>	0.020	ug/L	0.0492		81.1	70-130			
1,2,4-Trimethylbenzene	<b>0.0377</b>	0.020	ug/L	0.0492		76.6	70-130			
Vinyl acetate	<b>0.0326</b>	0.020	ug/L	0.0296		110	70-130			
Vinyl chloride	<b>0.0248</b>	0.020	ug/L	0.0256		96.9	70-130			
o-Xylene	<b>0.0370</b>	0.020	ug/L	0.0434		85.3	70-130			
m,p-Xylenes	<b>0.0751</b>	0.020	ug/L	0.0868		86.5	70-130			
1,2,3-Trichloropropane	<b>0.0419</b>	0.020	ug/L	0.0603		69.5	70-130			QL-02
sec-Butylbenzene	<b>0.0444</b>	0.020	ug/L	0.0549		80.8	70-130			
Isopropylbenzene	<b>0.0382</b>	0.020	ug/L	0.0492		77.7	70-130			
n-Propylbenzene	<b>0.0376</b>	0.020	ug/L	0.0492		76.4	70-130			
4-Isopropyltoluene	<b>0.0453</b>	0.020	ug/L	0.0549		82.5	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0336</i>		<i>ug/L</i>	<i>0.0358</i>		<i>94.0</i>	<i>70-130</i>			
<b>LCS Dup (B2D0625-BS1)</b>					Prepared & Analyzed: 04/06/22					
Acetone	<b>0.0241</b>	0.020	ug/L	0.0238		102	70-130	0.00	30	
Benzene	<b>0.0230</b>	0.0030	ug/L	0.0319		71.9	70-130	0.693	30	
Benzyl chloride	<b>0.0307</b>	0.020	ug/L	0.0445		68.8	70-130	3.32	30	QL-03
Bromodichloromethane	<b>0.0635</b>	0.0025	ug/L	0.0670		94.8	70-130	0.211	30	
Bromoform	<b>0.0927</b>	0.020	ug/L	0.103		89.7	70-130	0.112	30	
Bromomethane	<b>0.0360</b>	0.020	ug/L	0.0388		92.7	70-130	4.75	30	
2-Butanone (MEK)	<b>0.0256</b>	0.020	ug/L	0.0295		86.8	70-130	2.73	30	
Carbon Disulfide	<b>0.0252</b>	0.020	ug/L	0.0311		80.9	70-130	1.47	30	
Carbon Tetrachloride	<b>0.0644</b>	0.020	ug/L	0.0629		102	70-130	2.47	30	
Chlorobenzene	<b>0.0407</b>	0.020	ug/L	0.0460		88.4	70-130	0.564	30	
Chloroethane	<b>0.0235</b>	0.020	ug/L	0.0264		89.0	70-130	0.448	30	
Chloroform	<b>0.0395</b>	0.0040	ug/L	0.0488		80.8	70-130	0.124	30	
Chloromethane	<b>0.0169</b>	0.020	ug/L	0.0207		81.7	70-130	3.74	30	
Dibromochloromethane	<b>0.0737</b>	0.020	ug/L	0.0852		86.5	70-130	0.576	30	
1,2-Dibromoethane (EDB)	<b>0.0635</b>	0.020	ug/L	0.0768		82.6	70-130	1.56	30	
1,2-Dichlorobenzene	<b>0.0503</b>	0.020	ug/L	0.0601		83.6	70-130	3.76	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2D0625 - *** DEFAULT PREP ***										
<b>LCS Dup (B2D0625-BSD1) Continued</b>										
Prepared & Analyzed: 04/06/22										
1,3-Dichlorobenzene	0.0492	0.020	ug/L	0.0601		81.8	70-130	4.42	30	
1,4-Dichlorobenzene	0.0470	0.020	ug/L	0.0601		78.2	70-130	3.64	30	
Dichlorodifluoromethane (R12)	0.0361	0.020	ug/L	0.0495		73.0	70-130	7.77	30	
1,1-Dichloroethane	0.0334	0.020	ug/L	0.0405		82.6	70-130	12.9	30	
1,2-Dichloroethane (EDC)	0.0329	0.0040	ug/L	0.0405		81.2	70-130	0.00	30	
cis-1,2-Dichloroethylene	0.0322	0.020	ug/L	0.0396		81.2	70-130	0.866	30	
1,1-Dichloroethylene	0.0379	0.020	ug/L	0.0396		95.7	70-130	1.16	30	
trans-1,2-Dichloroethylene	0.0327	0.020	ug/L	0.0396		82.4	70-130	2.04	30	
1,2-Dichloropropane	0.0422	0.020	ug/L	0.0462		91.4	70-130	0.546	30	
trans-1,3-Dichloropropylene	0.0384	0.020	ug/L	0.0454		84.7	70-130	0.940	30	
cis-1,3-Dichloropropylene	0.0386	0.020	ug/L	0.0454		85.1	70-130	1.17	30	
Dichlorotetrafluoroethane	0.0606	0.020	ug/L	0.0699		86.7	70-130	6.37	30	
Ethylbenzene	0.0354	0.020	ug/L	0.0434		81.6	70-130	2.18	30	
4-Ethyltoluene	0.0346	0.020	ug/L	0.0492		70.3	70-130	1.27	30	
Hexachlorobutadiene	0.0711	0.020	ug/L	0.107		66.7	70-130	4.26	30	QL-07
2-Hexanone (MBK)	0.0343	0.020	ug/L	0.0410		83.7	70-130	5.46	30	
Isopropanol (IPA)	0.0232	0.20	ug/L	0.0216		107	70-130	0.422	30	
Methylene Chloride	0.0342	0.020	ug/L	0.0347		98.6	70-130	5.31	30	
4-Methyl-2-pentanone (MIBK)	0.0376	0.020	ug/L	0.0410		91.7	70-130	2.80	30	
Styrene	0.0350	0.020	ug/L	0.0426		82.1	70-130	0.486	30	
1,1,2,2-Tetrachloroethane	0.0603	0.020	ug/L	0.0687		87.8	70-130	3.03	30	
Tetrachloroethylene (PCE)	0.0579	0.010	ug/L	0.0679		85.4	70-130	0.117	30	
Toluene	0.0310	0.020	ug/L	0.0377		82.3	70-130	0.243	30	
1,2,4-Trichlorobenzene	0.0534	0.020	ug/L	0.0742		71.9	70-130	0.139	30	
1,1,2-Trichloroethane	0.0462	0.020	ug/L	0.0546		84.6	70-130	0.472	30	
1,1,1-Trichloroethane	0.0443	0.020	ug/L	0.0546		81.2	70-130	1.36	30	
Trichloroethylene (TCE)	0.0482	0.020	ug/L	0.0537		89.7	70-130	2.03	30	
Trichlorofluoromethane (R11)	0.0574	0.020	ug/L	0.0562		102	70-130	0.787	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	0.0738	0.020	ug/L	0.0766		96.3	70-130	1.25	30	
1,3,5-Trimethylbenzene	0.0395	0.020	ug/L	0.0492		80.4	70-130	0.867	30	
1,2,4-Trimethylbenzene	0.0371	0.020	ug/L	0.0492		75.4	70-130	1.58	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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 B2D0625 - \*\*\* DEFAULT PREP \*\*\*

**LCS Dup (B2D0625-BSD1) Continued**

Prepared &amp; Analyzed: 04/06/22

Vinyl acetate	<b>0.0318</b>	0.020	ug/L	0.0296	107	70-130	2.63	30	
Vinyl chloride	<b>0.0252</b>	0.020	ug/L	0.0256	98.7	70-130	1.84	30	
o-Xylene	<b>0.0357</b>	0.020	ug/L	0.0434	82.3	70-130	3.58	30	
m,p-Xylenes	<b>0.0724</b>	0.020	ug/L	0.0868	83.4	70-130	3.71	30	
1,2,3-Trichloropropane	<b>0.0424</b>	0.020	ug/L	0.0603	70.3	70-130	1.14	30	
sec-Butylbenzene	<b>0.0433</b>	0.020	ug/L	0.0549	78.9	70-130	2.38	30	
Isopropylbenzene	<b>0.0386</b>	0.020	ug/L	0.0492	78.5	70-130	1.02	30	
n-Propylbenzene	<b>0.0366</b>	0.020	ug/L	0.0492	74.5	70-130	2.52	30	
4-Isopropyltoluene	<b>0.0450</b>	0.020	ug/L	0.0549	82.0	70-130	0.608	30	

Surrogate: 4-Bromofluorobenzene 0.0334 ug/L 0.0358 93.4 70-130

**Fixed Gases by TCD - Quality Control**

Batch B2C1801 - \*\*\* DEFAULT PREP \*\*\*

**Blank (B2C1801-BLK1)**

Prepared &amp; Analyzed: 03/18/22

Methane	<0.10	0.10	% by Volume						
Oxygen	<0.10	0.10	% by Volume						
Carbon Dioxide	<0.10	0.10	% by Volume						

**LCS (B2C1801-BS1)**

Prepared &amp; Analyzed: 03/18/22

Methane	<b>2.55</b>	0.10	% by Volume	2.25	113	70-130			
Oxygen	<b>2.12</b>	0.10	% by Volume	2.00	106	70-130			
Carbon Dioxide	<b>8.60</b>	0.10	% by Volume	7.50	115	70-130			

**LCS Dup (B2C1801-BSD1)**

Prepared &amp; Analyzed: 03/18/22

Methane	<b>2.61</b>	0.10	% by Volume	2.25	116	70-130	2.32	30	
Oxygen	<b>2.13</b>	0.10	% by Volume	2.00	107	70-130	0.565	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Fixed Gases by TCD - Quality Control</b>										
<i>Batch B2C1801 - *** DEFAULT PREP ***</i>										
<b>LCS Dup (B2C1801-BSD1) Continued</b>					Prepared & Analyzed: 03/18/22					
Carbon Dioxide	8.74	0.10	% by Volume	7.50		117	70-130	1.67	30	
<b>Duplicate (B2C1801-DUP1)</b>					Source: 2C14020-11 Prepared & Analyzed: 03/18/22					
Methane	<0.10	0.10	% by Volume		<0.20				30	
Oxygen	7.31	0.20	% by Volume		19.8			92.3	30	QR-02
Carbon Dioxide	14.0	0.20	% by Volume		1.35			165	30	QR-02
<i>Batch B2C2122 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2122-BLK1)</b>					Prepared: 03/21/22 Analyzed: 03/25/22					
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
<b>LCS (B2C2122-BS1)</b>					Prepared: 03/21/22 Analyzed: 03/25/22					
Methane	2.62	0.10	% by Volume	2.25		117	70-130			
Oxygen	2.17	0.10	% by Volume	2.00		108	70-130			
Carbon Dioxide	8.82	0.10	% by Volume	7.50		118	70-130			
<b>LCS Dup (B2C2122-BSD1)</b>					Prepared: 03/21/22 Analyzed: 03/25/22					
Methane	2.56	0.10	% by Volume	2.25		114	70-130	2.24	30	
Oxygen	2.13	0.10	% by Volume	2.00		107	70-130	1.49	30	
Carbon Dioxide	8.72	0.10	% by Volume	7.50		116	70-130	1.13	30	
<b>Duplicate (B2C2122-DUP1)</b>					Source: 2C14020-24 Prepared: 03/21/22 Analyzed: 03/25/22					

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Fixed Gases by TCD - Quality Control</b>										
<i>Batch B2C2122 - *** DEFAULT PREP ***</i>										
Methane	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				30	
Oxygen	<b>23.9</b>	0.20	% by Volume		22.3			6.60	30	
Carbon Dioxide	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				30	
<i>Batch B2C2216 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2216-BLK1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/22/22</span>										
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
<b>LCS (B2C2216-BS1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/22/22</span>										
Methane	<b>2.58</b>	0.10	% by Volume	2.25		115	70-130			
Oxygen	<b>2.14</b>	0.10	% by Volume	2.00		107	70-130			
Carbon Dioxide	<b>8.71</b>	0.10	% by Volume	7.50		116	70-130			
<b>LCS Dup (B2C2216-BSD1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/22/22</span>										
Methane	<b>2.61</b>	0.10	% by Volume	2.25		116	70-130	1.12	30	
Oxygen	<b>2.14</b>	0.10	% by Volume	2.00		107	70-130	0.187	30	
Carbon Dioxide	<b>8.77</b>	0.10	% by Volume	7.50		117	70-130	0.698	30	
<b>Duplicate (B2C2216-DUP1)</b> <span style="float: right;">Source: 2C14020-34 Prepared &amp; Analyzed: 03/22/22</span>										
Methane	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				30	
Oxygen	<b>21.2</b>	0.20	% by Volume		21.4			0.846	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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Fixed Gases by TCD - Quality Control</b>										
<i>Batch B2C2216 - *** DEFAULT PREP ***</i>										
<b>Duplicate (B2C2216-DUP1) Continued Source: 2C14020-34 Prepared &amp; Analyzed: 03/22/22</b>										
Carbon Dioxide	<b>0.942</b>	0.20	% by Volume		0.920			2.36	30	
<i>Batch B2C2323 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2323-BLK1) Prepared &amp; Analyzed: 03/23/22</b>										
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
<b>LCS (B2C2323-BS1) Prepared &amp; Analyzed: 03/23/22</b>										
Methane	<b>2.66</b>	0.10	% by Volume	2.25		118	70-130			
Oxygen	<b>2.20</b>	0.10	% by Volume	2.00		110	70-130			
Carbon Dioxide	<b>8.94</b>	0.10	% by Volume	7.50		119	70-130			
<b>LCS Dup (B2C2323-BSD1) Prepared &amp; Analyzed: 03/23/22</b>										
Methane	<b>2.63</b>	0.10	% by Volume	2.25		117	70-130	1.17	30	
Oxygen	<b>2.18</b>	0.10	% by Volume	2.00		109	70-130	0.685	30	
Carbon Dioxide	<b>8.87</b>	0.10	% by Volume	7.50		118	70-130	0.764	30	
<b>Duplicate (B2C2323-DUP1) Source: 2C14020-48 Prepared &amp; Analyzed: 03/23/22</b>										
Methane	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				30	
Oxygen	<b>19.8</b>	0.20	% by Volume		20.4			2.81	30	
Carbon Dioxide	<b>2.07</b>	0.20	% by Volume		1.97			4.75	30	

*Batch B2C2401 - \*\*\* 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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Fixed Gases by TCD - Quality Control</b>										
<i>Batch B2C2401 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2401-BLK1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/24/22</span>										
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
<b>LCS (B2C2401-BS1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/24/22</span>										
Methane	<b>2.62</b>	0.10	% by Volume	2.25		117	70-130			
Oxygen	<b>2.18</b>	0.10	% by Volume	2.00		109	70-130			
Carbon Dioxide	<b>8.83</b>	0.10	% by Volume	7.50		118	70-130			
<b>LCS Dup (B2C2401-BSD1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/24/22</span>										
Methane	<b>2.60</b>	0.10	% by Volume	2.25		116	70-130	0.804	30	
Oxygen	<b>2.14</b>	0.10	% by Volume	2.00		107	70-130	2.13	30	
Carbon Dioxide	<b>8.74</b>	0.10	% by Volume	7.50		117	70-130	1.02	30	
<b>Duplicate (B2C2401-DUP1)</b> <span style="float: right;">Source: 2C14020-61 Prepared &amp; Analyzed: 03/24/22</span>										
Methane	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				30	
Oxygen	<b>20.2</b>	0.20	% by Volume		20.1			0.596	30	
Carbon Dioxide	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				30	
<i>Batch B2C2501 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2501-BLK1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/25/22</span>										
Methane	<0.10	0.10	% by Volume							

**Allen Aminian**  
QA/QC Manager





## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Fixed Gases by TCD - Quality Control</b>										
<i>Batch B2C2501 - *** DEFAULT PREP ***</i>										
<b>Blank (B2C2501-BLK1) Continued</b> <span style="float: right;">Prepared &amp; Analyzed: 03/25/22</span>										
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
<b>LCS (B2C2501-BS1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/25/22</span>										
Methane	<b>2.61</b>	0.10	% by Volume	2.25		116	70-130			
Oxygen	<b>2.16</b>	0.10	% by Volume	2.00		108	70-130			
Carbon Dioxide	<b>8.75</b>	0.10	% by Volume	7.50		117	70-130			
<b>LCS Dup (B2C2501-BSD1)</b> <span style="float: right;">Prepared &amp; Analyzed: 03/25/22</span>										
Methane	<b>2.58</b>	0.10	% by Volume	2.25		115	70-130	1.04	30	
Oxygen	<b>2.15</b>	0.10	% by Volume	2.00		107	70-130	0.742	30	
Carbon Dioxide	<b>8.72</b>	0.10	% by Volume	7.50		116	70-130	0.309	30	
<b>Duplicate (B2C2501-DUP1)</b> <span style="float: right;">Source: 2C14020-72 Prepared &amp; Analyzed: 03/25/22</span>										
Methane	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				30	
Oxygen	<b>19.5</b>	0.20	% by Volume		20.8			6.53	30	
Carbon Dioxide	<b>&lt;0.20</b>	0.20	% by Volume		<0.20				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:** MB187343  
**Date Received:** 03/14/22  
**Date Reported:** 04/12/22

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### 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.
- [5] = QL-06 : The recovery for this analyte in the LCS and LCSD is marginally above the upper control limit, therefore the reported concentration for this analyte may be biased high.
- [6] = QL-07 : The recovery for this analyte in the LCS and LCSD is marginally below the lower control limit, therefore the reported concentration for this analyte may be biased low.
- [7] = QR-02 : The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
- [8] = W-01 : No determinable quantities of cyanide amenable to chlorination.

