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Jacobs

Technical Memorandum

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Subject	**First 2022 Semiannual Soil Vapor Monitoring Report**	**Project Name**	SFPP Norwalk Pump Station, Norwalk, California
Attention	Mr. Paul Cho/Los Angeles Regional Water Quality Control Board		
Prepared by	Todd Kremmin/Jacobs Trevre Andrews/Jacobs		
Reviewed by	Eric Davis/Jacobs		
Date	June 21, 2022		
Copies to	Court Reece/Kinder Morgan		

1. Introduction

Jacobs Engineering Group Inc. (Jacobs) is pleased to submit this technical memorandum (tech memo) on behalf of Santa Fe Pacific Pipelines, L.P. (SFPP), an operating partner of Kinder Morgan, Inc. (Kinder Morgan). This tech memo presents soil vapor monitoring analytical results from the first semiannual sampling event of 2022, conducted in March and April, 2022, at the SFPP, L.P. (SFPP) Norwalk Pump Station, located within Defense Fuel Support Point (DFSP) Norwalk, at 15306 Norwalk Boulevard, Norwalk, California (the Site; Figure 1).

This tech memo is being submitted to the Los Angeles Regional Water Quality Control Board (Regional Board) in accordance with an April 11, 2022, decision by the Regional Board allowing Kinder Morgan to temporarily reduce soil vapor monitoring and reporting frequency from quarterly to semiannually due to ongoing construction and redevelopment activities at the Site (Regional Board, 2022). Therefore, this tech memo serves as the first semiannual soil vapor monitoring technical memorandum for 2022 and supersedes the prior requirement from the Regional Board requesting that Kinder Morgan conduct and submit quarterly soil vapor monitoring reports (Regional Board, 2021).

After construction and redevelopment activities at the Site are completed, Kinder Morgan will collaborate with the Regional Board to develop an updated soil vapor monitoring and sampling plan.

2. Background

Kinder Morgan has utilized a network of 31 dual- and triple-nested soil vapor monitoring probes (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 below ground surface (ft 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 (Table 1).

Additional Site background information and historical data from long-term soil vapor monitoring can be found in the recently submitted *Interim Remedial Action Plan (IRAP) – Implementing an NSZD Remedy* (Jacobs, 2022a), the *First Quarter 2022 Remediation Progress Report* (Jacobs, 2022b), and the previous soil vapor monitoring tech memo (Jacobs, 2022c).

3. Sampling

During the first 2022 semiannual sampling event, 66 native samples were collected from 31 SVPs (Table 1, Figure 2) in March using 1.4-liter Summa canisters. Three ambient air samples were also collected, along with four duplicate samples. Sampling was performed in accordance with the Department of Toxic Substances Control's (DTSC) *Advisory for Active Soil Gas Investigations* (DTSC, 2015). The samples were analyzed by the American Analytics laboratory for the following analytes:

- Volatile organic compounds (VOCs) using U.S. Environmental Protection Agency (EPA) Method TO-15
- Total petroleum hydrocarbon – gasoline (TPH-g) using EPA Method TO-3
- Fixed gases (carbon dioxide, methane, and oxygen) using EPA Method 3CM

Included in the TO-15 list of analytes were benzene, toluene, ethylbenzene, and xylene (BTEX), methyl tert-butyl ether (MTBE), naphthalene, tertiary butyl alcohol, 1,2-dichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, n-butylbenzene, sec-butylbenzene, isopropylbenzene, n-propylbenzene, and 2-propanol (the leak test compound). These constituents were identified as contaminants of potential concern (COPCs) based on the results of the *Vapor Intrusion Sampling and Human Health Risk Assessment* (Geomatrix, 2006).

Following the March 2022 sampling event, the laboratory, American Analytics, informed Jacobs that SVP sample "SVM-13-15" had historically high concentrations of tetrachloroethylene (PCE) and was higher in PCE relative to other samples during the event. The lab investigated the result and concluded that the sample was collected using a Summa canister that had been contaminated at the lab before it was dispatched to the Site to collect the sample. The lab discovered that this particular canister had been used on another, unrelated project, then was decommissioned for maintenance before it was recommissioned and rotated back into their stock, supposedly following batch cleaning. The lab also concluded that this canister had been used for a high-PCE concentration project and likely was not adequately cleaned prior to being used at the Site. Pursuant to this finding, the lab resampled "SVM-13-15" in April 2022 and the March 2022 result from this sample interval was invalidated and removed from the laboratory report. The attached laboratory report (MB187343) includes a note to this effect on page 193 (Attachment A).

In addition to resampling SVP "SVM-13-15," the lab also resampled SVP "SVM-26-5" out of an abundance of caution, to confirm a suspected anomalous PCE result at that location during the March 2022 sampling event. The lab was unable to confirm whether the sample had been contaminated, like the March 2022 sample from SVP "SVM-13-15," so the March 2022 and April 2022 results from "SVM-26-5" are both valid and presented in this tech memo.

4. Results

Table 2 presents the analytical results for samples collected during the first 2022 semiannual sampling event. Laboratory analytical reports are included in the attachment to this tech memo (Attachment A). A summary of results is as follows:

- During the first 2022 semiannual sampling event, no COPCs were detected in any SVPs.
  - Only "SVM-20-14.5" from March 2022 resulted in 0.31 microgram per liter (µg/L) J 2-Propanol (leak test compound).
- As noted above, "SVM-26-5" was sampled during the March 2022 sampling event, then resampled by American Analytics in April 2022, due to suspected anomalous PCE results from the March sampling event. While the results are different, both are valid, and Jacobs will continue to monitor for changes going forward. To summarize the comparison between the March and April 2022 results:
  - March 2022 detections – chloroform (0.0094 µg/L), PCE (0.14 µg/L, and TPH-g (0.73 µg/L).
  - April 2022 detections – all nondetect.

  It should be noted that prior to collecting the March and April 2022 samples from SVP "SVM-26-5," this SVP has only been sampled one other time (November 2021), where the result was also nondetect for all analytes.
- Other (i.e., non-COPC) compounds that were also detected during the first 2022 semiannual sampling included: 2,2,4-trimethylpentane, acetone, bromodichloromethane, chloroform, cyclohexane, ethanol, ethyl acetate, n-heptane, n-hexane, PCE, vinyl acetate, and TPH-g (C4-C12). The majority of those detections were below DTSC-modified screening levels (DTSC, 2020), and EPA regional screening levels (RSLs) (EPA, 2021), derived with an attenuation factor currently in guidance (DTSC, 2011). There are no established screening levels for some of these compounds.
  - The SVP where concentrations exceeded the current RSLs was:
    - "SVM-6-13" (bromodichloromethane and TPH-g at 13 ft bgs), in both the original and duplicate sample at this location.

5. Conclusion and Recommendations

There were no detections of any COPCs during the first 2022 semiannual sampling event; therefore, no COPCs currently present unacceptable risk at the Site. Other detected compounds (non-COPCs) are detected infrequently and at relatively low concentrations, below DTSC-modified screening levels and EPA RSLs, in the shallow soil vapor (defined as the upper 10 feet of soil). Observed transitory increases of non-COPCs, such as TPH-g, are an artifact of ongoing biosparging operations and are closely monitored with field-based observations on a weekly to biweekly basis. Further details and data regarding these observations are provided in the quarterly remedial progress reports.

As concluded in the *IRAP* (Jacobs, 2022a) and other documents such as the *Review of the Offsite Soil Vapor Monitoring Probe Network* (Jacobs, 2020a) and *Updated Human Health Risk Assessment for the Offsite/South-Central and Offsite/Southeastern Areas* (Jacobs, 2020b), exposure pathways at the Site are largely incomplete and insignificant for the petroleum releases in groundwater, subsurface soil, and soil vapor.

Moreover, multiple lines of evidence point to the presence at the Site of a clean, biologically active zone in shallow soil where aerobic biodegradation controls the diffusion of petroleum VOCs to the ground surface, further mitigating potential exposure pathways. This conclusion is also consistent with the conclusions presented in the 2006 human health risk assessment (HHRA) (Geomatrix, 2006) and the HHRAs supporting the closure of the DFSP 15-acre and 36-acre parcels (CH2M, 2017; Jacobs, 2019).

While the results of "SVM-26-5" from March and April 2022 are different, both are valid, and Jacobs will continue to monitor for changes going forward. It should be noted that prior to collecting the March and April 2022 samples from SVP "SVM-26-5," this SVP has only been sampled one other time (November 2021), where the result was also nondetect for all analytes.

Results from soil vapor monitoring and sampling in the second half of 2022 will be summarized in a tech memo to be submitted before the end of 2022.

6. References

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U.S. Environmental Protection Agency (EPA). 2021. *Regional Screening Levels*. May. https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables.

Tables

Table 1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

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

Table 1. Soil Vapor Monitoring Details

SFPP Norwalk Pump Station, Norwalk, California

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

Notes:

S = Shallow

M = Middle

D = Deep

SVM = Soil Vapor Monitoring

SVP = Soil Vapor Probe

SV = Historical Soil Vapor Location (no longer accessible)

Text = Destroyed or Abandoned

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results - March and April 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-1-5 03/15/22 SVM-1 5-5.5	SVM-1-15 03/15/22 SVM-1 15-15.5	SVM-2-5 03/15/22 SVM-2 5-5.5	SVM-3-5 03/15/22 SVM-3 5-5.5	SVM-3-15 03/15/22 SVM-3 15-15.5	SVM-5-5 03/16/22 SVM-5 5-5.5	SVM-5-15 03/16/22 SVM-5 15-15.5	SVM-6-7 03/16/22 SVM-6 7-7.5	SVM-6-13 03/16/22 SVM-6 13-13.5	SVM-6-13 DUP 03/16/22 SVM-6 13-13.5	SVM-7-7 03/16/22 SVM-7 7-7.5	SVM-7-13 03/16/22 SVM-7 13-13.5	SVM-8-5 03/16/22 SVM-8 5-5.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.11	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.064 U	< 4.0 U	< 4.0 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 3.2 U	< 200 U	< 200 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.048 U	< 3.0 U	< 3.0 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 UJ	< 20 U	< 20 U	< 0.020 UJ	< 0.020 UJ	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.048 U	< 3.0 U	< 3.0 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.32 UJ	< 20 U	< 20 U	< 0.020 UJ	< 0.020 UJ	< 0.020 U
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.32 UJ	< 20 UJ	< 20 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 32 U	< 2000 U	< 2000 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	**1500**	**1400**	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	**0.025**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	**0.032**	< 0.0025 U	< 0.0025 U	< 0.040 U	**44**	**44**	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	< 0.0040 U	< 0.0040 U	**0.0092**	**0.071**	< 0.0040 U	< 0.0040 U	< 0.064 U	< 4.0 U	< 4.0 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Cyclohexane	µg/L	6300	26000	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.16**	**260**	**250**	< 0.020 U	< 0.020 U	< 0.020 U
	Ethanol	µg/L	--	--	**0.12**	< 0.020 U	< 0.020 U	**0.021**	**0.021**	< 0.020 U	< 0.020 U	< 0.32 U	< 20 U	< 20 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethyl acetate	µg/L	73	310	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	**33**	**33**	< 0.020 U	< 0.020 U	< 0.020 U
	n-Heptane	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	**58**	**56**	< 0.020 U	< 0.020 U	< 0.020 U
	n-Hexane	µg/L	730	3100	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	**230**	**220**	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	**0.035**	< 0.16 U	< 10 U	< 10 U	< 0.010 U	**0.025**	< 0.010 U
	Vinyl Acetate	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.32 U	**45**	**46**	< 0.020 U	< 0.020 U	< 0.020 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	**1.2**	< 0.50 U	< 0.50 U	**150**	**11000**	**11000**	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**20**	**17**	**17**	**21**	**20**	**20**	**21**	**13**	**4.1 J**	**1.5 J**	**20**	**16**	**20**
	Carbon Dioxide	% v/v	--	--	**0.62**	**2.5**	**2.2**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	**9.9**	**11**	**2.2**	**4.3**	< 0.20 U

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation* and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

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

[1A]-https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (carcinogenic screening level) November 2020

[1B]-https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A]-https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B]-https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

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

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – March and April 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-8-15 03/16/22 SVM-8 15-15.5	SVM-9-5 03/15/22 SVM-9 5-5.5	SVM-9-14.5 03/15/22 SVM-9 14.5-15	SVM-10-15 03/16/22 SVM-10 15-15.5	SVM-11-7 03/14/22 SVM-11 7-7.5	SVM-11-15 03/14/22 SVM-11 15-15.5	SVM-11-22 03/14/22 SVM-11 22-22.5	SVM-12-7 03/14/22 SVM-12 7-7.5	SVM-12-15 03/14/22 SVM-12 15-15.5	SVM-12-22 03/14/22 SVM-12 22-22.5	SVM-13-7 03/14/22 SVM-13 7-7.5	SVM-13-15 04/12/22 SVM-13 15-15.5	SVM-13-22 03/14/22 SVM-13 22-22.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.11	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 UJ
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 UJ
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	< 0.020 U	< 0.020 U	**0.024**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	**0.0073**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Cyclohexane	µg/L	6300	26000	< 0.020 U	< 0.020 U	< 0.020 U	**0.069**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethanol	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethyl acetate	µg/L	73	310	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Heptane	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	**0.029**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Hexane	µg/L	730	3100	< 0.020 U	< 0.020 U	< 0.020 U	**0.067**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	**0.031**	< 0.010 U	**0.033**	< 0.010 U	< 0.010 U	**0.017**	< 0.010 U	< 0.010 U	**0.018**	< 0.010 U	< 0.010 U	**0.013**
	Vinyl Acetate	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	**4.8**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**21**	**19**	**20**	**20**	**19**	**19**	**9.0**	**20**	**16**	**8.1**	**21**	**19**	**14**
	Carbon Dioxide	% v/v	--	--	< 0.20 U	**3.9**	**0.44**	< 0.20 U	**0.84**	**1.7**	**8.9**	**1.2**	**4.7**	**14**	< 0.20 U	**0.56**	**3.7**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
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[2A]-https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

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http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

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

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

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates

SVM-1 = sample location

SVM-1-5 = sample ID

5-5.5 = sample depth in feet below ground surface

--- = not available

% v/v = percent volume by volume

<0.02 = not detected at the laboratory minimum reporting limit

U = not detected above listed laboratory reporting limit

UJ = estimated nondetect due to quality control exceedances

µg/L = micrograms per liter

COPC = contaminant of potential concern

TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results - March and April 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-14R-8 03/14/22 SVM-14R 8-8.5	SVM-14R-16 03/14/22 SVM-14R 16-16.5	SVM-14R-22 03/14/22 SVM-14R 22-22.5	SVM-15-7 03/16/22 SVM-15 7-7.5	SVM-15-15 03/16/22 SVM-15 15-15.5	SVM-15-22 03/16/22 SVM-15 22-22.5	SVM-16-7 03/16/22 SVM-16 7-7.5	SVM-16-16 03/16/22 SVM-16 16-16.5	SVM-16-22 03/16/22 SVM-16 22-22.5	SVM-17-5 03/15/22 SVM-17 5-5.5	SVM-17-14.5 03/15/22 SVM-17 14.5-15	SVM-17-14.5 DUP 03/15/22 SVM-17 14.5-15	SVM-18-5 03/15/22 SVM-18 5-5.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.11	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	**0.23**	< 0.020 U	< 0.020 U	< 0.020 U	**0.021**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.029**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	**0.020**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Cyclohexane	µg/L	6300	26000	< 0.020 U	< 0.020 U	< 0.020 U	**0.020**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethanol	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.021**
	Ethyl acetate	µg/L	73	310	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Heptane	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Hexane	µg/L	730	3100	< 0.020 U	< 0.020 U	< 0.020 U	**0.020**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	**0.020**	< 0.010 U	< 0.010 U
	Vinyl Acetate	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	**1.9**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	**0.83**	**0.66**	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.10 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**19**	**17**	**6.5**	**19**	**19**	**16**	**22**	**20**	**21**	**20**	**20**	**21**	**20**
	Carbon Dioxide	% v/v	--	--	**1.1**	**2.2**	**11**	**1.3**	**1.5**	**2.8**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	**3.0**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation* and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

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

[1A]-https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (carcinogenic screening level) November 2020

[1B]-https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A]-https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B]-https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

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

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – March and April 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-18-14.5 03/15/22 SVM-18 14.5-15	SVM-19-5 03/15/22 SVM-19 5-5.5	SVM-19-5 DUP 03/15/22 SVM-19 5-5.5	SVM-20-5 03/15/22 SVM-20 5-5.5	SVM-20-14.5 03/15/22 SVM-20 14.5-15	SVM-21-5 03/15/22 SVM-21 5-5.5	SVM-21-14.5 03/15/22 SVM-21 14.5-15	SVM-22-5 03/15/22 SVM-22 5-5.5	SVM-22-14.5 03/15/22 SVM-22 14.5-15	SVM-23-5 03/15/22 SVM-23 5-5.5	SVM-23-14.5 03/15/22 SVM-23 14.5-15	SVM-24-5 03/16/22 SVM-24 5-5.5	SVM-24-10 03/16/22 SVM-24 10-10.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.11	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	**0.31 J**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	**0.0062**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	**0.0082**	< 0.0040 U	**0.0071**	**0.0053**	**0.015**
	Cyclohexane	µg/L	6300	26000	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethanol	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.024**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethyl acetate	µg/L	73	310	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Heptane	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Hexane	µg/L	730	3100	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U
	Vinyl Acetate	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**21**	**25**	**20**	**21**	**21**	**21**	**22**	**22**	**21**	**21**	**21**	**21**	**20**
	Carbon Dioxide	% v/v	--	--	**0.92**	**0.46**	**0.54**	**0.93**	**0.51**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	**1.0**	**0.83**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
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SVM-1-5	Light blue highlighting indicates offsite soil vapor probe locations.
	Yellow highlighting indicates concentration exceeds human health screening level under residential scenario.

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – March and April 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVM-25-5 03/16/22 SVM-25 5-5.5	SVM-25-10 03/16/22 SVM-25 10-10.5	SVM-26-5 03/16/22 SVM-26 5-5.5	SVM-26-5 (Resample) 04/12/22 SVM-26 5-5.5	SVM-26-10 03/16/22 SVM-26 10-10.5	SVM-27-5 03/16/22 SVM-27 5-5.5	SVM-27-10 03/16/22 SVM-27 10-10.5	SVP-105-5 03/14/22 SVP-105 5-5.5	SVP-105-10 03/14/22 SVP-105 10-10.5	SVP-105-10-DUP 03/14/22 SVP-105 10-10.5	SVP-106-5 03/14/22 SVP-106 5-5.5	SVP-106-10 03/14/22 SVP-106 10-10.5	SVP-107-5 03/14/22 SVP-107 5-5.5
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.11	0.47	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Acetone	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	**0.0056**	**0.0094**	< 0.0040 U	< 0.0040 U	< 0.0040 U	**0.033**	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Cyclohexane	µg/L	6300	26000	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethanol	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.14 J**	< 0.020 U	< 0.020 U
	Ethyl acetate	µg/L	73	310	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Heptane	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Hexane	µg/L	730	3100	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	**0.029**	**0.14**	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U	< 0.010 U
	Vinyl Acetate	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	**0.73**	< 0.50 U	< 0.50 U	< 0.50 U	**0.59**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**20**	**19**	**20**	**17**	**20**	**20**	**20**	**21**	**20**	**20**	**21**	**21**	**20**
	Carbon Dioxide	% v/v	--	--	**2.0**	**2.7**	**1.8**	**1.7**	**1.7**	**0.86**	**1.8**	**1.2**	**1.4**	**1.5**	**1.6**	**0.90**	**1.5**

Notes:

[a] Source for the Indoor Air Screening Levels: DTSC, 2020. *Human Health Risk Assessment (HHRA) Note: Human and Ecological Risk Office (HERO) HHRA Note Number: 3, DTSC-modified Screening Levels (DTSC-SLs).* November.
DTSC has developed modified screening levels based on U.S. Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for use in the human health risk assessment process at hazardous waste sites and permitted facilities.

[b] Attenuation factor for current land use = 0.001. Source for the attenuation factors: DTSC, 2011. *Guidance for the Evaluation* and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). October.

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

[1A]-https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (carcinogenic screening level) November 2020

[1B]-https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

[2A]-https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (carcinogenic screening level)

[2B]-https://dtsc.ca.gov/wp-content/uploads/sites/31/2019/04/HHRA-Note-3-June-2020-A.pdf (noncarcinogenic screening level)

http://www.dtsc.ca.gov/AssessingRisk/upload/Final_VIG_Oct_2011.pdf.

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

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
SVM-1 = sample location
SVM-1-5 = sample ID
5-5.5 = sample depth in feet below ground surface
--- = not available
% v/v = percent volume by volume
<0.02 = not detected at the laboratory minimum reporting limit
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Table 2. Field Measurements and Laboratory Soil Vapor Analytical Results – March and April 2022

SFPP Norwalk Pump Station, Norwalk, California

Analyte Type	Analyte	Unit	Current Residential Soil Gas Screening Level [a, b]	Current Commercial Soil Gas Screening Level [a, b]	SVP-107-10 03/14/22 SVP-107 10-10.5	SVP-108-5 03/15/22 SVP-108 5-5.5	SVP-108-10 03/15/22 SVP-108 10-10.5	SVP-109-5 03/15/22 SVP-109 5-5.5	SVP-109-10 03/15/22 SVP-109 10-10.5	AMBIENT AIR 03/14/22	AMBIENT AIR 03/15/22	AMBIENT AIR 03/16/22
Field Measurements	Pressure	inches H_2O	--	--	--	--	--	--	--	--	--	--
	PID	ppmv	--	--	--	--	--	--	--	--	--	--
	Oxygen	percent	--	--	--	--	--	--	--	--	--	--
COPCs[c]	1,2,4-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	1,2-Dichloroethane	µg/L	0.11	0.47	< 0.0040 U	< 0.0040 U	< 0.16 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	1,3,5-Trimethylbenzene	µg/L	63	260	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	2-Propanol (leak test compound)	µg/L	--	--	< 0.20 U	< 0.20 U	< 8.0 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Benzene	µg/L	0.097	0.42	< 0.0030 U	< 0.0030 U	< 0.12 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	Ethylbenzene	µg/L	1.1	4.9	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Isopropylbenzene (aka Cumene)	µg/L	420	1800	< 0.020 UJ	< 0.020 U	< 0.80 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 U
	m,p-Xylenes	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Methyl tert-butyl ether (MTBE)	µg/L	11	47	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Naphthalene	µg/L	0.083	0.36	< 0.0030 U	< 0.0030 U	< 0.12 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U	< 0.0030 U
	n-Butylbenzene	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Propylbenzene (propylbenzene)	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.80 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 U	< 0.020 UJ
	o-Xylene	µg/L	100	440	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	sec-Butylbenzene	µg/L	1000	4400	< 0.020 UJ	< 0.020 UJ	< 0.80 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 UJ	< 0.020 U	< 0.020 UJ
	tert-Butanol (TBA)	µg/L	--	--	< 2.0 U	< 2.0 U	< 80 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U	< 2.0 U
	Toluene	µg/L	310	1300	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
Other Detected Compounds	2,2,4-Trimethylpentane	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	**0.024**
	Acetone	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	**0.034**	**0.027**	< 0.020 U
	Bromodichloromethane	µg/L	0.076	0.33	< 0.0025 U	< 0.0025 U	< 0.10 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U	< 0.0025 U
	Chloroform	µg/L	0.12	0.53	< 0.0040 U	< 0.0040 U	< 0.16 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U	< 0.0040 U
	Cyclohexane	µg/L	6300	26000	< 0.020 U	< 0.020 U	**1.7**	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Ethanol	µg/L	--	--	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	**0.036**	**0.025**	< 0.020 U
	Ethyl acetate	µg/L	73	310	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Heptane	µg/L	420	1800	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	n-Hexane	µg/L	730	3100	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	Tetrachloroethylene (PCE)	µg/L	0.46	2	< 0.010 U	< 0.010 U	< 0.40 U	< 0.010 U	**0.067**	< 0.010 U	< 0.010 U	< 0.010 U
	Vinyl Acetate	µg/L	210	880	< 0.020 U	< 0.020 U	< 0.80 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U
	TPH-G (C4-C12)	µg/L	630	2600	< 0.50 U	< 0.50 U	**5.9**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Fixed Gases	Methane	% v/v	--	--	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U
	Oxygen	% v/v	--	--	**20 J**	**17**	**11**	**20**	**22**	**22**	**21**	**21**
	Carbon Dioxide	% v/v	--	--	**1.3 J**	**3.8**	**9.2**	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U	< 0.20 U

Notes:

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[1B]-https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables (noncarcinogenic screening level)