Sample 2C14020-16 (SVM-13-15) was collected in a canister that was identified to have been exposed to high concentration of PCE. The sample result was not reported and the sample will be recollected and reanalyzed.

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**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.: 24401

20203564

Page 1 of 2

Client: Jacobs Project Name / No.: Norwalk Sampler's Name: Kris B.  
 Project Manager: Site Address: Sampler's Signature: [Signature]  
 Phone: City: 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		
						1	2	3	4	5	X							
SVP-105-5	2014020 - 01	3/14/22	804	Soil gas	1	X	X	X										
SVP-105-10	- 02		809		1	X	X	X										
SVA-105-10-Dup	- 03		809		1	X	X	X										
SVP-106-5	- 04		824		1	X	X	X										
SVA-106-10	- 05		824		1	X	X	X										
Ambient Air	- 06		830		1	X	X	X										
SVM-12-7	- 07		910		1	X	X	X										
SVM-12-15	- 08		910		1	X	X	X										
SVM-12-22	- 09		910		1	X	X	X										
SVP-107-5	- 10		925		1	X	X	X										'22 MAR 14 15
SVP-107-10	- 11		925		1	X	X	X										
SVM-11-7	- 12		1005		1	X	X	X										
SVM-11-15	- 13		1000		1	X	X	X										
SVM-11-22	- 14		1000		1	X	X	X										
SVM-13-7	- 15		1032		1	X	X	X										

For Laboratory Use		Relinquished by	Date	Time	Received by
<b>REVIEWED</b> Date <u>3/14/22</u> Time <u>17:13</u> TAT <u>10</u> Days Sign: <u>[Signature]</u>		<u>Kris Barreca</u>	<u>3/14/22</u>	<u>1510</u>	<u>[Signature]</u>
		Relinquished by	Date	Time	Received by
		Relinquished by	Date	Time	Received by

A.A. Project No.: AA3187343/244020

Note: By relinquishing samples to American Analytics, client agrees to pay for the analyses requested on this chain-of-custody form and any additional client requested analyses performed on this project.



# AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311

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

A.A. COC No.: 24402

20203565

Page 2 of 2

Client: Jacobs Project Name / No.: Norwalk Sampler's Name: \_\_\_\_\_  
 Project Manager: \_\_\_\_\_ Site Address: \_\_\_\_\_ Sampler's Signature: \_\_\_\_\_  
 Phone: \_\_\_\_\_ City: \_\_\_\_\_ P.O. No.: \_\_\_\_\_  
 Fax: \_\_\_\_\_ State & Zip: CA Quote No.: \_\_\_\_\_

### TAT Turnaround Codes \*\*

- ① = Same Day Rush
- ② = 24 Hour Rush
- ③ = 48 Hour Rush
- ④ = 72 Hour Rush
- ⑤ = 5 Day Rush
- X = 10 Working Days (Standard TAT)

### ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below			Special Instructions
①	②	③	
X	X	X	10-4 10-2 10-5 (Handwritten notes)
X	X	X	
X	X	X	
X	X	X	
X	X	X	

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Please enter the TAT Turnaround Codes ** below			Special Instructions
						①	②	③	
SVM-13-15	2014020 -16	3/14/22	1026	Soilgas	1	X	X	X	22 MAR 14 1
SVM-13-22	-17		1031		1	X	X	X	
SVM-14A-8	-18		1050		1	X	X	X	
SVM-14A-16	-19		1050		1	X	X	X	
SVM-14A-22	-20		1050		1	X	X	X	

For Laboratory Use	Relinquished by	Date	Time	Received by
REVIEWED Date <u>3/14/22</u> Time <u>17:13</u> TAT <u>10</u> Days Sign: <u>[Signature]</u>	<u>Kris Barreca</u>	<u>3/14/22</u>	<u>3:10 PM</u>	<u>[Signature]</u>
	Relinquished by	Date	Time	Received by
	Relinquished by	Date	Time	Received by

A.A. Project No.: MB187343 / 2014020



# AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311  
Tel: 818-998-5547 FAX: 818-998-7258

A.A. COC No.: 24406  
**20203567**  
Page 1 of 2

**Client:** Jacob      **Project Name / No.:** Norwalk      **Sampler's Name:** Kris B.  
**Project Manager:** \_\_\_\_\_      **Site Address:** \_\_\_\_\_      **Sampler's Signature:** Kris B.  
**Phone:** \_\_\_\_\_      **City:** \_\_\_\_\_      **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)**

<i>Fixed gases</i>	<i>10-3</i>	<i>10-15</i>																
Please enter the TAT Turnaround Codes ** below																		

**Special Instructions**

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Please enter the TAT Turnaround Codes ** below										Special Instructions			
						①	②	③	④	⑤	X								
SVP-109-5	2014020-21	3/15/22	750	Vapor	1	X	X	X											
SVP-109-10	22		750		1	X	X	X											
SVM-21-5	23		818		1	X	X	X											
SVM-21-14.5	24		818		1	X	X	X											
SVP-108-5	25		830		1	X	X	X											
SVP-108-10	26		830		1	X	X	X											
SVM-17-5	27		850		1	X	X	X											
SVM-17-14.5	28		850		1	X	X	X											
SVM-17-14.5 SVP	29		850		1	X	X	X											
Ambient Air	30		912		1	X	X	X											
SVM-22-5	31		912		1	X	X	X											
SVM-22-14.5	32		912		1	X	X	X											
SVM-18-5	33		935		1	X	X	X											
SVM-18-14.5	34		935		1	X	X	X											
SVM-20-5	35		935		1	X	X	X											

22 MAR 15

<p style="text-align: center;"><b>For Laboratory Use</b></p> <p style="font-size: 2em; text-align: center; opacity: 0.5;">REVIEWED</p> <p>Date <u>3/16/22</u> Time <u>16:49</u></p> <p>TAT <u>10</u> Days Sign: <u>[Signature]</u></p>	Relinquished by <u>Kris Barreca</u>	Date <u>3/15/22</u>	Time <u>14:27</u>	Received by <u>[Signature]</u>
	Relinquished by	Date	Time	Received by
	Relinquished by	Date	Time	Received by

A.A. Project No.: MB187343/2014020

I, the undersigned, agree to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project.



# AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311

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

A.A. COC No.: 24107

20203568

Page 2 of 2

Client: Jacob Project Name / No.: Norwalk Sampler's Name: Kris B.  
 Project Manager: \_\_\_\_\_ Site Address: \_\_\_\_\_ Sampler's Signature: [Signature]  
 Phone: \_\_\_\_\_ City: \_\_\_\_\_ 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)

Fixed gases	TO-3	TO-15																	
-------------	------	-------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Special Instructions

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Please enter the TAT Turnaround Codes ** below										Special Instructions				
						①	②	③	④	⑤	X									
SVM-20-14.5	2014020 - 36	3/15/22	937	Vapor	1	X	X	X												
SVM-19-5	- 37		955		1	X	X	X												
SVM-19-5 Dup	- 38		955		1	X	X	X												
SVM-23-5	- 39		1019		1	X	X	X												
SVM-23-14.5	- 40		1019		1	X	X	X												
SVM-9-5	- 41		1055		1	X	X	X												
SVM-9-14.5	- 42		1055		1	X	X	X												
SVM-3-5	- 43		1133		1	X	X	X												
SVM-3-15	- 44		1133		1	X	X	X												
SVM-2-5	- 45		1205		1	X	X	X												
SVM-1-5	- 46		1223		1	X	X	X												
SVM-1-15	- 47		1223		1	X	X	X												

22 MAR 15 1

<b>For Laboratory Use</b> <b>REVIEWED</b> Date: <u>3/16/22</u> Time: <u>16:49</u> TAT: <u>10</u> Days Sign: <u>[Signature]</u>	Relinquished by <u>Kris Barreca</u>	Date <u>3/15/22</u>	Time <u>1427</u>	Received by <u>[Signature]</u>
	Relinquished by	Date	Time	Received by
	Relinquished by	Date	Time	Received by

A.A. Project No.: MB181343 / 2014020



# AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311

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

A.A. COC No.: 24414

20203570

Page 1 of 2

Client: Jacob Project Name / No.: Norwalk Sampler's Name: Kris B.  
 Project Manager: \_\_\_\_\_ Site Address: \_\_\_\_\_ Sampler's Signature: [Signature]  
 Phone: \_\_\_\_\_ City: \_\_\_\_\_ 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		
						Fixed gases	TO-3	TO-15										
SVM-25-5	2614020-48	3/16/22	758	Vapor	1	X	X	X										
SVM-25-10	49		757		1	X	X	X										
SVM-24-5	50		802		1	X	X	X										
SVM-24-10	51		802		1	X	X	X										
SVM-27-5	52		851		1	X	X	X										
SVM-27-10	53		851		1	X	X	X										
SVM-26-5	54		855		1	X	X	X										
SVM-26-10	55		855		1	X	X	X										
SVM-7-7	56		956		1	X	X	X										
SVM-7-13	57		956		1	X	X	X										22 MAR 16
SVM-6-7	58		1002		1	X	X	X										
SVM-6-13	59		1002		1	X	X	X										
SVM-6-13 Dup	60		1002		1	X	X	X										
SVM-10-15	61		1020		1	X	X	X										
SVM-15-7	62		1045		1	X	X	X										

<b>For Laboratory Use</b>  <b>REVIEWED</b> Date: <u>3/16/22</u> Time: <u>1654</u> TAT: <u>10</u> Days Sign: <u>[Signature]</u>	Relinquished by <u>[Signature]</u>	Date <u>3-16-22</u>	Time <u>1230</u>	Received by <u>[Signature]</u>
	Relinquished by <u>[Signature]</u>	Date <u>3/16/22</u>	Time <u>1400</u>	Received by <u>[Signature]</u>
	Relinquished by	Date	Time	Received by

A.A. Project No.: ANB187343/2614020

Client agrees to pay for the services requested on this chain of custody form and any additional client-requested analyses performed on this project.



# AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

9765 ETON AVE., CHATSWORTH, CA 91311

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

A.A. COC No.: 24418

20203569

Page 2 of

Client: Jacob Project Name / No.: Norwalk Sampler's Name: Kris B.  
 Project Manager: Site Address: Sampler's Signature: Kris B.  
 Phone: City: 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)

Fixed gases	TO-3	TO-15																	
-------------	------	-------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Special Instruction

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Please enter the TAT Turnaround Codes ** below										Special Instruction				
						①	②	③	④	⑤	X									
SVM-15-15	204020	-63	3/16/22	1045	Vapor		X	X	X											
SVM-15-22	64			1045			X	X	X											
Ambient Air	65			1034			X	X	X											
SVM-16-7	66			1124			X	X	X											
SVM-16-16	67			1124			X	X	X											
SVM-16-22	68			1140			X	X	X											
SVM-5-5	69			1157			X	X	X											
SVM-5-15	70			1200			X	X	X											
SVM-8-5	71			1155			X	X	X											
SVM-8-15	72			1149			X	X	X											

22 MAR 16

<b>For Laboratory Use</b> REVIEWED Date: <u>3/16/22</u> Time: <u>1654</u> TAT: <u>10</u> Days Sign: <u>[Signature]</u>	Relinquished by <u>[Signature]</u>	Date <u>3-16-22</u>	Time <u>1230</u>	Received by <u>[Signature]</u>
	Relinquished by <u>[Signature]</u>	Date <u>3/16/22</u>	Time <u>1400</u>	Received by <u>[Signature]</u>
	Relinquished by	Date	Time	Received by

A.A. Project No.: MB187343/204020

Note: By relinquishing samples to American Analytics, client agrees to pay for the services requested on this chain-of-custody form and any additional client requested analyses performed on this project.





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

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April 21, 2022

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

**Re : KMEP Norwalk Biosparge Startup / 693142**  
**MB187344 / 2D12011**

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received on 04/12/22 17:11 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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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**Fixed Gases**

SVM-13-15	2D12011-01	Vapor	3	04/12/22 12:48	04/12/22 17:11
SVM-26-5	2D12011-02	Vapor	3	04/12/22 13:18	04/12/22 17:11

**TO-15 (Mid Level)**

SVM-13-15	2D12011-01	Vapor	3	04/12/22 12:48	04/12/22 17:11
SVM-26-5	2D12011-02	Vapor	3	04/12/22 13:18	04/12/22 17:11

**TO-3**

SVM-13-15	2D12011-01	Vapor	3	04/12/22 12:48	04/12/22 17:11
SVM-26-5	2D12011-02	Vapor	3	04/12/22 13:18	04/12/22 17:11

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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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

#### ANALYTICAL DATA SUMMARY

Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
<b>Fixed Gases by TCD</b>								
Oxygen	SVM-13-15	19	0.20	% by Volume	2	04/14/22	04/14/22	ASTM D1946M
Carbon Dioxide	SVM-13-15	0.56	0.20	% by Volume	2	04/14/22	04/14/22	ASTM D1946M
Oxygen	SVM-26-5	17	0.20	% by Volume	2	04/14/22	04/14/22	ASTM D1946M
Carbon Dioxide	SVM-26-5	1.7	0.20	% by Volume	2	04/14/22	04/14/22	ASTM D1946M

#### VOCs by EPA TO-3

#### VOCs by GCMS EPA TO-15 (Mid Level)

**Allen Aminian**  
QA/QC Manager



### LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22  
**Units:** ug/L

---

<b>Date Sampled:</b>	04/12/22	04/12/22	
<b>Date Prepared:</b>	04/13/22	04/13/22	
<b>Date Analyzed:</b>	04/13/22	04/13/22	
<b>AA ID No:</b>	2D12011-01	2D12011-02	
<b>Client ID No:</b>	SVM-13-15	SVM-26-5	
<b>Matrix:</b>	Vapor	Vapor	
<b>Dilution Factor:</b>	1	1	MRL

---

**TO-3 (TO-3)**

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

4-Bromofluorobenzene	86%	83%	<b><u>%REC Limits</u></b> 70-130
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*Allen Aminian*

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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 GCMS EPA TO-15 (Mid Level)

**AA Project No:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22  
**Units:** ug/L

<b>Date Sampled:</b>	04/12/22	04/12/22	
<b>Date Prepared:</b>	04/13/22	04/13/22	
<b>Date Analyzed:</b>	04/13/22	04/13/22	
<b>AA ID No:</b>	2D12011-01	2D12011-02	
<b>Client ID No:</b>	SVM-13-15	SVM-26-5	
<b>Matrix:</b>	Vapor	Vapor	
<b>Dilution Factor:</b>	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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22  
**Units:** ug/L

<b>Date Sampled:</b>	04/12/22	04/12/22	
<b>Date Prepared:</b>	04/13/22	04/13/22	
<b>Date Analyzed:</b>	04/13/22	04/13/22	
<b>AA ID No:</b>	2D12011-01	2D12011-02	
<b>Client ID No:</b>	SVM-13-15	SVM-26-5	
<b>Matrix:</b>	Vapor	Vapor	
<b>Dilution Factor:</b>	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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22  
**Units:** ug/L

<b>Date Sampled:</b>	04/12/22	04/12/22	
<b>Date Prepared:</b>	04/13/22	04/13/22	
<b>Date Analyzed:</b>	04/13/22	04/13/22	
<b>AA ID No:</b>	2D12011-01	2D12011-02	
<b>Client ID No:</b>	SVM-13-15	SVM-26-5	
<b>Matrix:</b>	Vapor	Vapor	
<b>Dilution Factor:</b>	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

<b>Surrogates</b>			<b>%REC Limits</b>
4-Bromofluorobenzene	84%	81%	70-130

**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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22  
**Units:** % by Volume

---

<b>Date Sampled:</b>	04/12/22	04/12/22	
<b>Date Prepared:</b>	04/14/22	04/14/22	
<b>Date Analyzed:</b>	04/14/22	04/14/22	
<b>AA ID No:</b>	2D12011-01	2D12011-02	
<b>Client ID No:</b>	SVM-13-15	SVM-26-5	
<b>Matrix:</b>	Vapor	Vapor	
<b>Dilution Factor:</b>	2	2	MRL

---

**Fixed Gases (ASTM D1946M)**

Methane	<0.20	<0.20	0.10
Oxygen	<b>19</b>	<b>17</b>	0.10
Carbon Dioxide	<b>0.56</b>	<b>1.7</b>	0.10