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

3/14/2022 - 3/16/2022 and 4/12/2022 = sample dates
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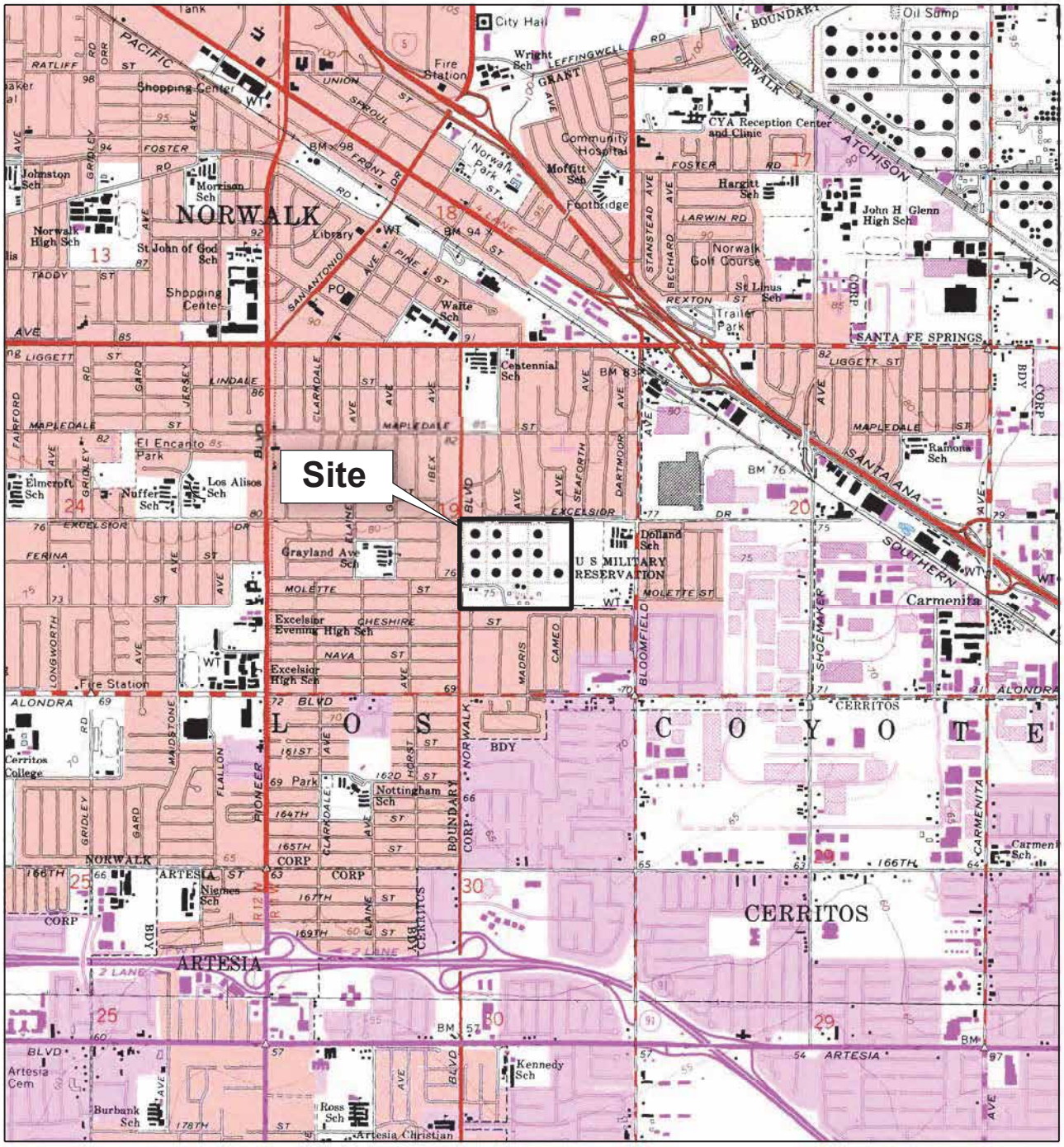
U = not detected above listed laboratory reporting limit
UJ = estimated nondetect due to quality control exceedances
µg/L = micrograms per liter
COPC = contaminant of potential concern
TPH-g = total petroleum hydrocarbons quantified as gasoline

Figures



North

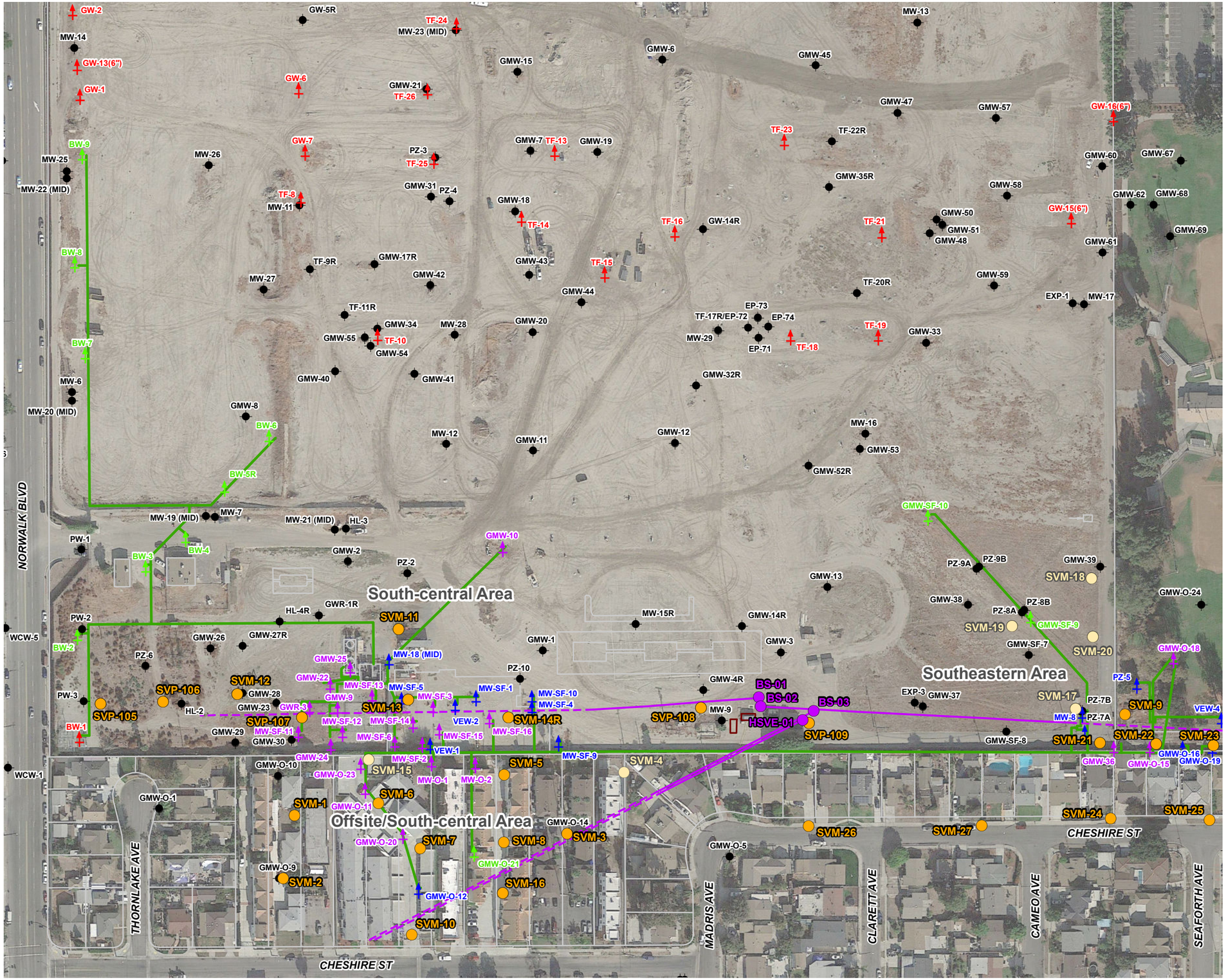
0 1200 2400

Approximate scale in feet

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.

Jacobs



LEGEND

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

Imagery Source:
Google Earth December 3, 2017.

N

0 75 150 300
Feet

1 inch = 150 feet

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

Jacobs

\\DC1VS01\GISPROJ\K\KINDERMORGAN\NORWALK\MAPFILES\2022\FIGURE_2_REMEDIATION_SYSTEMS_LAYOUT.MXD AESPEJO 6/13/2022

Attachment A
Laboratory Analytical Reports

AMERICAN ANALYTICS

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

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 Analytics.

Sincerely,

Allen Aminian

QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

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

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
Fixed Gases					
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
TO-3					
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

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
		Fixed Gases by TCD						
Oxygen	SVP-105-5	**21**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-105-5	**1.2**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-105-10	**20**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-105-10	**1.4**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-105-10-DUP	**20**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-105-10-DUP	**1.5**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-106-5	**21**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-106-5	**1.6**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Oxygen	SVP-106-10	**21**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M
Carbon Dioxide	SVP-106-10	**0.90**	0.20	% by Volume	2	03/18/22	03/18/22	ASTM D1946M

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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	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
QA/QC Manager

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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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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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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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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

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Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-9-5	**3.9**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-9-14.5	**20**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-9-14.5	**0.44**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-3-5	**21**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-3-15	**20**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-2-5	**17**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-2-5	**2.2**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-1-5	**20**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-1-5	**0.62**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Oxygen	SVM-1-15	**17**	0.20	% by Volume	2	03/23/22	03/23/22	ASTM D1946M
Carbon Dioxide	SVM-1-15	**2.5**	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
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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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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Analyte	Sample Name	Result	MRL	Units	Dilution	Prepared	Analyzed	Method
Carbon Dioxide	SVM-6-13	**9.9**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-6-13 DUP	**1.5**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-6-13 DUP	**11**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-10-15	**20**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-15-7	**19**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-15-7	**1.3**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-15-15	**19**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-15-15	**1.5**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	SVM-15-22	**16**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Carbon Dioxide	SVM-15-22	**2.8**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M
Oxygen	AMBIENT AIR	**21**	0.20	% by Volume	2	03/24/22	03/24/22	ASTM D1946M

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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

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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-01**	0.20	ug/L	1	03/18/22	03/19/22	TO-15

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Chloroform	SVM-19-5	**0.0062**	0.0040	ug/L	1	03/18/22	03/19/22	TO-15
Chloroform	SVM-23-14.5	**0.0071**	0.0040	ug/L	1	03/23/22	03/23/22	TO-15
Tetrachloroethylene (PCE)	SVM-9-5	**0.031**	0.010	ug/L	1	03/23/22	03/24/22	TO-15
Acetone	SVM-9-14.5	**0.024**	0.020	ug/L	1	03/23/22	03/24/22	TO-15
Chloroform	SVM-3-5	**0.0092**	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Ethanol	SVM-3-5	**0.021**	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Bromodichloromethane	SVM-3-15	**0.032**	0.0025	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-3-15	**0.071**	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Ethanol	SVM-3-15	**0.021**	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Acetone	SVM-1-5	**0.025**	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Ethanol	SVM-1-5	**0.12**	0.020	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-25-10	**0.0056**	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Tetrachloroethylene (PCE)	SVM-25-10	**0.029**	0.010	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-24-5	**0.0053**	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-24-10	**0.015**	0.0040	ug/L	1	03/25/22	03/25/22	TO-15
Chloroform	SVM-27-10	**0.033**	0.0040	ug/L	1	03/25/22	03/26/22	TO-15
Chloroform	SVM-26-5	**0.0094**	0.0040	ug/L	1	03/25/22	03/26/22	TO-15
Tetrachloroethylene (PCE)	SVM-26-5	**0.14**	0.010	ug/L	1	03/25/22	03/26/22	TO-15
Tetrachloroethylene (PCE)	SVM-7-13	**0.025**	0.010	ug/L	1	03/28/22	03/28/22	TO-15
Cyclohexane	SVM-6-7	**0.16**	0.032	ug/L	1.6	03/28/22	03/28/22	TO-15
Bromodichloromethane	SVM-6-13	**44**	2.5	ug/L	1000	03/29/22	03/29/22	TO-15
Cyclohexane	SVM-6-13	**260**	120	ug/L	6000	03/29/22	03/29/22	TO-15
Ethyl Acetate	SVM-6-13	**33**	20	ug/L	1000	03/29/22	03/29/22	TO-15
Heptane	SVM-6-13	**58**	20	ug/L	1000	03/29/22	03/29/22	TO-15
n-Hexane	SVM-6-13	**230**	120	ug/L	6000	03/29/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-6-13	**1500**	600	ug/L	30000	03/29/22	03/29/22	TO-15
Vinyl acetate	SVM-6-13	**45**	20	ug/L	1000	03/29/22	03/29/22	TO-15
Bromodichloromethane	SVM-6-13 DUP	**44**	2.5	ug/L	1000	03/29/22	03/29/22	TO-15
Cyclohexane	SVM-6-13 DUP	**250**	120	ug/L	6000	03/29/22	03/29/22	TO-15
Ethyl Acetate	SVM-6-13 DUP	**33**	20	ug/L	1000	03/29/22	03/29/22	TO-15
Heptane	SVM-6-13 DUP	**56**	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	**220**	120	ug/L	6000	03/29/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-6-13 DUP	**1400**	600	ug/L	30000	03/29/22	03/29/22	TO-15
Vinyl acetate	SVM-6-13 DUP	**46**	20	ug/L	1000	03/29/22	03/29/22	TO-15
Cyclohexane	SVM-10-15	**0.069**	0.020	ug/L	1	03/28/22	03/28/22	TO-15
Heptane	SVM-10-15	**0.029**	0.020	ug/L	1	03/28/22	03/28/22	TO-15
n-Hexane	SVM-10-15	**0.067**	0.020	ug/L	1	03/28/22	03/28/22	TO-15
Tetrachloroethylene (PCE)	SVM-10-15	**0.033**	0.010	ug/L	1	03/28/22	03/28/22	TO-15
Cyclohexane	SVM-15-7	**0.020**	0.020	ug/L	1	03/28/22	03/29/22	TO-15
n-Hexane	SVM-15-7	**0.020**	0.020	ug/L	1	03/28/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-15-7	**0.23**	0.020	ug/L	1	03/28/22	03/29/22	TO-15
2,2,4-Trimethylpentane	AMBIENT AIR	**0.024**	0.020	ug/L	1	03/28/22	03/29/22	TO-15
2,2,4-Trimethylpentane	SVM-16-16	**0.021**	0.020	ug/L	1	03/28/22	03/29/22	TO-15
Acetone	SVM-16-22	**0.029**	0.020	ug/L	1	03/31/22	03/31/22	TO-15
Tetrachloroethylene (PCE)	SVM-5-15	**0.035**	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/16/22	03/16/22	03/16/22	
AA ID No:	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	77%	77%	75%	76%	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
Client ID No:	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	74%	75%	78%	73%	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
Client ID No:	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	77%	77%	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
Client ID No:	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	78%	78%	81%	79%	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

Date Sampled:	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/18/22	03/18/22	
AA ID No:	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
Client ID No:	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
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

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-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	79%	80%	78%	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/17/22	03/23/22	03/17/22	03/17/22	
Date Analyzed:	04/05/22	03/23/22	04/05/22	04/05/22	
AA ID No:	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
Client ID No:	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	**5.9**	**0.66**	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	99%	110%	84%	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 EPA TO-3

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	03/17/22	
Date Analyzed:	04/05/22	04/05/22	04/05/22	04/05/22	
AA ID No:	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
Client ID No:	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	81%	85%	83%	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: VOCs by EPA TO-3

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	03/17/22	
Date Analyzed:	04/05/22	04/05/22	04/05/22	04/05/22	
AA ID No:	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
Client ID No:	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	84%	84%	82%	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/23/22	03/23/22	03/23/22	
Date Analyzed:	03/23/22	03/23/22	03/23/22	03/24/22	
AA ID No:	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
Client ID No:	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	102%	102%	102%	103%	70-130

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: 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:	03/23/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/24/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
Client ID No:	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	**1.2**	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	103%	84%	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

Date Sampled:	03/15/22	03/15/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
Client ID No:	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	77%	80%	82%	79%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/26/22	
AA ID No:	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
Client ID No:	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	**0.59**	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	74%	78%	79%	79%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/28/22	03/28/22	
Date Analyzed:	03/26/22	03/26/22	03/28/22	03/28/22	
AA ID No:	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
Client ID No:	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	**0.73**	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	76%	77%	79%	79%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/31/22	03/31/22	03/28/22	
Date Analyzed:	03/28/22	03/31/22	03/31/22	03/28/22	
AA ID No:	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
Client ID No:	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	300	300	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	**150**	**11000**	**11000**	**4.8**	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	81%	83%	78%	90%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/28/22	03/28/22	
Date Analyzed:	03/29/22	03/29/22	03/29/22	03/29/22	
AA ID No:	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	**1.9**	<0.50	<0.50	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	87%	87%	85%	88%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/31/22	03/31/22	
Date Analyzed:	03/29/22	03/29/22	03/31/22	03/31/22	
AA ID No:	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-3 (TO-3)					
Gasoline Range Organics (GRO)	<0.50	<0.50	**0.83**	<0.50	0.50
Surrogates					**%REC Limits**
4-Bromofluorobenzene	86%	82%	89%	87%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/31/22	03/31/22	03/31/22	
Date Analyzed:	03/31/22	03/31/22	03/31/22	
AA ID No:	2C14020-70	2C14020-71	2C14020-72	
Client ID No:	SVM-5-15	SVM-8-5	SVM-8-15	
Matrix:	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	MRL
TO-3 (TO-3)				
Gasoline Range Organics (GRO)	<0.50	<0.50	<0.50	0.50
Surrogates				**%REC Limits**
4-Bromofluorobenzene	84%	85%	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/16/22	03/16/22	03/16/22	
AA ID No:	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/16/22	03/16/22	03/16/22	
AA ID No:	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	**0.14 [1]**	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/16/22	03/16/22	03/16/22	
AA ID No:	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	75%	75%	73%	73%	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
Client ID No:	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	**0.034**	<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	**0.0073**	<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:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
Client ID No:	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	**0.036**	<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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Analyzed:	03/16/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
Client ID No:	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	72%	74%	76%	72%	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
Client ID No:	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
Client ID No:	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.018**	<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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/16/22	03/16/22	03/16/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
Client ID No:	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
Client ID No:	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<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:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
Client ID No:	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	**0.017**	<0.010	**0.013**	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/17/22	03/17/22	
AA ID No:	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
Client ID No:	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	77%	77%	80%	77%	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

Date Sampled:	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/18/22	03/18/22	
AA ID No:	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
Client ID No:	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	**0.020**	<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:	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/18/22	03/18/22	
AA ID No:	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
Client ID No:	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

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

Date Sampled:	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
Date Prepared:	03/17/22	03/17/22	03/17/22	03/17/22	
Date Analyzed:	03/17/22	03/17/22	03/18/22	03/18/22	
AA ID No:	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
Client ID No:	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	79%	82%	76%	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

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)					
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
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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	**0.024**	<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)	**0.067**	<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

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)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	77%	79%	76%	79%	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/22/22	03/23/22	03/18/22	03/18/22	
Date Analyzed:	03/22/22	03/23/22	03/18/22	03/18/22	
AA ID No:	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
Client ID No:	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	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	**1.7**	<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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/22/22	03/23/22	03/18/22	03/18/22	
Date Analyzed:	03/22/22	03/23/22	03/18/22	03/18/22	
AA ID No:	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
Client ID No:	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	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	**0.020**	<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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/22/22	03/23/22	03/18/22	03/18/22	
Date Analyzed:	03/22/22	03/23/22	03/18/22	03/18/22	
AA ID No:	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
Client ID No:	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	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
Surrogates					**%REC Limits**
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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/18/22	03/18/22	03/19/22	03/19/22	
AA ID No:	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
Client ID No:	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.027**	<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	**0.0082**	<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:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/18/22	03/18/22	03/19/22	03/19/22	
AA ID No:	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
Client ID No:	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.025**	<0.020	<0.020	**0.021**	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/18/22	03/18/22	03/19/22	03/19/22	
AA ID No:	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
Client ID No:	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	85%	85%	85%	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: 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:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/19/22	03/19/22	03/19/22	03/19/22	
AA ID No:	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
Client ID No:	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	**0.0062**	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:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/19/22	03/19/22	03/19/22	03/19/22	
AA ID No:	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
Client ID No:	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	**0.31 [8]**	<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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/19/22	03/19/22	03/19/22	03/19/22	
AA ID No:	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
Client ID No:	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	86%	84%	85%	84%	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/23/22	03/23/22	03/23/22	
Date Analyzed:	03/23/22	03/23/22	03/23/22	03/24/22	
AA ID No:	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
Client ID No:	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	**0.0071**	<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:	03/23/22	03/23/22	03/23/22	03/23/22	
Date Analyzed:	03/23/22	03/23/22	03/23/22	03/24/22	
AA ID No:	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
Client ID No:	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	**0.031**	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/23/22	03/23/22	03/23/22	
Date Analyzed:	03/23/22	03/23/22	03/23/22	03/24/22	
AA ID No:	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
Client ID No:	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	100%	100%	99%	99%	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/24/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
Client ID No:	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.024**	<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	**0.032**	<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	**0.0092**	**0.071**	<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:	03/23/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/24/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
Client ID No:	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
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	**0.021**	**0.021**	<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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/24/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
Client ID No:	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	100%	81%	78%	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

Date Sampled:	03/15/22	03/15/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
Client ID No:	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	**0.025**	<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	**0.0056**	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	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
Client ID No:	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	**0.12**	<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	**0.029**	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

Date Sampled:	03/15/22	03/15/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
Client ID No:	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	76%	78%	80%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/26/22	
AA ID No:	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
Client ID No:	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	**0.0053**	**0.015**	<0.0040	**0.033**	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:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/26/22	
AA ID No:	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
Client ID No:	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/26/22	
AA ID No:	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
Client ID No:	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/28/22	03/28/22	
Date Analyzed:	03/26/22	03/26/22	03/28/22	03/28/22	
AA ID No:	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
Client ID No:	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	**0.0094**	<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:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/28/22	03/28/22	
Date Analyzed:	03/26/22	03/26/22	03/28/22	03/28/22	
AA ID No:	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
Client ID No:	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	**0.14**	<0.010	<0.010	**0.025**	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/28/22	03/28/22	
Date Analyzed:	03/26/22	03/26/22	03/28/22	03/28/22	
AA ID No:	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
Client ID No:	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	74%	76%	79%	79%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/29/22	03/29/22	03/28/22	
Date Analyzed:	03/28/22	03/29/22	03/29/22	03/28/22	
AA ID No:	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
Client ID No:	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	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	**44**	**44**	<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	**0.16**	**260**	**250**	**0.069**	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/29/22	03/29/22	03/28/22	
Date Analyzed:	03/28/22	03/29/22	03/29/22	03/28/22	
AA ID No:	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
Client ID No:	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	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	**33**	**33**	<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	**58**	**56**	**0.029**	0.020
Hexachlorobutadiene	<0.32	<20	<20	<0.020	0.020
n-Hexane	<0.32	**230**	**220**	**0.067**	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	**0.033**	0.010
Tetrahydrofuran (THF)	<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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/29/22	03/29/22	03/28/22	
Date Analyzed:	03/28/22	03/29/22	03/29/22	03/28/22	
AA ID No:	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
Client ID No:	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	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	**1500**	**1400**	<0.020	0.020
Vinyl acetate	<0.32	**45**	**46**	<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
Surrogates					**%REC Limits**
4-Bromofluorobenzene	81%	84%	79%	90%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/28/22	03/28/22	
Date Analyzed:	03/29/22	03/29/22	03/29/22	03/29/22	
AA ID No:	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	<0.020	<0.020	0.020
Cyclohexane	**0.020**	<0.020	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/28/22	03/28/22	
Date Analyzed:	03/29/22	03/29/22	03/29/22	03/29/22	
AA ID No:	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	**0.020**	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/28/22	03/28/22	
Date Analyzed:	03/29/22	03/29/22	03/29/22	03/29/22	
AA ID No:	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	**0.23**	<0.020	<0.020	**0.024**	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	87%	87%	85%	88%	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/31/22	03/31/22	
Date Analyzed:	03/29/22	03/29/22	03/31/22	03/31/22	
AA ID No:	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15)					
Acetone	<0.020	<0.020	**0.029**	<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:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/31/22	03/31/22	
Date Analyzed:	03/29/22	03/29/22	03/31/22	03/31/22	
AA ID No:	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
1,1-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/28/22	03/28/22	03/31/22	03/31/22	
Date Analyzed:	03/29/22	03/29/22	03/31/22	03/31/22	
AA ID No:	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	1	1	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)					
Toluene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	**0.021**	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	<0.020	<0.020	0.020
Surrogates					**%REC Limits**
4-Bromofluorobenzene	86%	82%	87%	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

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

Date Sampled:	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/31/22	03/31/22	03/31/22	
Date Analyzed:	03/31/22	03/31/22	03/31/22	
AA ID No:	2C14020-70	2C14020-71	2C14020-72	
Client ID No:	SVM-5-15	SVM-8-5	SVM-8-15	
Matrix:	Vapor	Vapor	Vapor	
Dilution Factor:	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)	**0.035**	<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

Date Sampled:	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/31/22	03/31/22	03/31/22	
Date Analyzed:	03/31/22	03/31/22	03/31/22	
AA ID No:	2C14020-70	2C14020-71	2C14020-72	
Client ID No:	SVM-5-15	SVM-8-5	SVM-8-15	
Matrix:	Vapor	Vapor	Vapor	
Dilution Factor:	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
Surrogates				**%REC Limits**
4-Bromofluorobenzene	82%	83%	84%	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: MB187343
Date Received: 03/14/22
Date Reported: 04/12/22
Units: % by Volume

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/18/22	03/18/22	03/18/22	03/18/22	
AA ID No:	2C14020-01	2C14020-02	2C14020-03	2C14020-04	
Client ID No:	SVP-105-5	SVP-105-10	SVP-105-10-DUP	SVP-106-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**20**	**20**	**21**	0.10
Carbon Dioxide	**1.2**	**1.4**	**1.5**	**1.6**	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/18/22	03/18/22	03/18/22	03/18/22	
AA ID No:	2C14020-05	2C14020-06	2C14020-07	2C14020-08	
Client ID No:	SVP-106-10	AMBIENT AIR	SVM-12-7	SVM-12-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**22**	**20**	**16**	0.10
Carbon Dioxide	**0.90**	<0.20	**1.2**	**4.7**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187343
Date Received: 03/14/22
Date Reported: 04/12/22
Units: % by Volume