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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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
<b>VOCs by EPA TO-3 - Quality Control</b>										
<i>Batch B2D1505 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D1505-BLK1)</b>				Prepared & Analyzed: 04/13/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0288</i>		<i>ug/L</i>	<i>0.0358</i>	<i>80.6</i>	<i>70-130</i>				
<b>LCS (B2D1505-BS1)</b>				Prepared & Analyzed: 04/13/22						
Gasoline Range Organics (GRO)	<b>0.830</b>	0.50	ug/L	0.802	104	70-130				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0304</i>		<i>ug/L</i>	<i>0.0358</i>	<i>85.0</i>	<i>70-130</i>				
<b>LCS Dup (B2D1505-BSD1)</b>				Prepared & Analyzed: 04/13/22						
Gasoline Range Organics (GRO)	<b>0.833</b>	0.50	ug/L	0.802	104	70-130	0.325	30		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0309</i>		<i>ug/L</i>	<i>0.0358</i>	<i>86.4</i>	<i>70-130</i>				

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

*Batch B2D1412 - \*\*\* DEFAULT PREP \*\*\**

<b>Blank (B2D1412-BLK1)</b>				Prepared & Analyzed: 04/13/22						
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							

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D1412 - *** DEFAULT PREP ***</i>										
<b>Blank (B2D1412-BLK1) Continued</b>										
Prepared & Analyzed: 04/13/22										
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							
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							

**Allen Aminian**  
 QA/QC Manager

**LABORATORY ANALYSIS RESULTS**

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

**AA Project No:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2D1412 - *** DEFAULT PREP ***										
<b>Blank (B2D1412-BLK1) Continued</b>										
Prepared & Analyzed: 04/13/22										
1,1,2,2-Tetrachloroethane	<0.020	0.020	ug/L							
Tetrachloroethylene (PCE)	<0.010	0.010	ug/L							
Tetrahydrofuran (THF)	<0.020	0.020	ug/L							
Toluene	<0.020	0.020	ug/L							
1,2,4-Trichlorobenzene	<0.020	0.020	ug/L							
1,1,2-Trichloroethane	<0.020	0.020	ug/L							
1,1,1-Trichloroethane	<0.020	0.020	ug/L							
Trichloroethylene (TCE)	<0.020	0.020	ug/L							
Trichlorofluoromethane (R11)	<0.020	0.020	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	0.020	ug/L							
1,3,5-Trimethylbenzene	<0.020	0.020	ug/L							
1,2,4-Trimethylbenzene	<0.020	0.020	ug/L							
2,2,4-Trimethylpentane	<0.020	0.020	ug/L							
Vinyl acetate	<0.020	0.020	ug/L							
Vinyl bromide	<0.020	0.020	ug/L							
Vinyl chloride	<0.020	0.020	ug/L							
o-Xylene	<0.020	0.020	ug/L							
m,p-Xylenes	<0.020	0.020	ug/L							
1,2,3-Trichloropropane	<0.020	0.020	ug/L							
sec-Butylbenzene	<0.020	0.020	ug/L							
Isopropylbenzene	<0.020	0.020	ug/L							
n-Propylbenzene	<0.020	0.020	ug/L							
4-Isopropyltoluene	<0.020	0.020	ug/L							
n-Butylbenzene	<0.020	0.020	ug/L							
Surrogate: 4-Bromofluorobenzene	0.0283		ug/L	0.0358		79.2	70-130			
<b>LCS (B2D1412-BS1)</b>										
Prepared & Analyzed: 04/13/22										
Acetone	<b>0.0249</b>	0.020	ug/L	0.0238		105	70-130			
Benzene	<b>0.0258</b>	0.0030	ug/L	0.0319		80.8	70-130			
Benzyl chloride	<b>0.0482</b>	0.020	ug/L	0.0445		108	70-130			
Bromodichloromethane	<b>0.0726</b>	0.0025	ug/L	0.0670		108	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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2D1412 - *** DEFAULT PREP ***										
<b>LCS (B2D1412-BS1) Continued</b>										
Prepared & Analyzed: 04/13/22										
Bromoform	0.124	0.020	ug/L	0.103		120	70-130			
Bromomethane	0.0394	0.020	ug/L	0.0388		102	70-130			
2-Butanone (MEK)	0.0290	0.020	ug/L	0.0295		98.3	70-130			
Carbon Disulfide	0.0284	0.020	ug/L	0.0311		91.1	70-130			
Carbon Tetrachloride	0.0725	0.020	ug/L	0.0629		115	70-130			
Chlorobenzene	0.0503	0.020	ug/L	0.0460		109	70-130			
Chloroethane	0.0255	0.020	ug/L	0.0264		96.6	70-130			
Chloroform	0.0439	0.0040	ug/L	0.0488		89.9	70-130			
Chloromethane	0.0221	0.020	ug/L	0.0207		107	70-130			
Dibromochloromethane	0.0877	0.020	ug/L	0.0852		103	70-130			
1,2-Dibromoethane (EDB)	0.0738	0.020	ug/L	0.0768		96.0	70-130			
1,2-Dichlorobenzene	0.0709	0.020	ug/L	0.0601		118	70-130			
1,3-Dichlorobenzene	0.0760	0.020	ug/L	0.0601		126	70-130			
1,4-Dichlorobenzene	0.0726	0.020	ug/L	0.0601		121	70-130			
Dichlorodifluoromethane (R12)	0.0395	0.020	ug/L	0.0495		79.9	70-130			
1,1-Dichloroethane	0.0369	0.020	ug/L	0.0405		91.2	70-130			
1,2-Dichloroethane (EDC)	0.0360	0.0040	ug/L	0.0405		89.0	70-130			
cis-1,2-Dichloroethylene	0.0360	0.020	ug/L	0.0396		90.7	70-130			
1,1-Dichloroethylene	0.0409	0.020	ug/L	0.0396		103	70-130			
trans-1,2-Dichloroethylene	0.0369	0.020	ug/L	0.0396		93.1	70-130			
1,2-Dichloropropane	0.0485	0.020	ug/L	0.0462		105	70-130			
trans-1,3-Dichloropropylene	0.0442	0.020	ug/L	0.0454		97.3	70-130			
cis-1,3-Dichloropropylene	0.0441	0.020	ug/L	0.0454		97.2	70-130			
Dichlorotetrafluoroethane	0.0645	0.020	ug/L	0.0699		92.2	70-130			
Ethylbenzene	0.0437	0.020	ug/L	0.0434		101	70-130			
4-Ethyltoluene	0.0481	0.020	ug/L	0.0492		97.9	70-130			
Hexachlorobutadiene	0.110	0.020	ug/L	0.107		104	70-130			
2-Hexanone (MBK)	0.0422	0.020	ug/L	0.0410		103	70-130			
Isopropanol (IPA)	0.0225	0.20	ug/L	0.0216		104	70-130			
Methylene Chloride	0.0365	0.020	ug/L	0.0347		105	70-130			
4-Methyl-2-pentanone (MIBK)	0.0449	0.020	ug/L	0.0410		110	70-130			
Styrene	0.0458	0.020	ug/L	0.0426		108	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

**AA Project No:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
<i>Batch B2D1412 - *** DEFAULT PREP ***</i>										
<b>LCS (B2D1412-BS1) Continued</b>						Prepared & Analyzed: 04/13/22				
1,1,2,2-Tetrachloroethane	<b>0.0786</b>	0.020	ug/L	0.0687		114	70-130			
Tetrachloroethylene (PCE)	<b>0.0686</b>	0.010	ug/L	0.0679		101	70-130			
Toluene	<b>0.0351</b>	0.020	ug/L	0.0377		93.1	70-130			
1,2,4-Trichlorobenzene	<b>0.0994</b>	0.020	ug/L	0.0742		134	70-130			QL-02
1,1,2-Trichloroethane	<b>0.0522</b>	0.020	ug/L	0.0546		95.6	70-130			
1,1,1-Trichloroethane	<b>0.0487</b>	0.020	ug/L	0.0546		89.2	70-130			
Trichloroethylene (TCE)	<b>0.0545</b>	0.020	ug/L	0.0537		101	70-130			
Trichlorofluoromethane (R11)	<b>0.0633</b>	0.020	ug/L	0.0562		113	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<b>0.0836</b>	0.020	ug/L	0.0766		109	70-130			
1,3,5-Trimethylbenzene	<b>0.0527</b>	0.020	ug/L	0.0492		107	70-130			
1,2,4-Trimethylbenzene	<b>0.0498</b>	0.020	ug/L	0.0492		101	70-130			
Vinyl acetate	<b>0.0358</b>	0.020	ug/L	0.0296		121	70-130			
Vinyl chloride	<b>0.0262</b>	0.020	ug/L	0.0256		102	70-130			
o-Xylene	<b>0.0465</b>	0.020	ug/L	0.0434		107	70-130			
m,p-Xylenes	<b>0.0927</b>	0.020	ug/L	0.0868		107	70-130			
1,2,3-Trichloropropane	<b>0.0489</b>	0.020	ug/L	0.0603		81.1	70-130			
sec-Butylbenzene	<b>0.0467</b>	0.020	ug/L	0.0549		85.1	70-130			
Isopropylbenzene	<b>0.0444</b>	0.020	ug/L	0.0492		90.3	70-130			
n-Propylbenzene	<b>0.0416</b>	0.020	ug/L	0.0492		84.7	70-130			
4-Isopropyltoluene	<b>0.0463</b>	0.020	ug/L	0.0549		84.4	70-130			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0301</i>		<i>ug/L</i>	<i>0.0358</i>		<i>84.2</i>	<i>70-130</i>			
<b>LCS Dup (B2D1412-BSD1)</b>						Prepared & Analyzed: 04/13/22				
Acetone	<b>0.0256</b>	0.020	ug/L	0.0238		108	70-130	2.73	30	
Benzene	<b>0.0260</b>	0.0030	ug/L	0.0319		81.4	70-130	0.740	30	
Benzyl chloride	<b>0.0498</b>	0.020	ug/L	0.0445		112	70-130	3.17	30	
Bromodichloromethane	<b>0.0737</b>	0.0025	ug/L	0.0670		110	70-130	1.47	30	
Bromoform	<b>0.127</b>	0.020	ug/L	0.103		122	70-130	2.48	30	
Bromomethane	<b>0.0401</b>	0.020	ug/L	0.0388		103	70-130	1.76	30	
2-Butanone (MEK)	<b>0.0292</b>	0.020	ug/L	0.0295		98.9	70-130	0.609	30	
Carbon Disulfide	<b>0.0293</b>	0.020	ug/L	0.0311		94.0	70-130	3.13	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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control</b>										
Batch B2D1412 - *** DEFAULT PREP ***										
<b>LCS Dup (B2D1412-BSD1) Continued</b>										
Prepared & Analyzed: 04/13/22										
Carbon Tetrachloride	0.0727	0.020	ug/L	0.0629	116	70-130	0.260	30		
Chlorobenzene	0.0508	0.020	ug/L	0.0460	110	70-130	0.911	30		
Chloroethane	0.0256	0.020	ug/L	0.0264	97.2	70-130	0.619	30		
Chloroform	0.0445	0.0040	ug/L	0.0488	91.2	70-130	1.44	30		
Chloromethane	0.0212	0.020	ug/L	0.0207	103	70-130	3.91	30		
Dibromochloromethane	0.0890	0.020	ug/L	0.0852	104	70-130	1.54	30		
1,2-Dibromoethane (EDB)	0.0732	0.020	ug/L	0.0768	95.3	70-130	0.732	30		
1,2-Dichlorobenzene	0.0731	0.020	ug/L	0.0601	122	70-130	3.09	30		
1,3-Dichlorobenzene	0.0772	0.020	ug/L	0.0601	128	70-130	1.57	30		
1,4-Dichlorobenzene	0.0752	0.020	ug/L	0.0601	125	70-130	3.58	30		
Dichlorodifluoromethane (R12)	0.0385	0.020	ug/L	0.0495	77.9	70-130	2.53	30		
1,1-Dichloroethane	0.0383	0.020	ug/L	0.0405	94.7	70-130	3.77	30		
1,2-Dichloroethane (EDC)	0.0361	0.0040	ug/L	0.0405	89.3	70-130	0.337	30		
cis-1,2-Dichloroethylene	0.0363	0.020	ug/L	0.0396	91.5	70-130	0.878	30		
1,1-Dichloroethylene	0.0410	0.020	ug/L	0.0396	103	70-130	0.0969	30		
trans-1,2-Dichloroethylene	0.0370	0.020	ug/L	0.0396	93.2	70-130	0.107	30		
1,2-Dichloropropane	0.0471	0.020	ug/L	0.0462	102	70-130	2.90	30		
trans-1,3-Dichloropropylene	0.0443	0.020	ug/L	0.0454	97.7	70-130	0.410	30		
cis-1,3-Dichloropropylene	0.0445	0.020	ug/L	0.0454	98.0	70-130	0.820	30		
Dichlorotetrafluoroethane	0.0638	0.020	ug/L	0.0699	91.3	70-130	0.981	30		
Ethylbenzene	0.0450	0.020	ug/L	0.0434	104	70-130	2.94	30		
4-Ethyltoluene	0.0483	0.020	ug/L	0.0492	98.3	70-130	0.408	30		
Hexachlorobutadiene	0.108	0.020	ug/L	0.107	101	70-130	2.54	30		
2-Hexanone (MBK)	0.0422	0.020	ug/L	0.0410	103	70-130	0.0970	30		
Isopropanol (IPA)	0.0186	0.20	ug/L	0.0216	85.8	70-130	19.2	30		
Methylene Chloride	0.0355	0.020	ug/L	0.0347	102	70-130	2.70	30		
4-Methyl-2-pentanone (MIBK)	0.0446	0.020	ug/L	0.0410	109	70-130	0.824	30		
Styrene	0.0465	0.020	ug/L	0.0426	109	70-130	1.38	30		
1,1,2,2-Tetrachloroethane	0.0794	0.020	ug/L	0.0687	116	70-130	1.04	30		
Tetrachloroethylene (PCE)	0.0690	0.010	ug/L	0.0679	102	70-130	0.592	30		
Toluene	0.0358	0.020	ug/L	0.0377	95.0	70-130	2.02	30		
1,2,4-Trichlorobenzene	0.0975	0.020	ug/L	0.0742	131	70-130	1.96	30	QL-03	

**Allen Aminian**  
QA/QC Manager



## LABORATORY ANALYSIS RESULTS

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

**AA Project No:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

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 B2D1412 - \*\*\* DEFAULT PREP \*\*\*

#### LCS Dup (B2D1412-BSD1) Continued

Prepared & Analyzed: 04/13/22

1,1,2-Trichloroethane	<b>0.0523</b>	0.020	ug/L	0.0546		95.9	70-130	0.313	30	
1,1,1-Trichloroethane	<b>0.0491</b>	0.020	ug/L	0.0546		90.0	70-130	0.893	30	
Trichloroethylene (TCE)	<b>0.0543</b>	0.020	ug/L	0.0537		101	70-130	0.395	30	
Trichlorofluoromethane (R11)	<b>0.0649</b>	0.020	ug/L	0.0562		116	70-130	2.63	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<b>0.0854</b>	0.020	ug/L	0.0766		111	70-130	2.09	30	
1,3,5-Trimethylbenzene	<b>0.0529</b>	0.020	ug/L	0.0492		108	70-130	0.372	30	
1,2,4-Trimethylbenzene	<b>0.0504</b>	0.020	ug/L	0.0492		102	70-130	1.18	30	
Vinyl acetate	<b>0.0358</b>	0.020	ug/L	0.0296		121	70-130	0.197	30	
Vinyl chloride	<b>0.0268</b>	0.020	ug/L	0.0256		105	70-130	2.41	30	
o-Xylene	<b>0.0473</b>	0.020	ug/L	0.0434		109	70-130	1.76	30	
m,p-Xylenes	<b>0.0940</b>	0.020	ug/L	0.0868		108	70-130	1.44	30	
1,2,3-Trichloropropane	<b>0.0517</b>	0.020	ug/L	0.0603		85.7	70-130	5.52	30	
sec-Butylbenzene	<b>0.0478</b>	0.020	ug/L	0.0549		87.1	70-130	2.32	30	
Isopropylbenzene	<b>0.0447</b>	0.020	ug/L	0.0492		91.0	70-130	0.772	30	
n-Propylbenzene	<b>0.0423</b>	0.020	ug/L	0.0492		86.1	70-130	1.64	30	
4-Isopropyltoluene	<b>0.0474</b>	0.020	ug/L	0.0549		86.3	70-130	2.23	30	

Surrogate: 4-Bromofluorobenzene 0.0286 ug/L 0.0358 80.0 70-130

### Fixed Gases by TCD - Quality Control

Batch B2D1405 - \*\*\* DEFAULT PREP \*\*\*

#### Blank (B2D1405-BLK1)

Prepared & Analyzed: 04/14/22

Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							

#### LCS (B2D1405-BS1)

Prepared & Analyzed: 04/14/22

Methane	<b>2.64</b>	0.10	% by Volume	2.25		117	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

**AA Project No:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Fixed Gases by TCD - Quality Control</b>										
<i>Batch B2D1405 - *** DEFAULT PREP ***</i>										
<b>LCS (B2D1405-BS1) Continued</b> <span style="float: right;">Prepared &amp; Analyzed: 04/14/22</span>										
Oxygen	2.21	0.10	% by Volume	2.00		111	70-130			
Carbon Dioxide	8.95	0.10	% by Volume	7.50		119	70-130			
<b>LCS Dup (B2D1405-BSD1)</b> <span style="float: right;">Prepared &amp; Analyzed: 04/14/22</span>										
Methane	2.17	0.10	% by Volume	2.25		96.4	70-130	19.7	30	
Oxygen	1.74	0.10	% by Volume	2.00		87.2	70-130	23.6	30	
Carbon Dioxide	7.90	0.10	% by Volume	7.50		105	70-130	12.5	30	
<b>Duplicate (B2D1405-DUP1)</b> <span style="float: right;">Source: 2D12011-02 Prepared &amp; Analyzed: 04/14/22</span>										
Methane	<0.20	0.20	% by Volume		<0.20				30	
Oxygen	17.9	0.20	% by Volume		16.5			7.97	30	
Carbon Dioxide	1.63	0.20	% by Volume		1.73			5.95	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:** MB187344  
**Date Received:** 04/12/22  
**Date Reported:** 04/21/22

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### Special Notes

- [1] = **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.
- [2] = **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.