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/18/22	03/18/22	03/18/22	03/18/22	
Date Analyzed:	03/18/22	03/18/22	03/18/22	03/18/22	
AA ID No:	2C14020-09	2C14020-10	2C14020-11	2C14020-12	
Client ID No:	SVM-12-22	SVP-107-5	SVP-107-10	SVM-11-7	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**8.1**	**20**	**20**	**19**	0.10
Carbon Dioxide	**14**	**1.5**	**1.3**	**0.84**	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

Date Sampled:	03/14/22	03/14/22	03/14/22	03/14/22	
Date Prepared:	03/18/22	03/21/22	03/21/22	03/21/22	
Date Analyzed:	03/18/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-13	2C14020-14	2C14020-15	2C14020-17	
Client ID No:	SVM-11-15	SVM-11-22	SVM-13-7	SVM-13-22	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**9.0**	**21**	**14**	0.10
Carbon Dioxide	**1.7**	**8.9**	<0.20	**3.7**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187343
Date Received: 03/14/22
Date Reported: 04/12/22
Units: % by Volume

Date Sampled:	03/14/2022	03/14/2022	03/14/2022	03/15/2022	
Date Prepared:	03/21/22	03/21/22	03/21/22	03/21/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-18	2C14020-19	2C14020-20	2C14020-21	
Client ID No:	SVM-14R-8	SVM-14R-16	SVM-14R-22	SVP-109-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**17**	**6.5**	**20**	0.10
Carbon Dioxide	**1.1**	**2.2**	**11**	<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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/21/22	03/21/22	03/21/22	03/22/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/22/22	
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:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**22**	**21**	**22**	**17**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	**3.8**	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/23/22	03/22/22	03/22/22	
Date Analyzed:	03/23/22	03/23/22	03/22/22	03/22/22	
AA ID No:	2C14020-26	2C14020-27	2C14020-28	2C14020-29	
Client ID No:	SVP-108-10	SVM-17-5	SVM-17-14.5	SVM-17-14.5 DUP	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**11**	**20**	**20**	**21**	0.10
Carbon Dioxide	**9.2**	<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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/22/22	03/22/22	03/22/22	03/22/22	
Date Analyzed:	03/22/22	03/22/22	03/22/22	03/22/22	
AA ID No:	2C14020-30	2C14020-31	2C14020-32	2C14020-33	
Client ID No:	AMBIENT AIR	SVM-22-5	SVM-22-14.5	SVM-18-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**22**	**21**	**20**	0.10
Carbon Dioxide	<0.20	<0.20	<0.20	**3.0**	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/22/22	03/22/22	03/22/22	03/22/22	
Date Analyzed:	03/22/22	03/22/22	03/22/22	03/22/22	
AA ID No:	2C14020-34	2C14020-35	2C14020-36	2C14020-37	
Client ID No:	SVM-18-14.5	SVM-20-5	SVM-20-14.5	SVM-19-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**21**	**21**	**25**	0.10
Carbon Dioxide	**0.92**	**0.93**	**0.51**	**0.46**	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

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/23/22	03/23/22	03/23/22	
Date Analyzed:	03/23/22	03/23/22	03/23/22	03/23/22	
AA ID No:	2C14020-38	2C14020-39	2C14020-40	2C14020-41	
Client ID No:	SVM-19-5 DUP	SVM-23-5	SVM-23-14.5	SVM-9-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**21**	**21**	**19**	0.10
Carbon Dioxide	**0.54**	<0.20	<0.20	**3.9**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187343
Date Received: 03/14/22
Date Reported: 04/12/22
Units: % by Volume

Date Sampled:	03/15/22	03/15/22	03/15/22	03/15/22	
Date Prepared:	03/23/22	03/23/22	03/23/22	03/23/22	
Date Analyzed:	03/23/22	03/23/22	03/23/22	03/23/22	
AA ID No:	2C14020-42	2C14020-43	2C14020-44	2C14020-45	
Client ID No:	SVM-9-14.5	SVM-3-5	SVM-3-15	SVM-2-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**21**	**20**	**17**	0.10
Carbon Dioxide	**0.44**	<0.20	<0.20	**2.2**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187343
Date Received: 03/14/22
Date Reported: 04/12/22
Units: % by Volume

Date Sampled:	03/15/22	03/15/22	03/16/22	03/16/22	
Date Prepared:	03/23/22	03/23/22	03/23/22	03/23/22	
Date Analyzed:	03/23/22	03/23/22	03/23/22	03/23/22	
AA ID No:	2C14020-46	2C14020-47	2C14020-48	2C14020-49	
Client ID No:	SVM-1-5	SVM-1-15	SVM-25-5	SVM-25-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**17**	**20**	**19**	0.10
Carbon Dioxide	**0.62**	**2.5**	**2.0**	**2.7**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187343
Date Received: 03/14/22
Date Reported: 04/12/22
Units: % by Volume

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/23/22	03/24/22	03/24/22	03/24/22	
Date Analyzed:	03/23/22	03/24/22	03/24/22	03/24/22	
AA ID No:	2C14020-50	2C14020-51	2C14020-52	2C14020-53	
Client ID No:	SVM-24-5	SVM-24-10	SVM-27-5	SVM-27-10	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**20**	**20**	**20**	0.10
Carbon Dioxide	**1.0**	**0.83**	**0.86**	**1.8**	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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/24/22	03/24/22	03/24/22	03/24/22	
Date Analyzed:	03/24/22	03/24/22	03/24/22	03/24/22	
AA ID No:	2C14020-54	2C14020-55	2C14020-56	2C14020-57	
Client ID No:	SVM-26-5	SVM-26-10	SVM-7-7	SVM-7-13	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**20**	**20**	**20**	**16**	0.10
Carbon Dioxide	**1.8**	**1.7**	**2.2**	**4.3**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: Fixed Gases by TCD

AA Project No: MB187343
Date Received: 03/14/22
Date Reported: 04/12/22
Units: % by Volume

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/24/22	03/24/22	03/24/22	03/24/22	
Date Analyzed:	03/24/22	03/24/22	03/24/22	03/24/22	
AA ID No:	2C14020-58	2C14020-59	2C14020-60	2C14020-61	
Client ID No:	SVM-6-7	SVM-6-13	SVM-6-13 DUP	SVM-10-15	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**13**	**4.1**	**1.5**	**20**	0.10
Carbon Dioxide	<0.20	**9.9**	**11**	<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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/24/22	03/24/22	03/24/22	03/24/22	
Date Analyzed:	03/24/22	03/24/22	03/24/22	03/24/22	
AA ID No:	2C14020-62	2C14020-63	2C14020-64	2C14020-65	
Client ID No:	SVM-15-7	SVM-15-15	SVM-15-22	AMBIENT AIR	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.20	<0.20	0.10
Oxygen	**19**	**19**	**16**	**21**	0.10
Carbon Dioxide	**1.3**	**1.5**	**2.8**	<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

Date Sampled:	03/16/22	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-66	2C14020-67	2C14020-68	2C14020-69	
Client ID No:	SVM-16-7	SVM-16-16	SVM-16-22	SVM-5-5	
Matrix:	Vapor	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	1	2	MRL
Fixed Gases (ASTM D1946M)					
Methane	<0.20	<0.20	<0.10	<0.20	0.10
Oxygen	**22**	**20**	**21**	**20**	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

Date Sampled:	03/16/22	03/16/22	03/16/22	
Date Prepared:	03/25/22	03/25/22	03/25/22	
Date Analyzed:	03/25/22	03/25/22	03/25/22	
AA ID No:	2C14020-70	2C14020-71	2C14020-72	
Client ID No:	SVM-5-15	SVM-8-5	SVM-8-15	
Matrix:	Vapor	Vapor	Vapor	
Dilution Factor:	2	2	2	MRL
Fixed Gases (ASTM D1946M)				
Methane	<0.20	<0.20	<0.20	0.10
Oxygen	**21**	**20**	**21**	0.10
Carbon Dioxide	<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

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
VOCs by EPA TO-3 - Quality Control										
*Batch B2C1717 - *** DEFAULT PREP ****										
Blank (B2C1717-BLK1)				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*			
LCS (B2C1717-BS1)				Prepared: 03/16/22 Analyzed: 03/17/22						
Gasoline Range Organics (GRO)	**0.977**	0.50	ug/L	0.802		122	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0276*		*ug/L*	*0.0358*		*77.2*	*70-130*			
LCS Dup (B2C1717-BSD1)				Prepared: 03/16/22 Analyzed: 03/17/22						
Gasoline Range Organics (GRO)	**1.02**	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*			
Duplicate (B2C1717-DUP1)			**Source: 2C14016-01**	Prepared & Analyzed: 03/16/22						
Gasoline Range Organics (GRO)	**17.0**	0.50	ug/L		2700000			200	30	
Surrogate: 4-Bromofluorobenzene	*0.0290*		*ug/L*	*0.0358*		*81.0*	*70-130*			
*Batch B2C2132 - *** DEFAULT PREP ****										
Blank (B2C2132-BLK1)				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*			
LCS (B2C2132-BS1)				Prepared: 03/17/22 Analyzed: 03/18/22						
Gasoline Range Organics (GRO)	**1.04**	0.50	ug/L	0.802		130	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0296*		*ug/L*	*0.0358*		*82.6*	*70-130*			
LCS Dup (B2C2132-BSD1)				Prepared: 03/17/22 Analyzed: 03/18/22						
Gasoline Range Organics (GRO)	**1.03**	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 ****										
Blank (B2C2133-BLK1)				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*			
LCS (B2C2133-BS1)				Prepared: 03/18/22 Analyzed: 04/06/22						
Gasoline Range Organics (GRO)	**0.755**	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
VOCs by EPA TO-3 - Quality Control										
*Batch B2C2133 - *** DEFAULT PREP ****										
LCS (B2C2133-BS1) Continued				Prepared: 03/18/22 Analyzed: 04/06/22						
Surrogate: 4-Bromofluorobenzene	*0.0311*		*ug/L*	*0.0358*		*87.0*	*70-130*			
LCS Dup (B2C2133-BSD1)				Prepared: 03/21/22 Analyzed: 04/05/22						
Gasoline Range Organics (GRO)	**0.917**	0.50	ug/L	0.802		114	70-130	19.4	30	
Surrogate: 4-Bromofluorobenzene	*0.0295*		*ug/L*	*0.0358*		*82.4*	*70-130*			
*Batch B2C2406 - *** DEFAULT PREP ****										
Blank (B2C2406-BLK1)				Prepared & Analyzed: 03/23/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0353*		*ug/L*	*0.0358*		*98.6*	*70-130*			
LCS (B2C2406-BS1)				Prepared: 03/23/22 Analyzed: 03/24/22						
Gasoline Range Organics (GRO)	**0.712**	0.50	ug/L	0.802		88.8	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0371*		*ug/L*	*0.0358*		*104*	*70-130*			
LCS Dup (B2C2406-BSD1)				Prepared: 03/23/22 Analyzed: 03/24/22						
Gasoline Range Organics (GRO)	**0.688**	0.50	ug/L	0.802		85.8	70-130	3.39	30	
Surrogate: 4-Bromofluorobenzene	*0.0372*		*ug/L*	*0.0358*		*104*	*70-130*			
*Batch B2C2920 - *** DEFAULT PREP ****										
Blank (B2C2920-BLK1)				Prepared & Analyzed: 03/25/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0295*		*ug/L*	*0.0358*		*82.4*	*70-130*			
LCS (B2C2920-BS1)				Prepared: 03/25/22 Analyzed: 03/26/22						
Gasoline Range Organics (GRO)	**0.910**	0.50	ug/L	0.802		114	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0288*		*ug/L*	*0.0358*		*80.4*	*70-130*			
LCS Dup (B2C2920-BSD1)				Prepared: 03/25/22 Analyzed: 03/26/22						
Gasoline Range Organics (GRO)	**0.817**	0.50	ug/L	0.802		102	70-130	10.9	30	
Surrogate: 4-Bromofluorobenzene	*0.0288*		*ug/L*	*0.0358*		*80.4*	*70-130*			
*Batch B2C2921 - *** DEFAULT PREP ****										
Blank (B2C2921-BLK1)				Prepared & Analyzed: 03/28/22						
Gasoline Range Organics (GRO)	<0.50	0.50	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
VOCs by EPA TO-3 - Quality Control										
*Batch B2C2921 - *** DEFAULT PREP ****										
Blank (B2C2921-BLK1) Continued				Prepared & Analyzed: 03/28/22						
Surrogate: 4-Bromofluorobenzene	*0.0273*		*ug/L*	*0.0358*		*76.4*	*70-130*			
LCS (B2C2921-BS1)				Prepared & Analyzed: 03/28/22						
Gasoline Range Organics (GRO)	**0.701**	0.50	ug/L	0.802		87.4	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0297*		*ug/L*	*0.0358*		*83.0*	*70-130*			
LCS Dup (B2C2921-BSD1)				Prepared: 03/28/22 Analyzed: 03/29/22						
Gasoline Range Organics (GRO)	**0.840**	0.50	ug/L	0.802		105	70-130	18.1	30	
Surrogate: 4-Bromofluorobenzene	*0.0309*		*ug/L*	*0.0358*		*86.4*	*70-130*			
*Batch B2D0108 - *** DEFAULT PREP ****										
Blank (B2D0108-BLK1)				Prepared & Analyzed: 03/31/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0330*		*ug/L*	*0.0358*		*92.2*	*70-130*			
LCS (B2D0108-BS1)				Prepared: 03/31/22 Analyzed: 04/01/22						
Gasoline Range Organics (GRO)	**0.726**	0.50	ug/L	0.802		90.6	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0298*		*ug/L*	*0.0358*		*83.4*	*70-130*			
LCS Dup (B2D0108-BSD1)				Prepared: 03/31/22 Analyzed: 04/01/22						
Gasoline Range Organics (GRO)	**0.742**	0.50	ug/L	0.802		92.6	70-130	2.19	30	
Surrogate: 4-Bromofluorobenzene	*0.0298*		*ug/L*	*0.0358*		*83.4*	*70-130*			
*Batch B2D0626 - *** DEFAULT PREP ****										
Blank (B2D0626-BLK1)				Prepared & Analyzed: 03/18/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0334*		*ug/L*	*0.0358*		*93.2*	*70-130*			
LCS (B2D0626-BS1)				Prepared & Analyzed: 03/18/22						
Gasoline Range Organics (GRO)	**1.06**	0.50	ug/L	0.802		132	70-130			
Surrogate: 4-Bromofluorobenzene	*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						