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

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**Allen Aminian**  
QA/QC Manager



**Appendix B**  
**BS-02 Narrative and Operations Data**

**Appendix B. 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	0.30	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	-64530
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	-65576
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	-66475
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	-67081

**Appendix B. 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
1/6/22 0:00	0.00	20.9	0.00	0.00	0.00	0.00	0.00	0.00000	0.00	11006	1.6	0.00	0.0	0.00	102683	-67051
1/13/22 0:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00000	0.00	11006	22.5	0.00	0.0	0.00	102683	-67051
1/26/22 0:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00000	0.00	11006	22.5	0.00	0.0	0.00	102683	-67051
3/3/22 0:00	0.00	16.80	6.50	457.00	0.00	0.00	0.00	0.00000	0.00	11006	5.7	0.00	0.0	0.00	102683	-67051
3/8/22 0:00	0.00	19.50	29.00	361.00	0.71	256.31	7432.99	0.00163	2.35	11012	3	0.59	0.2	240.14	103284	-67652
3/10/22 0:00	0.80	20.90	6.00	86.90	0.71	61.70	370.19	0.00008	0.12	11014	1.6	0.08	0.0	30.83	103555	-67923
3/24/22 0:00	0.2	19.4	48	215	1.00	215	10320.00	0.00227	3.27	11038	3.1	0.51	0.1	208.15	105228	-69317
4/7/22 11:16	0.8	19.3	9.1	153	0.75	114.75	1044.23	0.00023	0.33	11064	3.2	0.3	0.1	114.68	107563	-71401
5/4/22 13:20	--	20.1	26.5	151	0.99	149.49	3961.49	0.00087	1.25	11085	2.4	0.3	0.1	112.05	110634	--
5/11/22 11:40	0.4	19.9	23.5	180	0.90	162.00	3807.00	0.00084	1.20	11094	2.6	0.3	0.1	131.54	111478	-75059
5/12/22 15:00	0.6	19.4	14.3	180	0.90	162.00	2316.60	0.00051	0.73	11095	3.1	0.4	0.1	156.84	111642	-75194
5/25/22 12:15	0.1	20.5	14.7	181	1.00	181.00	2660.70	0.00058	0.84	11105	2	0.3	0.1	113.06	113381	-76427
6/9/22 9:15	0.8	20.1	45	180	0.98	176.40	7938.00	0.00174	2.51	11130	2.4	0.3	0.1	132.22	115205	-78143
6/15/22 9:40	--	20.9	25.8	182	0.99	180.18	4648.64	0.00102	1.47	11142	1.6	0.2	0.1	90.03	115874	--

**Appendix B. 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	0.60	0.07	0.70	0.02	24.21	32485	24701	35191	180
12/9/21 11:59	0.60	0.07	0.70	0.02	24.07	33845	26053	37018	160
12/15/21 13:35	1.88	0.23	0.70	0.05	75.93	33991	26513	37492	170
12/23/21 7:45	1.76	0.22	0.70	0.05	71.18	34580	27066	38057	165
12/30/21 8:00	2.06	0.25	0.70	0.06	82.93	35079	27647	38648	168

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

	Biodegradation						Cumulative Mass Removed	Flow	
	CO2		C14 Correction Factor Based on BaCO3	C14 Correction Applied					
Date	CO2 Production (scf/minute)	CO2 Production (lbs/minute)		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)
1/6/22 0:00	0.00	0.00	0.70	0.00	0.00	35632	27647	38653	0
1/13/22 0:00	0.00	0.00	0.70	0.00	0.00	35632	27647	38653	0
1/26/22 0:00	0.00	0.00	0.70	0.00	0.00	35632	27647	38653	0
3/3/22 0:00	0.00	0.00	0.70	0.00	0.00	35632	27647	38653	150
3/8/22 0:00	0.00	0.00	0.70	0.00	0.00	35632	27647	38659	70
3/10/22 0:00	0.49	0.06	0.70	0.01	19.92	35632	27687	38701	155
3/24/22 0:00	0.43	0.05	0.70	0.01	17.35	35911	27930	38968	128
4/7/22 11:16	0.92	0.11	0.70	0.03	37.04	36162	28466	39530	153
5/4/22 13:20	--	--	0.70	--	--	--	--	--	151
5/11/22 11:40	0.65	0.08	0.70	0.02	26.15	36419	28647	39741	180
5/12/22 15:00	0.97	0.12	0.70	0.03	39.22	36448	28692	39787	180
5/25/22 12:15	0.18	0.02	0.70	0.01	7.30	36954	28786	39891	181
6/9/22 9:15	1.41	0.17	0.70	0.04	56.95	37062	29633	40763	180
6/15/22 9:40	--	--	0.70	--	--	--	--	--	182

**Appendix C**  
**HSVE-01 and BS-03 Narrative and Operations Data**



**Appendix C.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 C.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 water in DL 90 deg elbow

**Appendix C.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 aprox 700 with velocalc. 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
HSVE-1	1/6/2022	12:52	0	69.5	19.3	NM	NM	361	52	Shutdown SVE & AS @ 1010 for the weekend because of high precip & no availability to vlear manifold + drip legs due to holiday.
HSVE-1	1/13/2022	9:45	0	221	19.3	0.8	0	625	55.4	BS-02 and BS-03 systems off due to rain (approximately 5.7")
HSVE-1	1/20/2022	11:05	147	238	19.1	NM	NM	395	54.5	BS-02 system will remain off, BS-03 restarted at 150 scfm at noon.
HSVE-1	1/26/2022	9:20	172	188	19.7	1.1	0.1	375	56	
HSVE-1	2/8/2022	8:55	245	250	18.4	0	0	395	53.7	0.4-0.6" DP
HSVE-1	2/15/2022	11:15	313	320	19.2	1.3	0.1	395	51.9	Condensate removal completed at 8AM, system off 7-8AM and 930 to 1030 for condensate and RO calibration.
HSVE-1	2/24/2022	9:20	250	202.3	19.2	1.1	0	450	56	diff p range from 0.7 to 1.2 in WC
HSVE-1	2/24/2022	11:20	250	204.9	19.1	1	0	450	56	
HSVE-1	3/1/2022	13:50	247	520	18.9	0.8	0	459	52.7	SVE Flow range was 395-459
HSVE-1	3/3/2022	10:30	215	226	19.8	NM	NM	457	54	SE restarted at 10:22; 0.4"-0.8"
HSVE-1	3/8/2022	9:05	219	192	19.8	NM	NM	361	52.1	0.1-0.5" DP
HSVE-1	3/24/2022	8:55	189	198	19.8	0.3	0.1	610	56	
HSVE-1	4/7/2022	11:20	235	177	19	0.9	0	457	55	DP = 0.1-0.8" H2O
HSVE-1	4/28/2022	9:00	203	73.5	19.8	0.5	0	235	52.5	0-0.4" (median 0.25")
HSVE-1	5/4/2022	13:15	262	126	19.8	NM	NM	457	53.4	
HSVE-1	5/11/2022	11:35	237	165	19.3	0.7	0	427	53.6	0.7" DP
HSVE-1	5/25/2022	12:10	248	110	20.3	0.3	0	395	56.6	0.1-0.7 = 0.6"
HSVE-1	6/9/2022	9:11	200	115	20	1	0	650	56	BS-03 flow increased to 225 scfm
HSVE-1	6/15/2022	9:30	227	71.5	20.3	NM	NM	395	52.5	0.6"wc DP
HSVE-1	6/30/2022	10:05	165	57	20.3	0.5	0	427	56	

**Appendix C.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-11	200	4/6/2021	13:59	20.9	0	0		
GMW-O-11	200	4/8/2021	14:20	20.9	0	0	0.5	20.9
GMW-O-11	200	4/15/2021	11:10	20.7	0.1	0	0	21.2
GMW-O-11	200	4/21/2021	13:07	21.9	0.1	0	0.1	21.4
GMW-O-11	200	4/28/2021	12:28	21.4	0.1	0	1.2	20.9
GMW-O-11	200	5/5/2021	13:40	21.2	0	0	3.8	20.9
GMW-O-11	200	5/11/2021	15:30	21	0.1	0	0	21.7
GMW-O-11	200	5/11/2021	12:40	20.5	0.1	0	0.3	21.3
GMW-O-11	200	5/12/2021	14:40	21.6	0	0	0	20.9
GMW-O-11	200	5/12/2021	9:37	20.8	0.2	0	0.3	n/a
GMW-O-11	200	5/13/2021	11:30	21.5	0.1	0	0.6	20.9
GMW-O-11	200	5/14/2021	12:34	19.9	0.1	0	0.1	21.3
GMW-O-11	200	5/18/2021	14:50	20.9	0	0	0.5	20.9
GMW-O-11	200	5/18/2021	12:02	20.7	0.2	0	0.7	20.9
GMW-O-11	200	5/19/2021						21.5
GMW-O-11	200	5/20/2021	11:25	20.5	0	0	0.3	21.5
GMW-O-11	200	5/26/2021						20.9
GMW-O-11	200	5/27/2021	10:59	21.8	0	0.1	0	21.5
GMW-O-11	200	6/1/2021	14:15	15.7	2.4	0	30.25	20.9
GMW-O-11	200	6/10/2021	11:15	20.2	0	0	2.4	21.1
GMW-O-11	200	6/10/2021	14:27	20.4	0	0	3.1	20.5
GMW-O-11	200	6/11/2021	9:04	20.6	0	0	0	21
GMW-O-11	200	6/22/2021	9:00	20.9	0.1	0	0.1	21.4
GMW-O-11	200	6/25/2021	10:40	21.7	0.1	0	0	20.9
GMW-O-11	200	6/28/2021	12:30	21.1	0.1	0.1	0.4	21.1
GMW-O-11		10/1/2021	10:13				0	20.9
GMW-O-11	200	10/1/2021	10:13	--	--	--	0	20.9
GMW-O-11	200	10/19/2021	13:38	19.5	0.3	0	37.5	20.9
GMW-O-11	200	11/10/2021	12:50	NM	NM	NM	NM	20.9
GMW-O-11	200	11/15/2021	14:53	NM	NM	NM	48.5	20.9
GMW-O-11	200	12/2/2021	14:36	20.9	NM	NM	0	20.9
GMW-O-11	200	12/9/2021	10:33	20.9	0	0	0	20.9
GMW-O-11	200	12/15/2021	--	20.9	0	0	0	20.9
GMW-O-11	200	12/17/2021	15:22	20.9	--	--	0	20.9

**Appendix C.2. Soil Vapor Field Monitoring Data***SFPP Norwalk Pump Station, Norwalk, California*

<b>Well/ Location</b>	<b>Approximate Distance to HSVE-01 (ft) (negative upgradient)</b>	<b>Date</b>	<b>Time</b>	<b>Oxygen (%)</b>	<b>Carbon Dioxide (%)</b>	<b>Methane (%)</b>	<b>VOC's (ppmv)</b>	<b>Ambient Oxygen (%)</b>
GMW-O-11	200	1/20/2022	10:36	20.9	NM	NM	0	20.9
GMW-O-11	200	2/8/2022	10:25	20.9	0	0	0	20.9
GMW-O-11	200	2/15/2022	12:31	20.8	0	0	0	20.9
GMW-O-11	200	3/1/2022	13:09	20.8	0	0	0	21
GMW-O-11	200	4/28/2022	10:17	20.9	0	0	0	21
GMW-O-11	200	5/4/2022	14:00	20.9	NM	NM	0	21
GMW-O-11	200	5/11/2022	10:03	20.9	NM	0	8	21
GMW-O-11	200	5/25/2022	13:35	20.1	0	0	68	21

**Appendix C.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	
Monitoring ID	SVM-10D	SVM-10S	SVM-16D	SVM-16M	SVM-16S	SVM-03D	SVM-03S	GMW-O-12	SVM-08D	SVM-08S	GMW-O-21	SVM-07D	SVM-07S	GMW-O-3	GMW-O-20	SVM-05D	SVM-05S	MW-SF-9	GMW-O-5	SVM-02D	SVM-02S	GMW-O-2	SVM-06D	SVM-06S	GMW-O-11	SVM-1D	SVM-1S	SVM-15D	SVM-15M	SVM-15S	GMW-O-14							
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	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	NM	0	NM	0	0	0	0	NM	NM	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	NM	0	0	0	NM	NM	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	NM	0	NM	0	0	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	NM	0	0.7	0	0	0	NM	NM	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	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	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	0.18	0	0.11	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. Preumatic 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 C.4. Startup 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 C.4. Startup 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 C.4. Startup 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 C.4. Startup 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 C.4. Startup 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 C.4. Startup 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 C.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
4/6/2021 12:25	6	13.4	381	323	1	323	0	0	0	0	7.6	1.88	0.53	766.66	0	0
4/6/2021 16:00	6.2	13.4	405	323	1	323	130815	0.02875	41.39	6	7.6	1.88	0.53	766.66	114	-6
4/7/2021 7:35	5.6	15.5	406.6	323	1	323	131331.8	0.02886	41.56	33	5.5	1.36	0.39	554.82	612	-17
4/7/2021 12:45	4.7	15.6	421.5	512	1	512	215808	0.04742	68.29	48	5.4	2.12	0.6	863.47	732	10
4/7/2021 15:25	4.4	16.2	418	512	1	512	214016	0.04703	67.72	55	4.8	1.88	0.53	767.53	828	14
4/8/2021 7:35	4	17.1	425	512	1	512	217600	0.04782	68.86	102	3.9	1.53	0.43	623.62	1345	66
4/8/2021 11:00	3.4	17.5	401.1	512	1	512	205363.2	0.04513	64.98	111	3.5	1.37	0.39	559.66	1433	86
4/8/2021 12:00	3.4	17	398.1	560	1	560	222936	0.04899	70.54	114	4	1.71	0.49	699.57	1457	90
4/8/2021 15:00	3.3	17.9	414.2	560	1	560	231952	0.05097	73.4	123	3.1	1.33	0.38	542.17	1544	92
4/15/2021 9:00	3.5	17.7	421	560	1	560	235760	0.05181	74.6	627	3.3	1.41	0.4	577.15	5204	1106
4/21/2021 13:00	3.4	17.5	408	560	0.73	408.8	166790.4	0.03665	52.78	952	3.5	1.09	0.31	446.85	8763	2076
4/28/2021 11:00	1.4	19.9	340	550	1	550	187000	0.04109	59.17	1361	1.1	0.46	0.13	188.95	11854	2588
5/5/2021 9:00	1.3	18.9	390	550	1	550	214500	0.04714	67.88	1831	2.1	0.88	0.25	360.72	13161	3276
5/5/2021 15:45	1.3	18.9	418	550	1	550	229900	0.05052	72.75	1851	2.1	0.88	0.25	360.72	13262	3250
5/11/2021 16:45	0.8	20.1	1200	560	0.98	548.8	658560	0.14472	208.39	3110	0.9	0.38	0.11	154.26	15441	2690
5/12/2021 8:15	1.3	19.9	422	500	0.98	490	206780	0.04544	65.43	3153	1.1	0.41	0.12	168.33	15541	2696
5/12/2021 15:00	1	20.2	2000	500	0.98	490	980000	0.21535	310.11	3240	0.8	0.3	0.09	122.42	15588	2716
5/13/2021 9:00	1.3	19.8	431.8	457	0.98	447.86	193385.95	0.0425	61.19	3286	1.2	0.41	0.12	167.84	15680	2762
5/13/2021 14:52	1	19.8	5000	457	0.98	447.86	2239300	0.49208	708.59	3459	1.2	0.41	0.12	167.84	15721	2774
5/14/2021 8:30	1.1	19.9	5000	457	0.98	447.86	2239300	0.49208	708.59	3980	1.1	0.38	0.11	153.86	15844	2774
5/14/2021 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
5/18/2021 9:00	1.9	17.4	1410	500	0.98	490	690900	0.15182	218.62	4972	3.6	1.35	0.38	550.91	16516	2274
5/18/2021 12:52	1.2	18.7	1900	500	0.98	490	931000	0.20458	294.6	5019	2.3	0.86	0.24	351.97	16605	2242
5/18/2021 15:30	1.2	19.5	2650	500	0.98	490	1298500	0.28534	410.89	5065	1.5	0.56	0.16	229.55	16643	2227
5/19/2021 9:30	1.2	19.7	440	457	0.98	447.86	197058.4	0.0433	62.36	5111	1.3	0.45	0.13	181.83	16815	2220
5/19/2021 13:10	0.9	20	4830	470	0.98	460.6	2224698	0.48887	703.97	5219	1	0.35	0.1	143.85	16843	2223
5/19/2021 16:15	0.8	19.9	390	485	0.98	475.3	185367	0.04073	58.66	5226	1.1	0.4	0.11	163.28	16862	2225
5/20/2021 9:30	1.4	19.6	455	500	0.98	490	222950	0.04899	70.55	5277	1.4	0.52	0.15	214.24	16979	2210
5/20/2021 11:49	0.9	19.5	475	500	0.98	490	232750	0.05115	73.65	5284	1.5	0.56	0.16	229.55	17000	2214
5/26/2021 11:02	1.2	19.3	415	460	0.93	427.8	177537	0.03901	56.18	5619	1.7	0.56	0.16	227.13	18370	1830
5/26/2021 12:15	1.1	18.9	395	460	0.93	427.8	168981	0.03713	53.47	5622	2.1	0.69	0.19	280.57	18381	1828
5/26/2021 14:01	0.9	19.4	418	530	0.93	492.9	206032.2	0.04527	65.2	5627	1.6	0.6	0.17	246.3	18402	1821
5/27/2021 7:48	1.2	19.5	374.2	600	0.93	558	208803.6	0.04588	66.07	5676	1.5	0.64	0.18	261.4	18584	1761
5/27/2021 11:20	1	19.2	379.1	600	0.93	558	211537.8	0.04648	66.94	5686	1.8	0.77	0.22	313.68	18623	1760
5/28/2021 10:15	1.3	18.5	335	510	0.93	474.3	158890.5	0.03492	50.28	5734	2.5	0.91	0.26	370.32	18922	1660
5/28/2021 11:30	1	18.7	421	510	0.93	474.3	199680.3	0.04388	63.19	5737	2.3	0.83	0.24	340.69	18942	1653
6/1/2021 12:40	1.2	18.5	386.2	600	0.99	594	229402.8	0.05041	72.59	6031	2.5	1.14	0.32	463.78	20321	993
6/1/2021 14:45	1	18.8	360.1	600	0.99	594	213899.4	0.047	67.69	6037	2.2	1	0.28	408.12	20361	976
6/10/2021 10:35	1.3	18	468.3	600	1	600	280980	0.06174	88.91	6822	3	1.38	0.39	562.16	23963	-662
6/10/2021 12:58	1.4	18.1	472.5	600	1	600	283500	0.0623	89.71	6831	2.9	1.33	0.38	543.42	24019	-689
6/10/2021 15:09	1	18.5	442.5	600	1	600	265500	0.05834	84.01	6838	2.5	1.15	0.33	468.46	24069	-710
6/11/2021 7:55	1.4	19.4	441	600	1	600	264600	0.05814	83.73	6897	1.6	0.73	0.21	299.82	24396	-880
6/11/2021 10:28	0.9	19.1	468	600	1	600	280800	0.0617	88.85	6906	1.9	0.87	0.25	356.03	24428	-878
6/22/2021 7:55	1.3	18.8	344.9	600	0.99	594	204870.6	0.04502	64.83	7612	2.2	1	0.28	408.12	28306	-2552
6/25/2021 8:45	1.6	16.6	354	510	0.99	504.9	178734.6	0.03928	56.56	7784	4.4	1.7	0.48	693.81	29545	-2913
6/25/2021 11:02	1	19.2	405	550	0.99	544.5	220522.5	0.04846	69.78	7791	1.8	0.75	0.21	306.09	29611	-2950
6/28/2021 11:00	1.1	18.4	422	600	0.99	594	250668	0.05508	79.32	8028	2.6	1.18	0.33	482.33	30529	-3256
6/28/2021 11:10	1.1	18.3	424	600	0.99	594	251856	0.05534	79.7	8029	2.7	1.23	0.35	500.88	30532	-3258
6/28/2021 13:50	1	18.4	415	600	0.99	594	246510	0.05417	78	8038	2.6	1.18	0.33	482.33	30588	-3286

**Appendix C.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
7/23/2021 8:00	1.3	19.7	421	600	0.74	444	186924	0.04108	59.15	9502	1.3	0.44	0.13	180.26	42529	-9717
7/23/2021 9:00	1.3	19.8	408	600	0.74	444	181152	0.03981	57.32	9504	1.2	0.41	0.12	166.4	42536	-9716
8/6/2021 9:25		19.1	365	555	1	555	202575	0.04452	64.1	10403	1.9	0.81	0.23	329.33	44869	-9016
8/31/2021 7:45	0.9	19.6	52.1	450	0.7	315	16411.5	0.00361	5.19	10532	1.4	0.34	0.1	137.73	53079	-17227
8/31/2021 10:45	1.1	18.4	408	500	0.7	350	142800	0.03138	45.19	10538	2.6	0.7	0.2	284.2	53096	-17231
9/1/2021 7:45	1	19.5	195	450	0.68	306	59670	0.01311	18.88	10555	1.5	0.35	0.1	143.35	53345	-17353
9/1/2021 8:00	1.1	19.5	202	450	0.68	306	61812	0.01358	19.56	10555	1.5	0.35	0.1	143.35	53346	-17353
9/9/2021 9:05	1.1	19.5	208	500	0.69	345	71760	0.01577	22.71	10737	1.5	0.4	0.11	161.62	54500	-17492
9/9/2021 12:45	1.1	19.4	215	500	1	500	107500	0.02362	34.02	10743	1.6	0.61	0.17	249.85	54524	-17495
9/16/2021 11:00	1.6	19.3	238.9	550	1	550	131395	0.02887	41.58	11031	1.7	0.72	0.2	292.01	56255	-17798
9/21/2021 13:45	0.8	21	72.4	200	1	200	14480	0.00318	4.58	11054	0	0	0	0	57749	-17605
9/21/2021 14:45	0.8	19.4	1100	500	1	500	550000	0.12086	174.04	11061	1.6	0.61	0.17	249.85	57749	-17603
9/21/2021 14:55	1.2	19.6	1090	500	1	500	545000	0.11976	172.46	11063	1.4	0.54	0.15	218.62	57750	-17603
9/30/2021 16:30	0.6	20.1	1312	400	1	400	524800	0.11532	166.06	12568	0.9	0.28	0.08	112.43	59732	-17547
10/1/2021 8:55	0.6	19.6	1260	400	0.98	392	493920	0.10854	156.29	12675	1.4	0.42	0.12	171.39	59809	-17562
10/7/2021 11:05	0.2	20.7	382	460	1	460	175720	0.03861	55.6	13014	0.3	0.11	0.03	43.1	60853	-18069
10/19/2021 9:15	0.5	20.1	102	395	0.98	387	39484.2	0.00868	12.49	13163	0.9	0.27	0.08	108.81	61367	-18172
10/19/2021 14:25	0.9	19.7	326	427	0.63	269	87697.26	0.01927	27.75	13169	1.3	0.27	0.08	109.22	61390	-18180
11/15/2021 14:07	0.9	19.5	337	400	0.98	392	132104	0.02903	41.8	14297	1.5	0.45	0.13	183.64	64338	-18679
12/9/2021 11:52	0.6	19.2	153	395	1	395	60435	0.01328	19.12	14754	1.8	0.54	0.15	222.05	68728	-19909
12/15/2021 13:30	0.9	19.4	421	400	0.91	364	153244	0.03367	48.49	15048	1.6	0.45	0.13	181.89	70075	-20718
12/17/2021 14:30	0.5	19.9	102	450	0.91	410	41769	0.00918	13.22	15075	1.1	0.34	0.1	140.68	70447	-20838
12/23/2021 7:45	0.9	19.9	260	360	0.78	281	73008	0.01604	23.1	15207	1.1	0.24	0.07	96.47	71251	-21204
12/30/2021 7:55	0.8	19.8	272	400	1	400	108800	0.02391	34.43	15449	1.2	0.37	0.1	149.91	71927	-21217
1/6/2022 12:52		19.3	69.5	361	0.77	278	19318.92	0.00425	6.11	15493	1.7	0.36	0.1	147.58	73007	-21433
1/13/2022 9:45	0.8	19.3	221	625	0.77	481	106356.25	0.02337	33.65	15724	1.7	0.63	0.18	255.51	74021	-22447
1/20/2022 11:05		19.1	238	395	0.77	304	72387.7	0.01591	22.91	15885	1.9	0.44	0.13	180.48	75824	-23232
1/26/2022 9:20	1.1	19.7	188	375	0.77	289	54285	0.01193	17.18	15987	1.3	0.29	0.08	117.23	76894	-24301
2/8/2022 8:55	0	18.4	250	395	0.97	383	95787.5	0.02105	30.31	16381	2.6	0.76	0.22	311.12	78416	-24278
2/15/2022 11:15	1.3	19.2	320	395	0.97	383	122608	0.02694	38.8	16656	1.8	0.53	0.15	215.39	80624	-26486
2/24/2022 11:20	1	19.1	204.9	450	0.97	437	89438.85	0.01965	28.3	16911	1.9	0.63	0.18	259.01	82563	-26745
3/1/2022 13:50	0.8	19	520	459	1	459	238680	0.05245	75.53	17296	2.1	0.74	0.21	301.03	83885	-27232
3/3/2022 10:30	0	19.8	226	457	1	457	103282	0.0227	32.68	17357	1.2	0.42	0.12	171.27	84445	-27537
3/8/2022 9:05	0	19.8	192	361	0.99	357	68618.88	0.01508	21.71	17465	1.2	0.33	0.09	133.94	85292	-28383
3/24/2022 8:55	0.3	19.8	198	610	0.99	604	119572.2	0.02628	37.84	18070	1.2	0.55	0.16	226.32	87434	-30525
4/7/2022 11:20	0.9	19	177	457	0.75	343	60666.75	0.01333	19.2	18340	2	0.52	0.15	214.09	90625	-32759
4/28/2022 9:00	0.5	19.8	73.5	235	0.98	230	16927.05	0.00372	5.36	18452	1.2	0.21	0.06	86.31	95100	-34818
5/4/2022 13:15	0	19.8	126	457	0.99	452	57006.18	0.01253	18.04	18564	1.2	0.42	0.12	169.56	95633	-35084
5/11/2022 11:35	0.7	19.3	165	427	0.98	418	69045.9	0.01517	21.85	18715	1.7	0.54	0.15	222.17	96808	-36260
5/25/2022 12:10	0.3	20.3	110	395	0.94	371	40843	0.00898	12.92	18896	0.7	0.2	0.06	81.17	99924	-37836
6/9/2022 9:11	1	20	115	650	0.98	637	73255	0.0161	23.18	19241	1	0.49	0.14	198.94	101132	-38423
6/15/2022 9:30	0	20.3	71.5	395	0.96	379	27112.8	0.00596	8.58	19293	0.7	0.2	0.06	82.9	102328	-38184
6/30/2022 10:05	0.5	20.3	57	427	0.86	367	20931.54	0.0046	6.62	19392	0.7	0.2	0.06	80.28	103573	-39429

**Appendix C.5. HSVE-01 Cumulative Mass Removed**

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		
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



**Appendix C.5. HSVE-01 Cumulative Mass Removed**

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		
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
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	5.50	0.67	0.65	0.14	206.09	37029	36726	47468	150
9/16/21 11:00	8.80	1.08	0.65	0.23	329.74	38457	39010	50041	275
9/21/21 13:45	1.60	0.20	0.65	0.04	59.95	40144	39316	50371	200
9/21/21 14:45	4.00	0.49	0.65	0.10	149.88	40146	39323	50384	200
9/21/21 14:55	6.00	0.74	0.65	0.16	224.82	40147	39324	50387	200
9/30/21 16:30	2.40	0.29	0.65	0.06	89.93	42185	40140	52708	250
10/1/21 8:55	2.35	0.29	0.65	0.06	88.13	42247	40200	52875	250
10/7/21 11:05	0.92	0.11	0.65	0.02	34.47	42784	40410	53424	260
10/19/21 9:15	1.94	0.24	0.65	0.05	72.52	43195	41275	54437	300
10/19/21 14:25	2.42	0.30	0.65	0.06	90.72	43210	41294	54463	200
11/15/21 14:07	3.53	0.43	0.65	0.09	132.20	45659	44862	59159	192
12/9/21 11:52	2.37	0.29	0.65	0.06	88.81	48819	46985	61739	280
12/15/21 13:30	3.28	0.40	0.65	0.09	122.75	49358	47730	62778	320
12/17/21 14:30	2.05	0.25	0.65	0.05	76.72	49608	47886	62961	250
12/23/21 7:45	2.53	0.31	0.65	0.07	94.70	50047	48428	63635	240
12/30/21 7:55	3.20	0.39	0.65	0.08	119.91	50711	49268	64716	245
1/6/2022 12:52	0.00	0.00	0.65	0.00	0.00	51575	49268	64761	0
1/13/2022 9:45	3.85	0.47	0.65	0.10	144.26	51575	50259	65983	0
1/20/2022 11:05	0.00	0.00	0.65	0.00	0.00	52593	50259	66144	147
1/26/2022 9:20	3.18	0.39	0.65	0.08	119.02	52593	50964	66952	172
2/8/2022 8:55	0.00	0.00	0.65	0.00	0.00	54138	50964	67345	245
2/15/2022 11:15	4.98	0.61	0.65	0.13	186.64	54138	52289	68945	313
2/24/2022 11:20	4.37	0.54	0.65	0.11	163.56	55818	53762	70673	250
3/1/22 13:50	3.67	0.45	0.65	0.10	137.59	56653	54464	71760	247
3/3/22 10:30	0.00	0.00	0.65	0.00	0.00	56909	54464	71821	215
3/8/22 9:05	0.00	0.00	0.65	0.00	0.00	56909	54464	71928	219
3/24/22 8:55	1.81	0.22	0.65	0.05	67.89	56909	55550	73619	189
4/7/22 11:20	3.08	0.38	0.65	0.08	116	57866	57180	75520	235
4/28/22 9:00	1.15	0.14	0.65	0.03	43	60282	58081	76534	203
5/4/22 13:15	0.00	0.00	0.65	0.00	0	60549	58081	76645	262
5/11/22 11:35	2.93	0.36	0.65	0.08	110	60549	58842	77557	237
5/25/22 12:10	1.11	0.14	0.65	0.03	42	62088	59427	78324	248
6/9/22 9:11	6.37	0.78	0.65	0.17	239	62709	62978	82219	200
6/15/22 9:30	0.00	0.00	0.65	0.00	0	64144	62978	82271	227
6/30/22 10:05	1.84	0.23	0.65	0.05	69	64144	64012	83404	165

**Appendix D**  
**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 (ft<sup>2</sup>/d)

0.01

Standard Deviation (ft<sup>2</sup>/d)

0.00

Coefficient of Variation

0.32

Well Designation: GMW-23 Beckett and Lyverse (2002)  
 Date: 31-Aug-21

Ground Surface Elev (ft msl)	0.0	Enter These Data	r <sub>e1</sub>	Drawdown Adjustment (ft)	0
Top of Casing Elev (ft msl)	0.0				
Well Casing Radius, r <sub>c</sub> (ft):	0.167				
Well Radius, r <sub>w</sub> (ft):	0.500	Calculated Parameters	8.80	6.00	
LNAPL Specific Yield, S <sub>y</sub> :	0.175				
LNAPL Density Ratio, ρ <sub>r</sub> :	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 <sub>e3</sub> (ft):	0.258				
Effective Radius, r <sub>e2</sub> (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 <sup>2</sup> /day)	NA
Constant Discharge (ft <sup>3</sup> /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 <sup>2</sup> /day)			
B&R Method	C&J Method	CB&P	Theim Method
0.003	0.01	0.01	NA

Recovery Rate Estimates	
Average Transmissivity (ft <sup>2</sup> /day)	0.01
Skimming Systems	
Maximum Skimming Drawdown (ft)	0.88
Estimated Skimming Recovery Rate (gpd)	0.09
Enhanced Skimming System	
Drawdown Enhancement (Vacuum or Water) (ft)	1.00
Estimated Enhanced Skimming Recovery Rate (gpd)	0.21

Initial Fluid Levels:	Enter Data Here					Water Table Depth (ft)	LNAPL Drawdown s <sub>n</sub> (ft)
	Time (min)	DTP (ft btoc)	DTW (ft btoc)	DTP (ft bgs)	DTW (ft bgs)		
8/31/2021 10:00:00	0	33.27	38.89	33.27	38.89	34.51	