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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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C1716 - *** DEFAULT PREP ****										
Blank (B2C1716-BLK1) Continued				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							

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

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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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C1716 - *** DEFAULT PREP ****										
LCS (B2C1716-BS1) Continued				Prepared & Analyzed: 03/16/22						
Dichlorodifluoromethane (R12)	**0.237**	0.020	ug/L	0.198		120	70-130			
1,1-Dichloroethane	**0.176**	0.020	ug/L	0.162		109	70-130			
1,2-Dichloroethane (EDC)	**0.164**	0.0040	ug/L	0.162		101	70-130			
cis-1,2-Dichloroethylene	**0.164**	0.020	ug/L	0.159		104	70-130			
1,1-Dichloroethylene	**0.196**	0.020	ug/L	0.159		123	70-130			
trans-1,2-Dichloroethylene	**0.167**	0.020	ug/L	0.159		105	70-130			
1,2-Dichloropropane	**0.214**	0.020	ug/L	0.185		116	70-130			
trans-1,3-Dichloropropylene	**0.194**	0.020	ug/L	0.182		107	70-130			
cis-1,3-Dichloropropylene	**0.197**	0.020	ug/L	0.182		108	70-130			
Dichlorotetrafluoroethane	**0.356**	0.020	ug/L	0.280		127	70-130			
Ethylbenzene	**0.198**	0.020	ug/L	0.174		114	70-130			
4-Ethyltoluene	**0.197**	0.020	ug/L	0.197		100	70-130			
Hexachlorobutadiene	**0.521**	0.020	ug/L	0.427		122	70-130			
2-Hexanone (MBK)	**0.189**	0.020	ug/L	0.164		115	70-130			
Isopropanol (IPA)	**0.119**	0.20	ug/L	0.0865		138	70-130			QL-02
Methylene Chloride	**0.178**	0.020	ug/L	0.139		128	70-130			
4-Methyl-2-pentanone (MIBK)	**0.204**	0.020	ug/L	0.164		125	70-130			
Styrene	**0.193**	0.020	ug/L	0.170		113	70-130			
1,1,2,2-Tetrachloroethane	**0.360**	0.020	ug/L	0.275		131	70-130			QL-02
Tetrachloroethylene (PCE)	**0.281**	0.010	ug/L	0.271		104	70-130			
Toluene	**0.150**	0.020	ug/L	0.151		99.5	70-130			
1,2,4-Trichlorobenzene	**0.361**	0.020	ug/L	0.297		122	70-130			
1,1,2-Trichloroethane	**0.221**	0.020	ug/L	0.218		101	70-130			
1,1,1-Trichloroethane	**0.214**	0.020	ug/L	0.218		98.2	70-130			
Trichloroethylene (TCE)	**0.247**	0.020	ug/L	0.215		115	70-130			
Trichlorofluoromethane (R11)	**0.314**	0.020	ug/L	0.225		140	70-130			QL-02
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.378**	0.020	ug/L	0.307		123	70-130			
1,3,5-Trimethylbenzene	**0.218**	0.020	ug/L	0.197		111	70-130			
1,2,4-Trimethylbenzene	**0.204**	0.020	ug/L	0.197		104	70-130			
Vinyl acetate	**0.160**	0.020	ug/L	0.118		136	70-130			QL-02
Vinyl chloride	**0.129**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C1716 - *** DEFAULT PREP ****										
LCS (B2C1716-BS1) Continued				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*			
LCS Dup (B2C1716-BSD1)				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
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						
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
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	

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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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C1716 - *** DEFAULT PREP ****										
Duplicate (B2C1716-DUP1) Continued	**Source: 2C14016-01**	Prepared: 03/16/22	Analyzed: 03/17/22							
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	

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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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C1716 - *** DEFAULT PREP ****										
Duplicate (B2C1716-DUP1) Continued				**Source: 2C14016-01**	Prepared & Analyzed: 03/16/22					
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							
Surrogate: 4-Bromofluorobenzene	*0.116*		*ug/L*	*0.143*		*81.2*	*70-130*			
*Batch B2C1807 - *** DEFAULT PREP ****										
Blank (B2C1807-BLK1)					Prepared & Analyzed: 03/17/22					
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							

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

Allen Aminian
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LABORATORY ANALYSIS RESULTS

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

AA Project No: 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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C1807 - *** DEFAULT PREP ****										
LCS (B2C1807-BS1) Continued				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*			
LCS Dup (B2C1807-BSD1)				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
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						
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
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 & 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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2131 - *** DEFAULT PREP ****										
Blank (B2C2131-BLK1) Continued				Prepared & 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 Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2131 - *** DEFAULT PREP ****										
Blank (B2C2131-BLK1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2131 - *** DEFAULT PREP ****										
Blank (B2C2131-BLK1) Continued				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							
Surrogate: 4-Bromofluorobenzene	*0.0178*		*ug/L*	*0.0358*		*49.8*	*70-130*			
LCS (B2C2131-BS1)				Prepared: 03/18/22 Analyzed: 03/19/22						
Acetone	**0.0303**	0.020	ug/L	0.0238		127	70-130			
Benzene	**0.0304**	0.0030	ug/L	0.0319		95.1	70-130			
Benzyl chloride	**0.0419**	0.020	ug/L	0.0445		94.1	70-130			
Bromodichloromethane	**0.0836**	0.0025	ug/L	0.0670		125	70-130			
Bromoform	**0.121**	0.020	ug/L	0.103		117	70-130			
Bromomethane	**0.0454**	0.020	ug/L	0.0388		117	70-130			
2-Butanone (MEK)	**0.0350**	0.020	ug/L	0.0295		119	70-130			
Carbon Disulfide	**0.0330**	0.020	ug/L	0.0311		106	70-130			
Carbon Tetrachloride	**0.0816**	0.020	ug/L	0.0629		130	70-130			
Chlorobenzene	**0.0522**	0.020	ug/L	0.0460		113	70-130			
Chloroethane	**0.0303**	0.020	ug/L	0.0264		115	70-130			
Chloroform	**0.0531**	0.0040	ug/L	0.0488		109	70-130			
Chloromethane	**0.0244**	0.020	ug/L	0.0207		118	70-130			
Dibromochloromethane	**0.0949**	0.020	ug/L	0.0852		111	70-130			
1,2-Dibromoethane (EDB)	**0.0819**	0.020	ug/L	0.0768		107	70-130			
1,2-Dichlorobenzene	**0.0619**	0.020	ug/L	0.0601		103	70-130			
1,3-Dichlorobenzene	**0.0634**	0.020	ug/L	0.0601		105	70-130			
1,4-Dichlorobenzene	**0.0602**	0.020	ug/L	0.0601		100	70-130			
Dichlorodifluoromethane (R12)	**0.0406**	0.020	ug/L	0.0495		82.1	70-130			
1,1-Dichloroethane	**0.0455**	0.020	ug/L	0.0405		112	70-130			

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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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2131 - *** DEFAULT PREP ****										
LCS (B2C2131-BS1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2131 - *** DEFAULT PREP ****										
LCS (B2C2131-BS1) Continued				Prepared: 03/18/22 Analyzed: 03/19/22						
1,2,3-Trichloropropane	**0.0424**	0.020	ug/L	0.0603		70.3	70-130			
sec-Butylbenzene	**0.0335**	0.020	ug/L	0.0549		61.1	70-130			QL-07
Isopropylbenzene	**0.0351**	0.020	ug/L	0.0492		71.4	70-130			
n-Propylbenzene	**0.0334**	0.020	ug/L	0.0492		68.0	70-130			QL-07
4-Isopropyltoluene	**0.0339**	0.020	ug/L	0.0549		61.7	70-130			QL-07
Surrogate: 4-Bromofluorobenzene	*0.0331*		*ug/L*	*0.0358*		*92.4*	*70-130*			
LCS Dup (B2C2131-BSD1)				Prepared: 03/18/22 Analyzed: 03/19/22						
Acetone	**0.0306**	0.020	ug/L	0.0238		129	70-130	1.02	30	
Benzene	**0.0303**	0.0030	ug/L	0.0319		94.7	70-130	0.422	30	
Benzyl chloride	**0.0437**	0.020	ug/L	0.0445		98.3	70-130	4.35	30	
Bromodichloromethane	**0.0859**	0.0025	ug/L	0.0670		128	70-130	2.77	30	
Bromoform	**0.124**	0.020	ug/L	0.103		120	70-130	2.11	30	
Bromomethane	**0.0462**	0.020	ug/L	0.0388		119	70-130	1.69	30	
2-Butanone (MEK)	**0.0347**	0.020	ug/L	0.0295		118	70-130	0.930	30	
Carbon Disulfide	**0.0328**	0.020	ug/L	0.0311		105	70-130	0.663	30	
Carbon Tetrachloride	**0.0852**	0.020	ug/L	0.0629		136	70-130	4.37	30	QL-03
Chlorobenzene	**0.0529**	0.020	ug/L	0.0460		115	70-130	1.23	30	
Chloroethane	**0.0310**	0.020	ug/L	0.0264		117	70-130	2.24	30	
Chloroform	**0.0531**	0.0040	ug/L	0.0488		109	70-130	0.00	30	
Chloromethane	**0.0249**	0.020	ug/L	0.0207		121	70-130	2.01	30	
Dibromochloromethane	**0.0963**	0.020	ug/L	0.0852		113	70-130	1.51	30	
1,2-Dibromoethane (EDB)	**0.0849**	0.020	ug/L	0.0768		110	70-130	3.59	30	
1,2-Dichlorobenzene	**0.0649**	0.020	ug/L	0.0601		108	70-130	4.74	30	
1,3-Dichlorobenzene	**0.0655**	0.020	ug/L	0.0601		109	70-130	3.27	30	
1,4-Dichlorobenzene	**0.0618**	0.020	ug/L	0.0601		103	70-130	2.56	30	
Dichlorodifluoromethane (R12)	**0.0399**	0.020	ug/L	0.0495		80.6	70-130	1.84	30	
1,1-Dichloroethane	**0.0438**	0.020	ug/L	0.0405		108	70-130	3.72	30	
1,2-Dichloroethane (EDC)	**0.0456**	0.0040	ug/L	0.0405		113	70-130	0.354	30	
cis-1,2-Dichloroethylene	**0.0428**	0.020	ug/L	0.0396		108	70-130	0.830	30	
1,1-Dichloroethylene	**0.0500**	0.020	ug/L	0.0396		126	70-130	0.636	30	
trans-1,2-Dichloroethylene	**0.0440**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2131 - *** DEFAULT PREP ****										
LCS Dup (B2C2131-BSD1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2131 - *** DEFAULT PREP ****										
LCS Dup (B2C2131-BSD1) Continued				Prepared: 03/18/22 Analyzed: 03/19/22						
4-Isopropyltoluene	**0.0345**	0.020	ug/L	0.0549		62.9	70-130	1.93	30	QL-07
Surrogate: 4-Bromofluorobenzene	*0.0344*		*ug/L*	*0.0358*		*96.2*	*70-130*			
*Batch B2C2326 - *** DEFAULT PREP ****										
Blank (B2C2326-BLK1)				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 Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2326 - *** DEFAULT PREP ****										
Blank (B2C2326-BLK1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2326 - *** DEFAULT PREP ****										
Blank (B2C2326-BLK1) Continued				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							
Surrogate: 4-Bromofluorobenzene	*0.125*		*ug/L*	*0.143*		*87.5*	*70-130*			
LCS (B2C2326-BS1)				Prepared & Analyzed: 03/22/22						
Acetone	**0.0942**	0.020	ug/L	0.0950		99.1	70-130			
Benzene	**0.0992**	0.0030	ug/L	0.128		77.6	70-130			
Benzyl chloride	**0.168**	0.020	ug/L	0.178		94.6	70-130			
Bromodichloromethane	**0.260**	0.0025	ug/L	0.268		97.1	70-130			
Bromoform	**0.414**	0.020	ug/L	0.413		100	70-130			
Bromomethane	**0.141**	0.020	ug/L	0.155		90.6	70-130			
2-Butanone (MEK)	**0.107**	0.020	ug/L	0.118		90.5	70-130			
Carbon Disulfide	**0.105**	0.020	ug/L	0.125		84.3	70-130			
Carbon Tetrachloride	**0.256**	0.020	ug/L	0.252		102	70-130			
Chlorobenzene	**0.179**	0.020	ug/L	0.184		97.1	70-130			
Chloroethane	**0.0955**	0.020	ug/L	0.106		90.5	70-130			
Chloroform	**0.169**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2326 - *** DEFAULT PREP ****										
LCS (B2C2326-BS1) Continued				Prepared & Analyzed: 03/22/22						
Chloromethane	**0.0829**	0.020	ug/L	0.0826		100	70-130			
Dibromochloromethane	**0.295**	0.020	ug/L	0.341		86.5	70-130			
1,2-Dibromoethane (EDB)	**0.249**	0.020	ug/L	0.307		81.2	70-130			
1,2-Dichlorobenzene	**0.224**	0.020	ug/L	0.240		93.2	70-130			
1,3-Dichlorobenzene	**0.226**	0.020	ug/L	0.240		93.8	70-130			
1,4-Dichlorobenzene	**0.226**	0.020	ug/L	0.240		93.8	70-130			
Dichlorodifluoromethane (R12)	**0.197**	0.020	ug/L	0.198		99.6	70-130			
1,1-Dichloroethane	**0.143**	0.020	ug/L	0.162		88.3	70-130			
1,2-Dichloroethane (EDC)	**0.141**	0.0040	ug/L	0.162		87.2	70-130			
cis-1,2-Dichloroethylene	**0.134**	0.020	ug/L	0.159		84.5	70-130			
1,1-Dichloroethylene	**0.150**	0.020	ug/L	0.159		94.5	70-130			
trans-1,2-Dichloroethylene	**0.137**	0.020	ug/L	0.159		86.6	70-130			
1,2-Dichloropropane	**0.176**	0.020	ug/L	0.185		95.1	70-130			
trans-1,3-Dichloropropylene	**0.158**	0.020	ug/L	0.182		87.1	70-130			
cis-1,3-Dichloropropylene	**0.159**	0.020	ug/L	0.182		87.8	70-130			
Dichlorotetrafluoroethane	**0.272**	0.020	ug/L	0.280		97.1	70-130			
Ethylbenzene	**0.158**	0.020	ug/L	0.174		91.0	70-130			
4-Ethyltoluene	**0.164**	0.020	ug/L	0.197		83.4	70-130			
Hexachlorobutadiene	**0.349**	0.020	ug/L	0.427		81.8	70-130			
2-Hexanone (MBK)	**0.149**	0.020	ug/L	0.164		91.1	70-130			
Isopropanol (IPA)	**0.0863**	0.20	ug/L	0.0865		99.7	70-130			
Methylene Chloride	**0.132**	0.020	ug/L	0.139		95.2	70-130			
4-Methyl-2-pentanone (MIBK)	**0.157**	0.020	ug/L	0.164		95.7	70-130			
Styrene	**0.153**	0.020	ug/L	0.170		89.9	70-130			
1,1,2,2-Tetrachloroethane	**0.277**	0.020	ug/L	0.275		101	70-130			
Tetrachloroethylene (PCE)	**0.224**	0.010	ug/L	0.271		82.7	70-130			
Toluene	**0.128**	0.020	ug/L	0.151		84.7	70-130			
1,2,4-Trichlorobenzene	**0.290**	0.020	ug/L	0.297		97.7	70-130			
1,1,2-Trichloroethane	**0.189**	0.020	ug/L	0.218		86.7	70-130			
1,1,1-Trichloroethane	**0.183**	0.020	ug/L	0.218		83.6	70-130			
Trichloroethylene (TCE)	**0.187**	0.020	ug/L	0.215		86.8	70-130			
Trichlorofluoromethane (R11)	**0.228**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2326 - *** DEFAULT PREP ****										
LCS (B2C2326-BS1) Continued				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*			
LCS Dup (B2C2326-BSD1)				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
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						
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
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 & 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 Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2405 - *** DEFAULT PREP ****										
Blank (B2C2405-BLK1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2405 - *** DEFAULT PREP ****										
Blank (B2C2405-BLK1) Continued				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							
Surrogate: 4-Bromofluorobenzene	*0.0343*		*ug/L*	*0.0358*		*95.8*	*70-130*			
LCS (B2C2405-BS1)				Prepared & Analyzed: 03/23/22						
Acetone	**0.0233**	0.020	ug/L	0.0238		98.2	70-130			
Benzene	**0.0313**	0.0030	ug/L	0.0319		98.1	70-130			
Benzyl chloride	**0.0646**	0.020	ug/L	0.0445		145	70-130			QL-04
Bromodichloromethane	**0.0695**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2405 - *** DEFAULT PREP ****										
LCS (B2C2405-BS1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2405 - *** DEFAULT PREP ****										
LCS (B2C2405-BS1) Continued				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*			
LCS Dup (B2C2405-BSD1)				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
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						
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
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 & 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
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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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2919 - *** DEFAULT PREP ****										
Blank (B2C2919-BLK1) Continued				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 Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2919 - *** DEFAULT PREP ****										
Blank (B2C2919-BLK1) Continued				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
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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2919 - *** DEFAULT PREP ****										
LCS (B2C2919-BS1) Continued				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
Surrogate: 4-Bromofluorobenzene	*0.0333*		*ug/L*	*0.0358*		*93.0*	*70-130*			
LCS Dup (B2C2919-BSD1)				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
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						
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
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 & 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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2922 - *** DEFAULT PREP ****										
Blank (B2C2922-BLK1) Continued				Prepared & 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 Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2922 - *** DEFAULT PREP ****										
Blank (B2C2922-BLK1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2922 - *** DEFAULT PREP ****										
Blank (B2C2922-BLK1) Continued				Prepared & 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 & Analyzed: 03/28/22						
Acetone	**0.0301**	0.020	ug/L	0.0238		127	70-130			
Benzene	**0.0285**	0.0030	ug/L	0.0319		89.1	70-130			
Benzyl chloride	**0.0362**	0.020	ug/L	0.0445		81.3	70-130			
Bromodichloromethane	**0.0752**	0.0025	ug/L	0.0670		112	70-130			
Bromoform	**0.110**	0.020	ug/L	0.103		107	70-130			
Bromomethane	**0.0436**	0.020	ug/L	0.0388		112	70-130			
2-Butanone (MEK)	**0.0331**	0.020	ug/L	0.0295		112	70-130			
Carbon Disulfide	**0.0318**	0.020	ug/L	0.0311		102	70-130			
Carbon Tetrachloride	**0.0746**	0.020	ug/L	0.0629		118	70-130			
Chlorobenzene	**0.0480**	0.020	ug/L	0.0460		104	70-130			
Chloroethane	**0.0296**	0.020	ug/L	0.0264		112	70-130			
Chloroform	**0.0496**	0.0040	ug/L	0.0488		102	70-130			
Chloromethane	**0.0249**	0.020	ug/L	0.0207		120	70-130			
Dibromochloromethane	**0.0837**	0.020	ug/L	0.0852		98.2	70-130			
1,2-Dibromoethane (EDB)	**0.0725**	0.020	ug/L	0.0768		94.3	70-130			
1,2-Dichlorobenzene	**0.0533**	0.020	ug/L	0.0601		88.6	70-130			
1,3-Dichlorobenzene	**0.0554**	0.020	ug/L	0.0601		92.2	70-130			
1,4-Dichlorobenzene	**0.0510**	0.020	ug/L	0.0601		84.8	70-130			
Dichlorodifluoromethane (R12)	**0.0384**	0.020	ug/L	0.0495		77.6	70-130			
1,1-Dichloroethane	**0.0432**	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
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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2922 - *** DEFAULT PREP ****										
LCS (B2C2922-BS1) Continued				Prepared & Analyzed: 03/28/22						
1,2,3-Trichloropropane	**0.0421**	0.020	ug/L	0.0603		69.8	70-130			QL-07
sec-Butylbenzene	**0.0324**	0.020	ug/L	0.0549		59.1	70-130			QL-07
Isopropylbenzene	**0.0353**	0.020	ug/L	0.0492		71.9	70-130			
n-Propylbenzene	**0.0330**	0.020	ug/L	0.0492		67.2	70-130			QL-07
4-Isopropyltoluene	**0.0316**	0.020	ug/L	0.0549		57.6	70-130			QL-07
Surrogate: 4-Bromofluorobenzene	*0.0319*		*ug/L*	*0.0358*		*89.0*	*70-130*			
LCS Dup (B2C2922-BSD1)				Prepared: 03/28/22 Analyzed: 03/29/22						
Acetone	**0.0244**	0.020	ug/L	0.0238		103	70-130	20.9	30	
Benzene	**0.0250**	0.0030	ug/L	0.0319		78.4	70-130	12.8	30	
Benzyl chloride	**0.0327**	0.020	ug/L	0.0445		73.5	70-130	10.1	30	
Bromodichloromethane	**0.0652**	0.0025	ug/L	0.0670		97.3	70-130	14.2	30	
Bromoform	**0.0964**	0.020	ug/L	0.103		93.3	70-130	13.2	30	
Bromomethane	**0.0363**	0.020	ug/L	0.0388		93.4	70-130	18.5	30	
2-Butanone (MEK)	**0.0282**	0.020	ug/L	0.0295		95.5	70-130	16.2	30	
Carbon Disulfide	**0.0270**	0.020	ug/L	0.0311		86.6	70-130	16.5	30	
Carbon Tetrachloride	**0.0662**	0.020	ug/L	0.0629		105	70-130	11.8	30	
Chlorobenzene	**0.0425**	0.020	ug/L	0.0460		92.3	70-130	12.2	30	
Chloroethane	**0.0245**	0.020	ug/L	0.0264		93.0	70-130	18.5	30	
Chloroform	**0.0431**	0.0040	ug/L	0.0488		88.3	70-130	13.9	30	
Chloromethane	**0.0198**	0.020	ug/L	0.0207		96.0	70-130	22.6	30	
Dibromochloromethane	**0.0745**	0.020	ug/L	0.0852		87.4	70-130	11.6	30	
1,2-Dibromoethane (EDB)	**0.0660**	0.020	ug/L	0.0768		85.9	70-130	9.32	30	
1,2-Dichlorobenzene	**0.0488**	0.020	ug/L	0.0601		81.2	70-130	8.72	30	
1,3-Dichlorobenzene	**0.0489**	0.020	ug/L	0.0601		81.4	70-130	12.4	30	
1,4-Dichlorobenzene	**0.0461**	0.020	ug/L	0.0601		76.6	70-130	10.2	30	
Dichlorodifluoromethane (R12)	**0.0324**	0.020	ug/L	0.0495		65.6	70-130	16.8	30	QL-03
1,1-Dichloroethane	**0.0370**	0.020	ug/L	0.0405		91.4	70-130	15.4	30	
1,2-Dichloroethane (EDC)	**0.0365**	0.0040	ug/L	0.0405		90.3	70-130	11.6	30	
cis-1,2-Dichloroethylene	**0.0347**	0.020	ug/L	0.0396		87.5	70-130	14.4	30	
1,1-Dichloroethylene	**0.0395**	0.020	ug/L	0.0396		99.5	70-130	18.4	30	
trans-1,2-Dichloroethylene	**0.0362**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2922 - *** DEFAULT PREP ****										
LCS Dup (B2C2922-BSD1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C2922 - *** DEFAULT PREP ****										
LCS Dup (B2C2922-BSD1) Continued				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	QL-07
Surrogate: 4-Bromofluorobenzene	*0.0345*		*ug/L*	*0.0358*		*96.4*	*70-130*			
*Batch B2C3024 - *** DEFAULT PREP ****										
Blank (B2C3024-BLK1)				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C3024 - *** DEFAULT PREP ****										
Blank (B2C3024-BLK1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C3024 - *** DEFAULT PREP ****										
Blank (B2C3024-BLK1) Continued				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							
Surrogate: 4-Bromofluorobenzene	*0.124*		*ug/L*	*0.143*		*86.5*	*70-130*			
LCS (B2C3024-BS1)				Prepared: 03/29/22 Analyzed: 03/30/22						
Acetone	**0.115**	0.020	ug/L	0.0950		121	70-130			
Benzene	**0.114**	0.0030	ug/L	0.128		89.3	70-130			
Benzyl chloride	**0.220**	0.020	ug/L	0.178		124	70-130			
Bromodichloromethane	**0.320**	0.0025	ug/L	0.268		119	70-130			
Bromoform	**0.537**	0.020	ug/L	0.413		130	70-130			
Bromomethane	**0.166**	0.020	ug/L	0.155		107	70-130			
2-Butanone (MEK)	**0.133**	0.020	ug/L	0.118		112	70-130			
Carbon Disulfide	**0.131**	0.020	ug/L	0.125		105	70-130			
Carbon Tetrachloride	**0.302**	0.020	ug/L	0.252		120	70-130			
Chlorobenzene	**0.212**	0.020	ug/L	0.184		115	70-130			
Chloroethane	**0.112**	0.020	ug/L	0.106		106	70-130			
Chloroform	**0.192**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C3024 - *** DEFAULT PREP ****										
LCS (B2C3024-BS1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2C3024 - *** DEFAULT PREP ****										
LCS (B2C3024-BS1) Continued				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
Surrogate: 4-Bromofluorobenzene	*0.124*		*ug/L*	*0.143*		*86.6*	*70-130*			
LCS Dup (B2C3024-BSD1)				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
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						
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
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
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						
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	