LNAPL				
Average Time (min)	Discharge Q <sub>n</sub> (ft <sup>3</sup> /d)	s <sub>n</sub> (ft)	b <sub>n</sub> (ft)	r <sub>e</sub> (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	1.181	682.5	0.1710	4.59	0.89	0.258
9/9/2021 14:20:00	13160.00	34.35	36.03	34.35	36.03	34.720	1.008	7247.5	0.0201	1.09	1.68	0.258
9/16/2021 10:10:00	22990.00	33.33	35.48	33.33	35.48	33.803	0.904	18075.0	0.0144	0.96	2.15	0.258
9/23/2021 13:00:00	33240.00	34.12	36.33	34.12	36.33	34.606	0.891	28115.0	0.0018	0.90	2.21	0.258
10/7/2021 11:55	53335.00	33.70	36.41	33.70	36.41	34.296	0.781	43287.5	0.0075	0.84	2.71	0.258
11/1/2021 9:48	89208.00	34.74	38.57	34.74	38.57	35.583	0.535	71271.5	0.0094	0.66	3.83	0.258
12/9/2021 8:30	143850.00	33.53	38.21	33.53	38.21	34.560	0.348	116529.0	0.0047	0.44	4.68	0.258
1/6/2022 11:45	184365.00	34.49	39.81	34.49	39.81	35.660	0.207	164107.5	0.0048	0.28	5.32	0.258
2/24/2022 11:30	254910.00	33.84	39.73	33.84	39.73	35.136	0.081	219637.5	0.0024	0.14	5.89	0.258
3/10/2022 9:21:00	274941.00	33.97	39.89	33.97	39.89	35.272	0.075	264925.5	0.0005	0.08	5.92	0.258
5/9/2022 13:01:00	361561.00	33.58	39.84	33.58	39.84	34.957	0.037	318251.0	0.0012	0.06	6.26	0.258

Figure 1

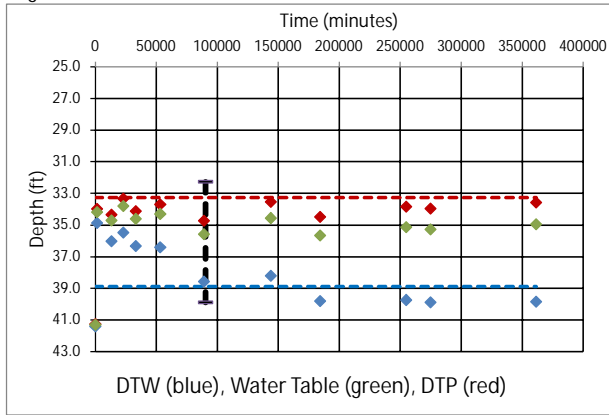
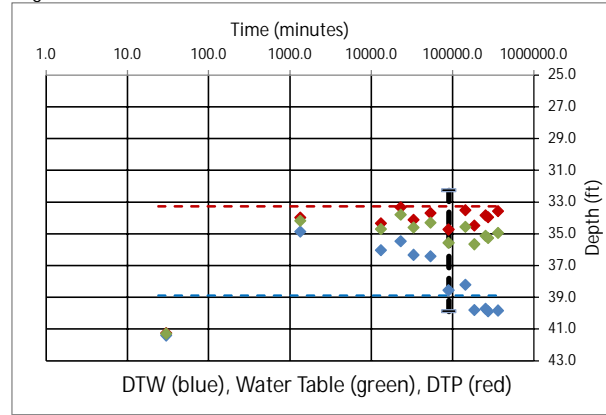


Figure 2



24.0	33.27
361561	33.27
24.0	38.89
361561	38.89

90390.3	32.27
90390.3	39.9

Figure 3

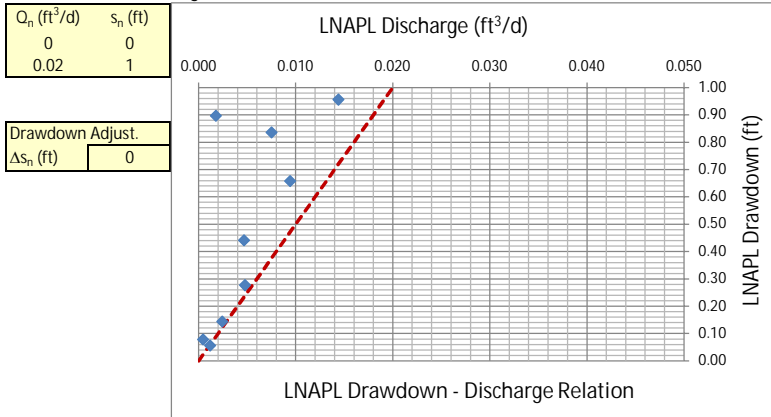
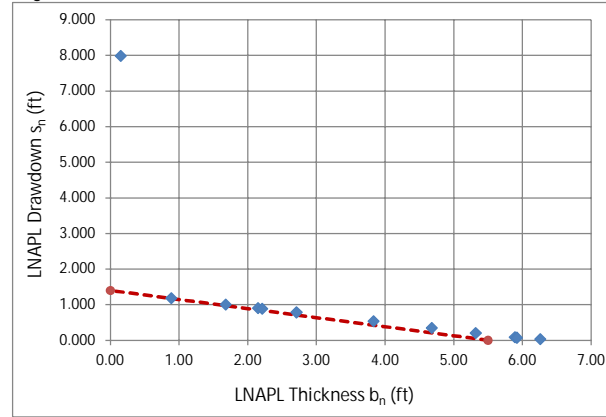


Figure 4



$b_n$	$s_n$
5.5	0
0	1.4

J-ratio	-0.255
---------	--------

Figure 5

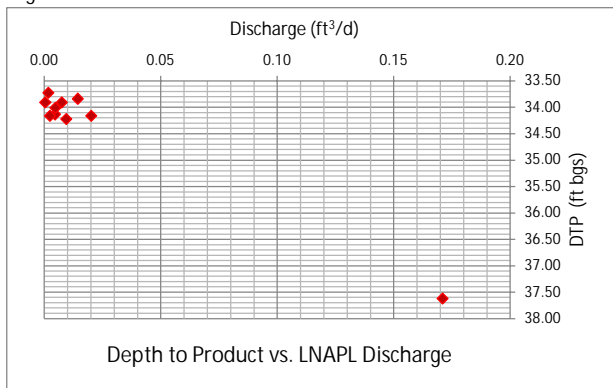


Figure 6

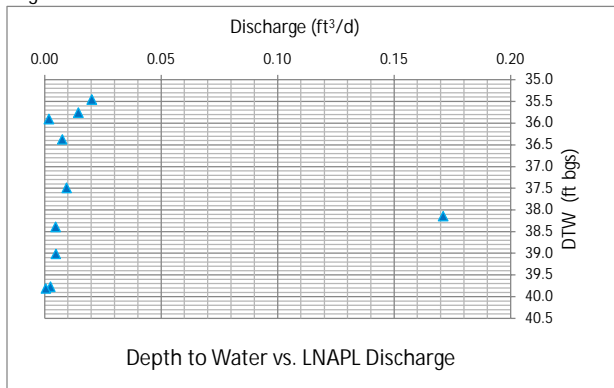


Figure 7

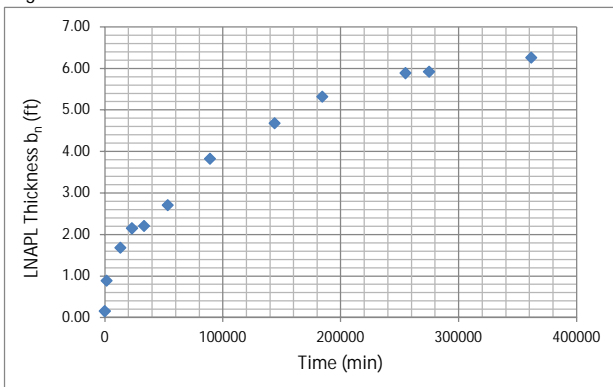


Figure 8

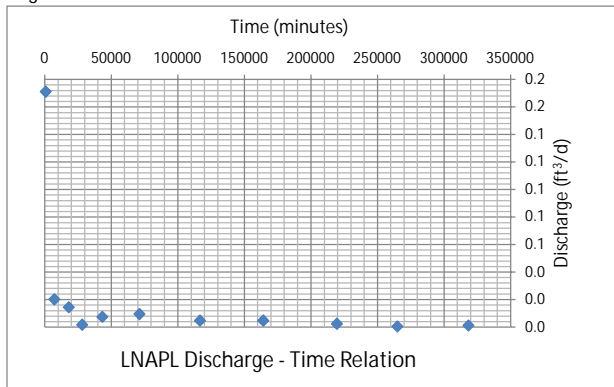


Figure 9

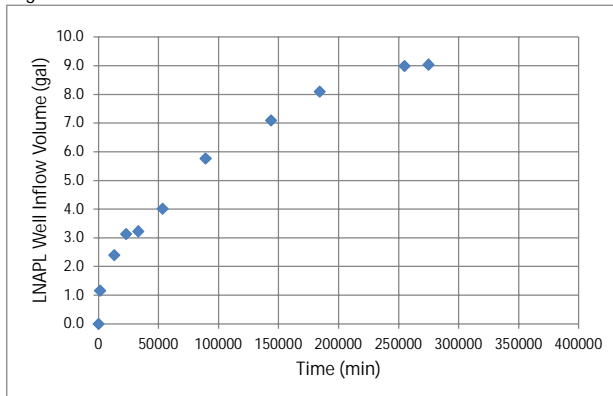
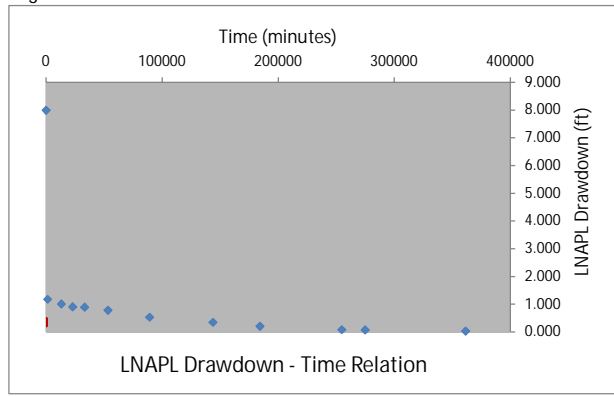


Figure 10



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

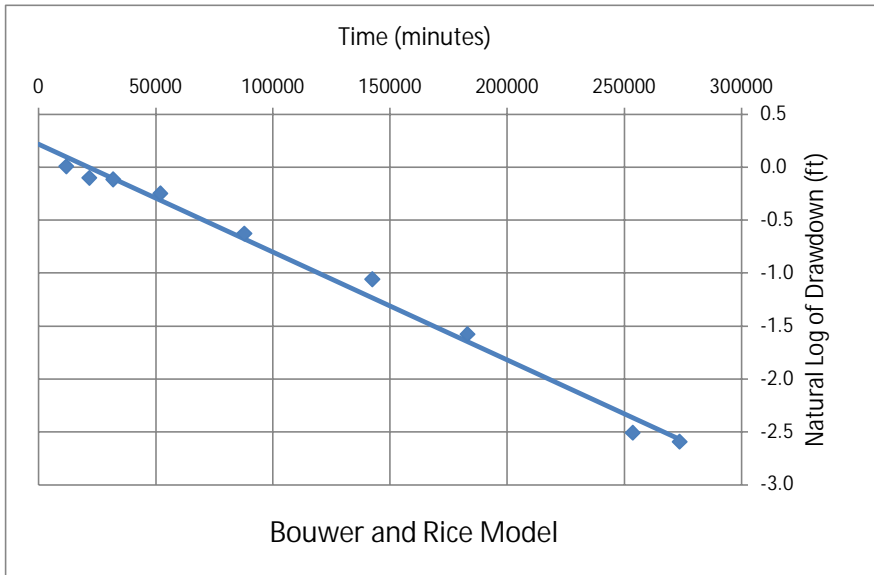
Time<sub>cut</sub>  <- Enter or change value here

Model Results:  $T_n$  (ft<sup>2</sup>/d) =  +/-  ft<sup>2</sup>/d

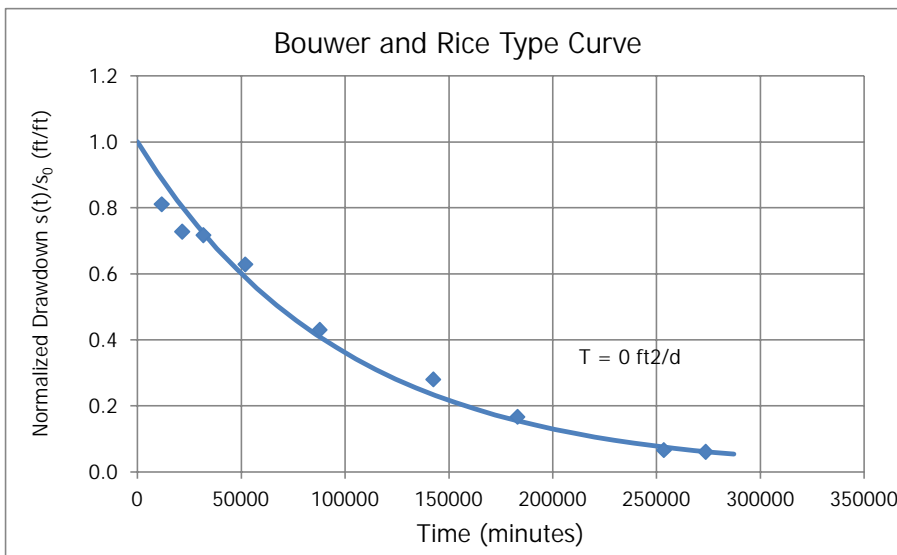
$L_e/r_e$	21.8
C	1.66
$R/r_e$	10.05

J-Ratio	-0.255
---------	--------

Coef. Of Variation	0.04
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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 <sub>cut</sub> (min):	1400	<- Enter or change values here
Time Adjustment (min):	1300	

Trial S<sub>n</sub>:  <- Enter d for default or enter S<sub>n</sub> value

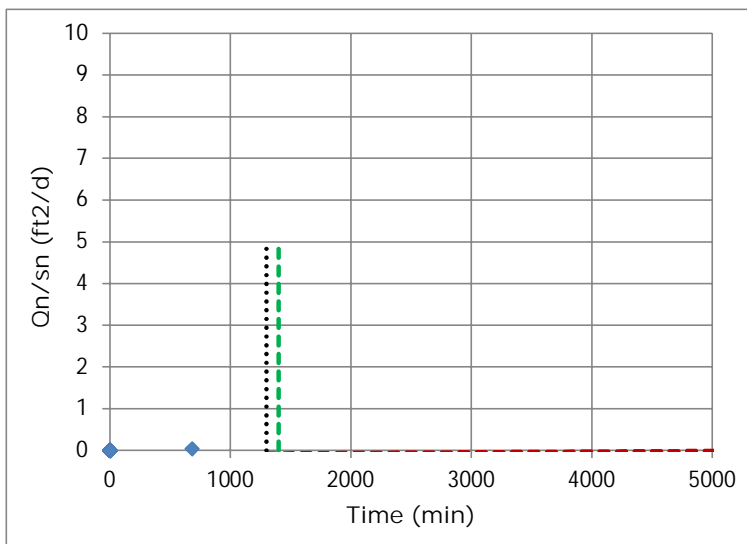
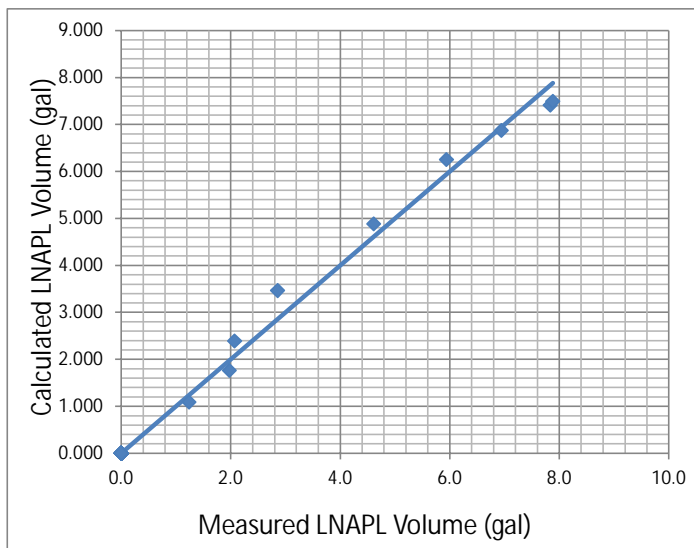
Root-Mean-Square Error:  <- Minimize this using "Solver"

<- Working S<sub>n</sub>

Trial T<sub>n</sub> (ft<sup>2</sup>/d):  <- By changing T<sub>n</sub> through "Solver"

Add constraint T<sub>n</sub> > 0.00001

Model Result:



Height



Cooper, Bredehoeft and Papadopoulos (1967)

Well Designation:	GMW-23
Date:	31-Aug-21

Enter early time cut-off for least-squares model fit

Time <sub>cut</sub> (min):	1500	<- Enter or change values here
Initial Drawdown s <sub>n</sub> (ft):	1.1814	

Trial S<sub>n</sub>: d <- Enter d for default

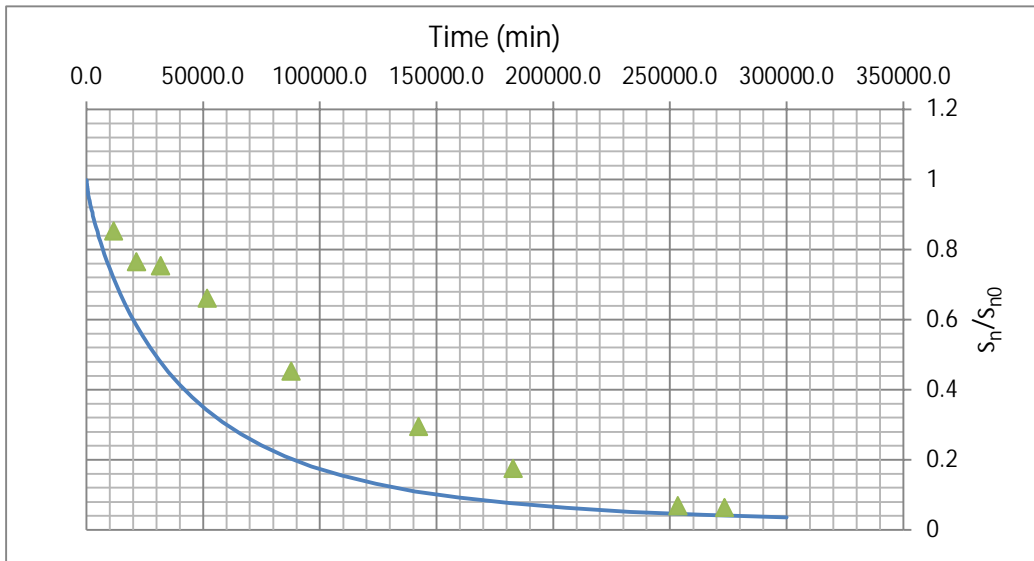
Root-Mean-Square Error: 0.581 <- Minimize this using "Solver"

Trial T<sub>n</sub> (ft<sup>2</sup>/d): 0.010 <- By changing T<sub>n</sub> through "Solver"

0.003 <- Working S<sub>n</sub>      Add constraint T<sub>n</sub> > 0.00001

Model Result: T<sub>n</sub> (ft<sup>2</sup>/d) = 0.01

T <sub>min</sub>	1
T <sub>max</sub>	300000



J-Ratio  
-0.255

Bouwer and Rice Short Term LNAPL Mobility Test Type Curves

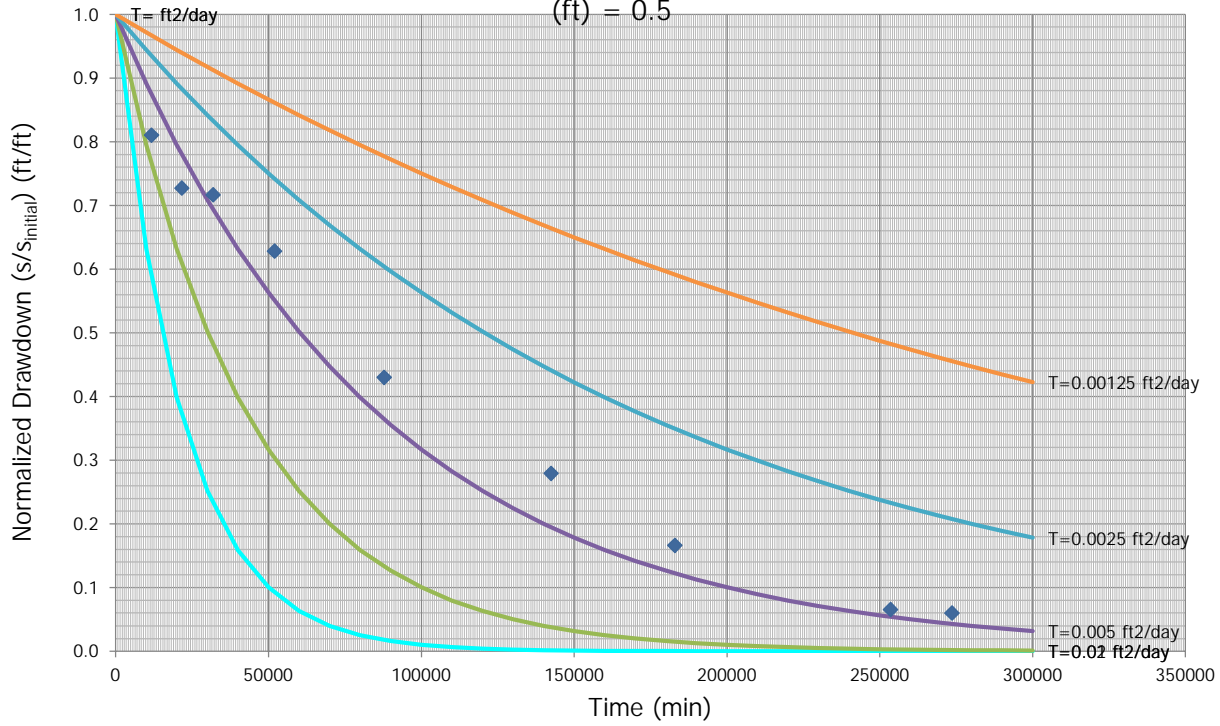
B&R Type Curves: Casing Rad. (ft) = 0.166666666666667 ; Borehole Rad. (ft) = 0.5

Enter these values

Type Curve ID	Type Curve Name	Notes	Max Time (min)	Transmissivity (ft <sup>2</sup> /day)
1	T=0.02 ft <sup>2</sup> /day		300000	0.02
2	T=0.01 ft <sup>2</sup> /day		300000	0.01
3	T=0.005 ft <sup>2</sup> /day		300000	0.005
4	T=0.0025 ft <sup>2</sup> /day		300000	0.0025
5	T=0.00125 ft <sup>2</sup> /day		300000	0.00125
6	T= ft <sup>2</sup> /day			
7	T= ft <sup>2</sup> /day			

J-Ratio	
-0.255	<-- If uncertain use
	-0.22

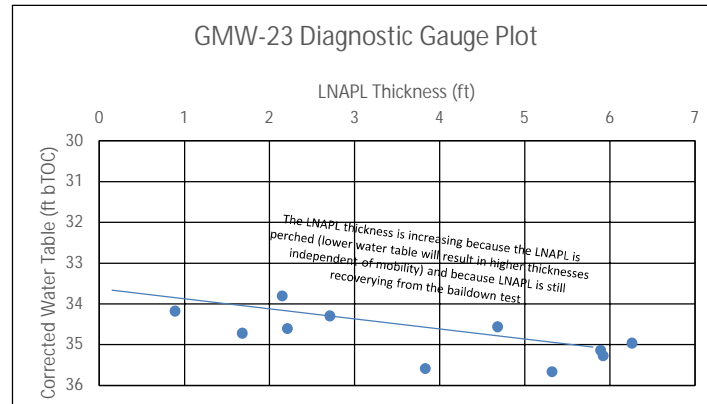
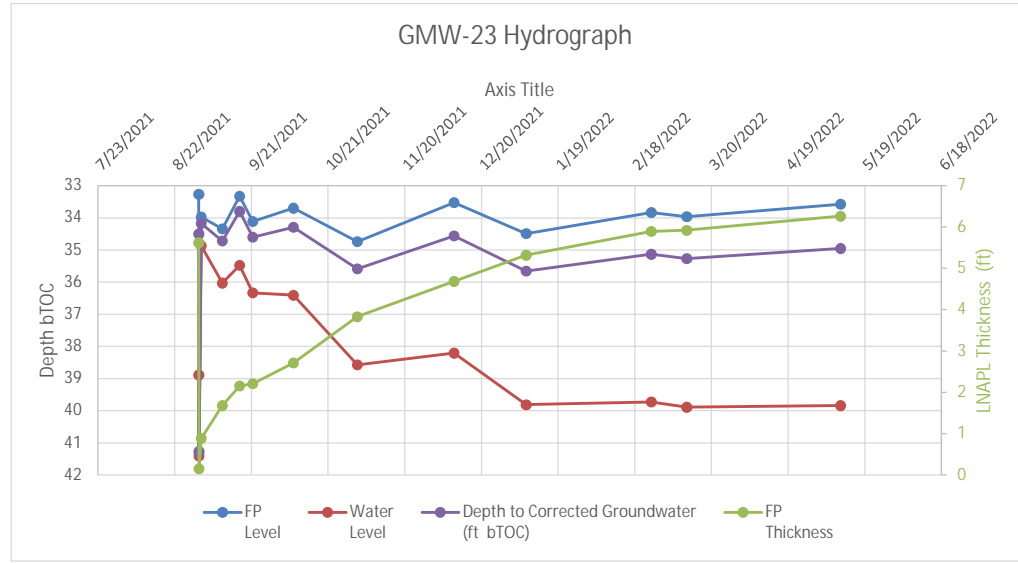
B&R Type Curves: Casing Rad. (ft) = 0.166666666666667 ; Borehole Rad. (ft) = 0.5



	Date	FP Level	Water Level	FP Thickness	Notes
GMW-23	8/31/2021 10:00	33.27	38.89	5.62	Bailed approx 6 gallons
	8/31/2021 11:30	41.26	41.41	0.15	NA
	9/1/2021 9:15	33.98	34.87	0.89	NA
	9/9/2021 14:20	34.35	36.03	1.68	NA
	9/16/2021 10:10	33.33	35.48	2.15	NA
	9/21/2021 13:00	34.12	36.33	2.21	NA
	10/7/2021 11:55	33.7	36.41	2.71	NA
	11/1/2021 9:48	34.74	38.57	3.83	BTS gauged
	12/9/2021 8:30	33.53	38.21	4.68	NA
	1/6/2022 11:45	34.49	39.81	5.32	Rained approx. 5.7" (12/20-1/1)
	2/24/2022 11:30	33.84	39.73	5.89	
	3/10/22 9:21	33.97	39.89	5.92	
5/9/2022 13:01	33.58	39.84	6.26	NA	

Depth to Corrected Groundwater (ft bTOC)

34.5064  
41.293  
34.1758  
34.7196  
33.803  
34.6062  
34.2962  
35.5826  
34.5596  
35.6604  
35.1358  
35.2724  
34.9572



**Appendix E**  
**Statistical Analysis Summary Data**

**Appendix E. Statistical Analysis Summary Data**  
*SFPP Norwalk Pump Station, Norwalk, California*

**Mann-Kendall TestData Preparation (2016 to Present)**

Well	Analyte	COUNT	DET	CEN	PER.CEN	MIN.CEN	MAX.CEN	MIN.DET	MAX.DET	MEAN	MEDIAN	SD	CV	LASTVALUE	LASTDATE	DIFF	S	PVAL	SLOPE	RESULT	TREND	STABILITY
EXP-1	TPH-g	17	0	17	100.0%	50	100	---	---	88.2353	100	21.8619	0.2478	ND (100)	May-2022	N/A	0	0.516	---	48.4% (+)	No Trend	>50% ND
EXP-2	TPH-g	17	0	17	100.0%	50	100	---	---	88.2353	100	21.8619	0.2478	ND (100)	May-2022	N/A	0	0.516	---	48.4% (+)	No Trend	>50% ND
EXP-3	TPH-g	16	0	16	100.0%	50	100	---	---	90.625	100	20.1556	0.2224	ND (100)	May-2022	N/A	0	0.518	---	48.2% (+)	No Trend	>50% ND
EXP-4	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
EXP-5	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-1	TPH-g	7	2	5	71.4%	50	50	55	57	51.7143	50	2.7627	0.0534	ND (50)	May-2022	12%	-1	0.5	---	50% (-)	No Trend	>50% ND
GMW-10	TPH-g	6	2	4	66.7%	200	500	200	200	300	200	154.9193	0.5164	ND (200)	May-2022	0%	0	0.5773	---	42.3% (+)	No Trend	>50% ND
GMW-11	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Apr-2016	N/A	IS	IS	IS	IS	IS	IS
GMW-12	TPH-g	12	0	12	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.527	---	47.3% (+)	No Trend	>50% ND
GMW-13	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-14R	TPH-g	12	0	12	100.0%	50	100	---	---	54.1667	50	14.4338	0.2665	ND (50)	May-2022	N/A	0	0.527	---	47.3% (+)	No Trend	>50% ND
GMW-15	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-16	TPH-g	11	0	11	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.5313	---	46.9% (+)	No Trend	>50% ND
GMW-17R	TPH-g	10	3	7	70.0%	100	100	550	1300	319	100	381.3778	1.1955	ND (100)	May-2022	92%	-20	0.045	0	95.5% (sig -)	Decreasing	---
GMW-18	TPH-g	6	1	5	83.3%	100	100	120	120	103.3333	100	8.165	0.079	ND (100)	May-2022	17%	-1	0.5	---	50% (-)	No Trend	>50% ND
GMW-19	TPH-g	11	3	8	72.7%	100	100	150	220	120.9091	100	37.7683	0.3124	ND (100)	May-2022	55%	-3	0.44	---	56% (-)	No Trend	>50% ND
GMW-20	TPH-g	2	0	2	100.0%	100	100	---	---	100	100	0	0	ND (100)	Apr-2017	N/A	IS	IS	IS	IS	IS	IS
GMW-21	TPH-g	12	3	9	75.0%	100	100	130	180	115	100	28.1366	0.2447	ND (100)	May-2022	44%	-26	0.043	0	95.7% (sig -)	Decreasing	---
GMW-23	TPH-g	8	8	0	0.0%	---	---	59	19000	2913.625	180	6580.1921	2.2584	19000	Aug-2021	0%	11	0.1135	---	88.6% (+)	No Trend	Not Stable
GMW-25	TPH-g	14	9	5	35.7%	50	500	56	950	162.9583	75.5	236.8889	1.4537	ND (50)	May-2022	95%	-21	0.14	---	86% (-)	No Trend	Not Stable
GMW-26	TPH-g	16	0	16	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.518	---	48.2% (+)	No Trend	>50% ND
GMW-28	TPH-g	19	8	11	57.9%	50	50	58	600	119.7895	50	156.8313	1.3092	ND (50)	May-2022	92%	-82	0.002	-11.3162	99.8% (sig -)	Decreasing	---
GMW-29	TPH-g	2	2	0	0.0%	---	---	2200	74000	38100	38100	50770.2669	1.3326	2200	Aug-2021	97%	IS	IS	IS	IS	IS	IS
GMW-30	TPH-g	11	8	3	27.3%	50	100	99	14000	2385.0303	280	4464.3901	1.8718	ND (50)	Nov-2020	100%	-50	7934227082	-131.3599	100% (sig -)	Decreasing	---
GMW-31	TPH-g	11	0	11	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.5313	---	46.9% (+)	No Trend	>50% ND
GMW-35R	TPH-g	10	8	2	20.0%	100	100	160	1200	377	205	334.8746	0.8883	ND (100)	May-2022	92%	3	0.431	---	56.9% (+)	No Trend	Stable
GMW-36	TPH-g	13	8	5	38.5%	50	200	68	16000	2081.6923	160	4414.5822	2.1207	ND (50)	May-2022	100%	-43	0.004	-142.3833	99.6% (sig -)	Decreasing	---
GMW-37	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-38	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-39	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-40	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Oct-2016	N/A	IS	IS	IS	IS	IS	IS
GMW-41	TPH-g	11	0	11	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.5313	---	46.9% (+)	No Trend	>50% ND
GMW-42	TPH-g	11	0	11	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.5313	---	46.9% (+)	No Trend	>50% ND
GMW-43	TPH-g	10	0	10	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.5357	---	46.4% (+)	No Trend	>50% ND
GMW-44	TPH-g	12	1	11	91.7%	100	100	160	160	105	100	17.3205	0.165	ND (100)	May-2022	38%	-5	0.3945	---	60.5% (-)	No Trend	>50% ND
GMW-45	TPH-g	8	8	0	0.0%	---	---	230	4300	1987.5	1850	1467.9699	0.7386	270	May-2022	94%	-16	0.031	-878.8063	96.9% (sig -)	Decreasing	---
GMW-47	TPH-g	14	5	9	64.3%	100	100	130	440	144.2857	100	90.689	0.6285	440	May-2022	0%	51	0.002	20.8492	99.8% (sig +)	Increasing	---
GMW-48	TPH-g	12	5	7	58.3%	100	100	150	470	201.6667	100	142.8772	0.7085	ND (100)	May-2022	79%	-45	5e-04	-73.5136	100% (sig -)	Decreasing	---
GMW-4R	TPH-g	11	3	8	72.7%	50	50	84	120	64	50	24.1209	0.3769	ND (50)	May-2022	58%	-5	0.381	---	61.9% (-)	No Trend	>50% ND
GMW-50	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Apr-2016	N/A	IS	IS	IS	IS	IS	IS
GMW-54	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Apr-2017	N/A	IS	IS	IS	IS	IS	IS
GMW-56	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-57	TPH-g	13	1	12	92.3%	100	100	160	160	104.6154	100	16.641	0.1591	ND (100)	May-2022	38%	4	0.429	---	57.1% (+)	No Trend	>50% ND
GMW-58	TPH-g	9	2	7	77.8%	100	100	150	390	137.7778	100	90.5266	0.657	ND (100)	May-2022	74%	-7	0.272	---	72.8% (-)	No Trend	>50% ND
GMW-59	TPH-g	13	4	9	69.2%	100	100	210	640	201.5385	100	174.6577	0.8666	ND (100)	May-2022	84%	-42	0.005	-31.9419	99.5% (sig -)	Decreasing	---
GMW-6	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-60	TPH-g	13	2	11	84.6%	100	100	110	220	110	100	31.8651	0.2897	ND (100)	May-2022	55%	-19	0.1395	---	86.1% (-)	No Trend	>50% ND
GMW-61	TPH-g	13	1	12	92.3%	100	100	140	140	103.0769	100	11.094	0.1076	ND (100)	May-2022	29%	-8	0.338	---	66.2% (-)	No Trend	>50% ND
GMW-62	TPH-g	8	8	0	0.0%	---	---	510	17000	4238.75	1650	5727.4288	1.3512	510	May-2022	97%	-16	0.031	-1256.3147	96.9% (sig -)	Decreasing	---
GMW-63	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-64	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-65	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-66R	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-67	TPH-g	13	5	8	61.5%	100	100	110	310	134.6154	100	68.0063	0.5052	110	May-2022	65%	5	0.406	---	59.4% (+)	No Trend	>50% ND
GMW-68	TPH-g	2	2	0	0.0%	---	---	5600	15000	10300	10300	6646.8037	0.6453	5600	May-2022	63%	IS	IS	IS	IS	IS	IS

Appendix E. Statistical Analysis Summary Data  
 SFPP Norwalk Pump Station, Norwalk, California

Mann-Kendall TestData Preparation (2016 to Present)

Well	Analyte	COUNT	DET	CEN	PER.CEN	MIN.CEN	MAX.CEN	MIN.DET	MAX.DET	MEAN	MEDIAN	SD	CV	LASTVALUE	LASTDATE	DIFF	S	PVAL	SLOPE	RESULT	TREND	STABILITY
GMW-69	TPH-g	13	13	0	0.0%	---	---	130	3600	1252.3077	930	979.7377	0.7823	170	May-2022	95%	-37	0.013	-299.5829	98.7% (sig -)	Decreasing	---
GMW-7	TPH-g	11	11	0	0.0%	---	---	150	710	411.8182	410	201.3861	0.489	670	May-2022	6%	20	0.071	---	92.9% (+)	No Trend	Stable
GMW-8	TPH-g	14	0	14	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.522	---	47.8% (+)	No Trend	>50% ND
GMW-9	TPH-g	13	4	9	69.2%	50	50	67	750	127	50	190.6967	1.5015	ND (50)	May-2022	93%	-28	0.05	---	95% (-)	No Trend	>50% ND
GMW-O-1	TPH-g	16	0	16	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.518	---	48.2% (+)	No Trend	>50% ND
GMW-O-10	TPH-g	16	4	12	75.0%	50	50	73	910	110.0625	50	206.9811	1.8806	ND (50)	May-2022	95%	-46	0.021	0	97.9% (sig -)	Decreasing	---
GMW-O-11	TPH-g	7	3	4	57.1%	100	100	95	290	126.4286	100	67.3326	0.5326	290	May-2022	0%	15	0.015	73	98.5% (sig +)	Increasing	---
GMW-O-12	TPH-g	1	1	0	0.0%	---	---	5300	5300	5300	5300	---	---	5300	Aug-2021	0%	IS	IS	IS	IS	IS	IS
GMW-O-14	TPH-g	20	16	4	20.0%	50	50	250	30000	6949.5	2300	9161.6879	1.3183	ND (50)	May-2022	100%	-105	0.0003475	-1238.1071	100% (sig -)	Decreasing	---
GMW-O-15	TPH-g	5	4	1	20.0%	1000	1000	4400	370000	79120	9200	145482.733	1.8388	ND (1000)	Nov-2020	100%	-8	0.042	-10412.411	95.8% (sig -)	Decreasing	---
GMW-O-16	TPH-g	13	2	11	84.6%	50	50	66	320	72	50	71.7174	0.9961	ND (50)	May-2022	84%	-1	0.5	---	50% (-)	No Trend	>50% ND
GMW-O-17	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-O-18	TPH-g	8	8	0	0.0%	---	---	1600	1.1e+07	1379162.5	4600	3887406.149	2.8187	1600	May-2022	100%	-16	0.031	-1831.3995	96.9% (sig -)	Decreasing	---
GMW-O-19	TPH-g	13	1	12	92.3%	50	50	52	52	50.1538	50	0.5547	0.0111	ND (50)	May-2022	4%	-8	0.338	---	66.2% (-)	No Trend	>50% ND
GMW-O-2	TPH-g	15	0	15	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.52	---	48% (+)	No Trend	>50% ND
GMW-O-20	TPH-g	17	16	1	5.9%	100	100	82	35000	5148.0588	640	9487.5905	1.8429	320	May-2022	99%	-92	7340478878	-775.8094	100% (sig -)	Decreasing	---
GMW-O-21	TPH-g	16	10	6	37.5%	50	8000	140	18000	4214.2308	3600	4826.7152	1.1453	ND (50)	May-2022	100%	-49	0.0145	-889.5298	98.6% (sig -)	Decreasing	---
GMW-O-23	TPH-g	17	11	6	35.3%	50	100	57	17000	1828.2353	100	4327.4142	2.367	ND (50)	May-2022	100%	-60	0.007	-73.6433	99.3% (sig -)	Decreasing	---
GMW-O-24	TPH-g	12	0	12	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.527	---	47.3% (+)	No Trend	>50% ND
GMW-O-3	TPH-g	16	7	9	56.3%	50	50	60	450	116.25	50	110.7291	0.9525	ND (50)	May-2022	89%	21	0.187	---	81.3% (+)	No Trend	>50% ND
GMW-O-4	TPH-g	16	0	16	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.518	---	48.2% (+)	No Trend	>50% ND
GMW-O-5	TPH-g	15	0	15	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.52	---	48% (+)	No Trend	>50% ND
GMW-O-9	TPH-g	16	0	16	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.518	---	48.2% (+)	No Trend	>50% ND
GMW-SF-7	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GMW-SF-8	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GW-1	TPH-g	2	0	2	100.0%	100	100	---	---	100	100	0	0	ND (100)	Apr-2017	N/A	IS	IS	IS	IS	IS	IS
GW-13(6)	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GW-14R	TPH-g	3	2	1	33.3%	100	100	140	1400	546.6667	140	603.6187	1.1042	ND (100)	May-2022	93%	IS	IS	IS	IS	IS	IS
GW-15(6)	TPH-g	11	4	7	63.6%	100	100	190	8700	1020	100	2444.6863	2.3968	ND (100)	May-2022	99%	-32	0.0065	-134.5907	99.4% (sig -)	Decreasing	---
GW-16(6)	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GW-2	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GW-3	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
GW-4	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Oct-2016	N/A	IS	IS	IS	IS	IS	IS
GW-6	TPH-g	12	0	12	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.527	---	47.3% (+)	No Trend	>50% ND
GW-7	TPH-g	2	0	2	100.0%	100	100	---	---	100	100	0	0	ND (100)	Apr-2017	N/A	IS	IS	IS	IS	IS	IS
GW-8	TPH-g	12	0	12	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.527	---	47.3% (+)	No Trend	>50% ND
GWR-1R	TPH-g	11	0	11	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.5313	---	46.9% (+)	No Trend	>50% ND
HL-2	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
HL-3	TPH-g	15	1	14	93.3%	50	50	130	130	55.3333	50	20.6559	0.3733	ND (50)	May-2022	62%	-14	0.2635	---	73.6% (-)	No Trend	>50% ND
MW-10	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Apr-2016	N/A	IS	IS	IS	IS	IS	IS
MW-12	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-13	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-14	TPH-g	2	0	2	100.0%	100	100	---	---	100	100	0	0	ND (100)	Apr-2017	N/A	IS	IS	IS	IS	IS	IS
MW-15R	TPH-g	11	5	6	54.6%	50	100	53	130	63.3333	53	22.958	0.3625	ND (50)	May-2022	62%	6	0.3525	---	64.8% (+)	No Trend	>50% ND
MW-16	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-17	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-18 (MID)	TPH-g	15	4	11	73.3%	50	100	150	390	112	50	117.2007	1.0464	ND (50)	May-2022	87%	-47	0.01	0	99% (sig -)	Decreasing	---
MW-19 (MID)	TPH-g	13	1	12	92.3%	50	50	54	54	50.3077	50	1.1094	0.0221	ND (50)	May-2022	7%	-10	0.295	---	70.5% (-)	No Trend	>50% ND
MW-20 (MID)	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-21 (MID)	TPH-g	13	2	11	84.6%	50	100	57	68	52.0833	50	5.1714	0.0993	ND (50)	May-2022	26%	-13	0.2365	---	76.4% (-)	No Trend	>50% ND
MW-22 (MID)	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-24	TPH-g	11	0	11	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.5313	---	46.9% (+)	No Trend	>50% ND
MW-25	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Nov-2019	N/A	IS	IS	IS	IS	IS	IS
MW-26	TPH-g	13	4	9	69.2%	100	100	130	210	123.8462	100	39.7179	0.3207	ND (100)	May-2022	52%	-34	0.021	0	97.9% (sig -)	Decreasing	---
MW-27	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND

Appendix E. Statistical Analysis Summary Data  
SFPP Norwalk Pump Station, Norwalk, California

Mann-Kendall TestData Preparation (2016 to Present)

Well	Analyte	COUNT	DET	CEN	PER.CEN	MIN.CEN	MAX.CEN	MIN.DET	MAX.DET	MEAN	MEDIAN	SD	CV	LASTVALUE	LASTDATE	DIFF	S	PVAL	SLOPE	RESULT	TREND	STABILITY
MW-28	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Apr-2017	N/A	IS	IS	IS	IS	IS	IS
MW-29	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-6	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-7	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
MW-8	TPH-g	13	1	12	92.3%	50	50	1200	1200	138.4615	50	318.9526	2.3035	ND (50)	May-2022	96%	2	0.476	---	52.4% (+)	No Trend	>50% ND
MW-9	TPH-g	13	4	9	69.2%	50	100	66	260	76.4103	66	55.6144	0.7278	ND (50)	May-2022	81%	-38	0.011	-8.7044	98.9% (sig -)	Decreasing	---
MW-O-1	TPH-g	2	0	2	100.0%	50	50	---	---	50	50	0	0	ND (50)	Feb-2021	N/A	IS	IS	IS	IS	IS	IS
MW-O-2	TPH-g	13	12	1	7.7%	5000	5000	520	73000	11796.1538	5600	18636.4465	1.5799	1100	May-2022	98%	-24	0.082	---	91.8% (-)	No Trend	Not Stable
MW-SF-1	TPH-g	14	3	11	78.6%	50	200	55	260	68.7143	100	53.2322	0.7747	ND (100)	May-2022	62%	-26	0.0875	---	91.2% (-)	No Trend	>50% ND
MW-SF-13	TPH-g	13	4	9	69.2%	50	200	78	5300	671.5385	200	1438.3348	2.1419	ND (200)	May-2022	96%	-22	0.102	---	89.8% (-)	No Trend	>50% ND
MW-SF-14	TPH-g	1	1	0	0.0%	---	---	370	370	370	370	---	---	370	Apr-2016	0%	IS	IS	IS	IS	IS	IS
MW-SF-15	TPH-g	13	7	6	46.2%	100	500	110	300	135.9167	130	55.4902	0.4083	ND (200)	May-2022	33%	-34	0.021	-21.3623	97.9% (sig -)	Decreasing	---
MW-SF-4	TPH-g	12	1	11	91.7%	50	500	540	540	153.3333	75	176.9609	1.1541	ND (100)	May-2022	81%	-11	0.2515	---	74.8% (-)	No Trend	>50% ND
MW-SF-6	TPH-g	13	6	7	53.9%	200	200	120	13000	1989.2308	200	3862.6783	1.9418	ND (200)	May-2022	98%	-41	0.006	-364.7301	99.4% (sig -)	Decreasing	---
MW-SF-9	TPH-g	1	1	0	0.0%	---	---	2300	2300	2300	2300	---	---	2300	Apr-2016	0%	IS	IS	IS	IS	IS	IS
PW-1	TPH-g	1	0	1	100.0%	100	100	---	---	100	100	---	---	ND (100)	Nov-2019	N/A	IS	IS	IS	IS	IS	IS
PW-3	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
PZ-10	TPH-g	1	0	1	100.0%	200	200	---	---	200	200	---	---	ND (200)	Apr-2016	N/A	IS	IS	IS	IS	IS	IS
PZ-2	TPH-g	16	8	8	50.0%	50	100	53	2300	373.3359	76.5	596.3206	1.5973	ND (100)	May-2022	96%	-72	0	-100.9323	100% (sig -)	Decreasing	---
PZ-3	TPH-g	10	5	5	50.0%	100	100	210	910	371	155	316.5581	0.8533	910	May-2022	0%	-14	0.127	---	87.3% (-)	No Trend	Stable
PZ-5	TPH-g	13	13	0	0.0%	---	---	150	16000	2120	860	4242.1182	2.001	220	May-2022	99%	-40	0.007	-204.9562	99.3% (sig -)	Decreasing	---
RTF-18-N	TPH-g	1	1	0	0.0%	---	---	25000	25000	25000	25000	---	---	25000	Apr-2017	0%	IS	IS	IS	IS	IS	IS
RTF-18-NNW	TPH-g	1	1	0	0.0%	---	---	30000	30000	30000	30000	---	---	30000	Apr-2017	0%	IS	IS	IS	IS	IS	IS
TF-15	TPH-g	5	5	0	0.0%	---	---	160	2000	1048	1100	669.4177	0.6388	780	May-2022	61%	-2	0.408	---	59.2% (-)	No Trend	Stable
TF-16	TPH-g	5	5	0	0.0%	---	---	170	3400	1186	790	1317.4711	1.1109	790	May-2022	77%	0	0.592	---	40.8% (+)	No Trend	Not Stable
TF-17R	TPH-g	5	5	0	0.0%	---	---	1700	8600	4780	5700	2878.715	0.6022	2100	May-2022	76%	-4	0.242	---	75.8% (-)	No Trend	Stable
TF-18	TPH-g	6	6	0	0.0%	---	---	450	54000	16708.3333	7500	20515.1265	1.2278	450	May-2022	99%	-7	0.136	---	86.4% (-)	No Trend	Not Stable
TF-19	TPH-g	1	1	0	0.0%	---	---	710	710	710	710	---	---	710	Nov-2018	0%	IS	IS	IS	IS	IS	IS
TF-20R	TPH-g	10	7	3	30.0%	100	100	170	1300	513	475	391.5367	0.7632	ND (100)	May-2022	92%	-38	0.0003911	-243.6944	100% (sig -)	Decreasing	---
TF-21	TPH-g	12	7	5	41.7%	100	100	110	1300	281.6667	130	327.9693	1.1644	ND (100)	May-2022	92%	-52	0.0001348	-81.5188	100% (sig -)	Decreasing	---
TF-23	TPH-g	7	7	0	0.0%	---	---	160	1100	587.1429	560	286.1069	0.4873	160	May-2022	85%	5	0.281	---	71.9% (+)	No Trend	Stable
TF-24	TPH-g	12	0	12	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.527	---	47.3% (+)	No Trend	>50% ND
TF-8	TPH-g	13	0	13	100.0%	100	100	---	---	100	100	0	0	ND (100)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
TF-9R	TPH-g	10	3	7	70.0%	100	100	750	1500	445	100	561.449	1.2617	ND (100)	May-2022	93%	-21	0.036	0	96.4% (sig -)	Decreasing	---
WCW-12	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
WCW-13	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
WCW-14	TPH-g	15	0	15	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.52	---	48% (+)	No Trend	>50% ND
WCW-2	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
WCW-3	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
WCW-4	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
WCW-5	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
WCW-6	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND
WCW-7	TPH-g	9	0	9	100.0%	50	100	---	---	55.5556	50	16.6667	0.3	ND (50)	May-2021	N/A	0	0.54	---	46% (+)	No Trend	>50% ND
WCW-8	TPH-g	13	0	13	100.0%	50	50	---	---	50	50	0	0	ND (50)	May-2022	N/A	0	0.524	---	47.6% (+)	No Trend	>50% ND