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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
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 & 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 Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0107 - *** DEFAULT PREP ****										
Blank (B2D0107-BLK1) Continued				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 Limits	RPD	RPD Limit	Notes
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0107 - *** DEFAULT PREP ****										
Blank (B2D0107-BLK1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0107 - *** DEFAULT PREP ****										
Blank (B2D0107-BLK1) Continued				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							
Surrogate: 4-Bromofluorobenzene	*0.0323*		*ug/L*	*0.0358*		*90.2*	*70-130*			
LCS (B2D0107-BS1)				Prepared & Analyzed: 03/31/22						
Acetone	**0.0245**	0.020	ug/L	0.0238		103	70-130			
Benzene	**0.0259**	0.0030	ug/L	0.0319		81.0	70-130			
Benzyl chloride	**0.0368**	0.020	ug/L	0.0445		82.6	70-130			
Bromodichloromethane	**0.0658**	0.0025	ug/L	0.0670		98.2	70-130			
Bromoform	**0.103**	0.020	ug/L	0.103		99.6	70-130			
Bromomethane	**0.0370**	0.020	ug/L	0.0388		95.3	70-130			
2-Butanone (MEK)	**0.0277**	0.020	ug/L	0.0295		93.8	70-130			
Carbon Disulfide	**0.0274**	0.020	ug/L	0.0311		87.9	70-130			
Carbon Tetrachloride	**0.0660**	0.020	ug/L	0.0629		105	70-130			
Chlorobenzene	**0.0462**	0.020	ug/L	0.0460		100	70-130			
Chloroethane	**0.0249**	0.020	ug/L	0.0264		94.5	70-130			
Chloroform	**0.0428**	0.0040	ug/L	0.0488		87.7	70-130			
Chloromethane	**0.0201**	0.020	ug/L	0.0207		97.4	70-130			
Dibromochloromethane	**0.0777**	0.020	ug/L	0.0852		91.2	70-130			
1,2-Dibromoethane (EDB)	**0.0684**	0.020	ug/L	0.0768		89.0	70-130			
1,2-Dichlorobenzene	**0.0569**	0.020	ug/L	0.0601		94.7	70-130			
1,3-Dichlorobenzene	**0.0577**	0.020	ug/L	0.0601		95.9	70-130			
1,4-Dichlorobenzene	**0.0559**	0.020	ug/L	0.0601		92.9	70-130			
Dichlorodifluoromethane (R12)	**0.0499**	0.020	ug/L	0.0495		101	70-130			
1,1-Dichloroethane	**0.0364**	0.020	ug/L	0.0405		90.0	70-130			
1,2-Dichloroethane (EDC)	**0.0355**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0107 - *** DEFAULT PREP ****										
LCS (B2D0107-BS1) Continued				Prepared & Analyzed: 03/31/22						
cis-1,2-Dichloroethylene	**0.0344**	0.020	ug/L	0.0396		86.8	70-130			
1,1-Dichloroethylene	**0.0389**	0.020	ug/L	0.0396		98.1	70-130			
trans-1,2-Dichloroethylene	**0.0355**	0.020	ug/L	0.0396		89.5	70-130			
1,2-Dichloropropane	**0.0440**	0.020	ug/L	0.0462		95.3	70-130			
trans-1,3-Dichloropropylene	**0.0412**	0.020	ug/L	0.0454		90.8	70-130			
cis-1,3-Dichloropropylene	**0.0413**	0.020	ug/L	0.0454		91.1	70-130			
Dichlorotetrafluoroethane	**0.0700**	0.020	ug/L	0.0699		100	70-130			
Ethylbenzene	**0.0407**	0.020	ug/L	0.0434		93.8	70-130			
4-Ethyltoluene	**0.0396**	0.020	ug/L	0.0492		80.5	70-130			
Hexachlorobutadiene	**0.0878**	0.020	ug/L	0.107		82.3	70-130			
2-Hexanone (MBK)	**0.0368**	0.020	ug/L	0.0410		89.8	70-130			
Isopropanol (IPA)	**0.0228**	0.20	ug/L	0.0216		105	70-130			
Methylene Chloride	**0.0348**	0.020	ug/L	0.0347		100	70-130			
4-Methyl-2-pentanone (MIBK)	**0.0392**	0.020	ug/L	0.0410		95.6	70-130			
Styrene	**0.0399**	0.020	ug/L	0.0426		93.6	70-130			
1,1,2,2-Tetrachloroethane	**0.0676**	0.020	ug/L	0.0687		98.5	70-130			
Tetrachloroethylene (PCE)	**0.0622**	0.010	ug/L	0.0679		91.7	70-130			
Toluene	**0.0334**	0.020	ug/L	0.0377		88.6	70-130			
1,2,4-Trichlorobenzene	**0.0660**	0.020	ug/L	0.0742		89.0	70-130			
1,1,2-Trichloroethane	**0.0494**	0.020	ug/L	0.0546		90.6	70-130			
1,1,1-Trichloroethane	**0.0475**	0.020	ug/L	0.0546		87.1	70-130			
Trichloroethylene (TCE)	**0.0493**	0.020	ug/L	0.0537		91.7	70-130			
Trichlorofluoromethane (R11)	**0.0588**	0.020	ug/L	0.0562		105	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0780**	0.020	ug/L	0.0766		102	70-130			
1,3,5-Trimethylbenzene	**0.0451**	0.020	ug/L	0.0492		91.8	70-130			
1,2,4-Trimethylbenzene	**0.0418**	0.020	ug/L	0.0492		85.1	70-130			
Vinyl acetate	**0.0335**	0.020	ug/L	0.0296		113	70-130			
Vinyl chloride	**0.0257**	0.020	ug/L	0.0256		101	70-130			
o-Xylene	**0.0416**	0.020	ug/L	0.0434		95.7	70-130			
m,p-Xylenes	**0.0875**	0.020	ug/L	0.0868		101	70-130			
1,2,3-Trichloropropane	**0.0475**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0107 - *** DEFAULT PREP ****										
LCS (B2D0107-BS1) Continued				Prepared & Analyzed: 03/31/22						
sec-Butylbenzene	**0.0480**	0.020	ug/L	0.0549		87.5	70-130			
Isopropylbenzene	**0.0427**	0.020	ug/L	0.0492		86.9	70-130			
n-Propylbenzene	**0.0412**	0.020	ug/L	0.0492		83.9	70-130			
4-Isopropyltoluene	**0.0501**	0.020	ug/L	0.0549		91.2	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0319*		*ug/L*	*0.0358*		*89.2*	*70-130*			
LCS Dup (B2D0107-BSD1)				Prepared: 03/31/22 Analyzed: 04/01/22						
Acetone	**0.0245**	0.020	ug/L	0.0238		103	70-130	0.0970	30	
Benzene	**0.0258**	0.0030	ug/L	0.0319		80.7	70-130	0.371	30	
Benzyl chloride	**0.0366**	0.020	ug/L	0.0445		82.2	70-130	0.423	30	
Bromodichloromethane	**0.0662**	0.0025	ug/L	0.0670		98.8	70-130	0.609	30	
Bromoform	**0.101**	0.020	ug/L	0.103		98.0	70-130	1.62	30	
Bromomethane	**0.0369**	0.020	ug/L	0.0388		95.1	70-130	0.210	30	
2-Butanone (MEK)	**0.0277**	0.020	ug/L	0.0295		94.0	70-130	0.213	30	
Carbon Disulfide	**0.0272**	0.020	ug/L	0.0311		87.5	70-130	0.456	30	
Carbon Tetrachloride	**0.0678**	0.020	ug/L	0.0629		108	70-130	2.73	30	
Chlorobenzene	**0.0464**	0.020	ug/L	0.0460		101	70-130	0.398	30	
Chloroethane	**0.0251**	0.020	ug/L	0.0264		95.3	70-130	0.843	30	
Chloroform	**0.0432**	0.0040	ug/L	0.0488		88.5	70-130	0.908	30	
Chloromethane	**0.0196**	0.020	ug/L	0.0207		94.9	70-130	2.60	30	
Dibromochloromethane	**0.0787**	0.020	ug/L	0.0852		92.4	70-130	1.31	30	
1,2-Dibromoethane (EDB)	**0.0688**	0.020	ug/L	0.0768		89.6	70-130	0.672	30	
1,2-Dichlorobenzene	**0.0582**	0.020	ug/L	0.0601		96.8	70-130	2.19	30	
1,3-Dichlorobenzene	**0.0588**	0.020	ug/L	0.0601		97.8	70-130	1.96	30	
1,4-Dichlorobenzene	**0.0566**	0.020	ug/L	0.0601		94.2	70-130	1.39	30	
Dichlorodifluoromethane (R12)	**0.0487**	0.020	ug/L	0.0495		98.5	70-130	2.41	30	
1,1-Dichloroethane	**0.0369**	0.020	ug/L	0.0405		91.1	70-130	1.21	30	
1,2-Dichloroethane (EDC)	**0.0357**	0.0040	ug/L	0.0405		88.2	70-130	0.683	30	
cis-1,2-Dichloroethylene	**0.0346**	0.020	ug/L	0.0396		87.3	70-130	0.574	30	
1,1-Dichloroethylene	**0.0388**	0.020	ug/L	0.0396		97.9	70-130	0.204	30	
trans-1,2-Dichloroethylene	**0.0355**	0.020	ug/L	0.0396		89.6	70-130	0.112	30	
1,2-Dichloropropane	**0.0445**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0107 - *** DEFAULT PREP ****										
LCS Dup (B2D0107-BSD1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0107 - *** DEFAULT PREP ****										
LCS Dup (B2D0107-BSD1) Continued				Prepared: 03/31/22 Analyzed: 04/01/22						
Surrogate: 4-Bromofluorobenzene	*0.0321*		*ug/L*	*0.0358*		*89.8*	*70-130*			
*Batch B2D0625 - *** DEFAULT PREP ****										
Blank (B2D0625-BLK1)				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
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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0625 - *** DEFAULT PREP ****										
Blank (B2D0625-BLK1) Continued				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							
Surrogate: 4-Bromofluorobenzene	*0.0274*		*ug/L*	*0.0358*		*76.6*	*70-130*			
LCS (B2D0625-BS1)				Prepared & Analyzed: 04/06/22						
Acetone	**0.0241**	0.020	ug/L	0.0238		102	70-130			
Benzene	**0.0231**	0.0030	ug/L	0.0319		72.4	70-130			
Benzyl chloride	**0.0317**	0.020	ug/L	0.0445		71.2	70-130			
Bromodichloromethane	**0.0634**	0.0025	ug/L	0.0670		94.6	70-130			
Bromoform	**0.0926**	0.020	ug/L	0.103		89.6	70-130			
Bromomethane	**0.0343**	0.020	ug/L	0.0388		88.4	70-130			
2-Butanone (MEK)	**0.0263**	0.020	ug/L	0.0295		89.2	70-130			
Carbon Disulfide	**0.0256**	0.020	ug/L	0.0311		82.1	70-130			
Carbon Tetrachloride	**0.0628**	0.020	ug/L	0.0629		99.8	70-130			
Chlorobenzene	**0.0409**	0.020	ug/L	0.0460		88.9	70-130			
Chloroethane	**0.0236**	0.020	ug/L	0.0264		89.4	70-130			
Chloroform	**0.0395**	0.0040	ug/L	0.0488		80.9	70-130			
Chloromethane	**0.0163**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0625 - *** DEFAULT PREP ****										
LCS (B2D0625-BS1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0625 - *** DEFAULT PREP ****										
LCS (B2D0625-BS1) Continued				Prepared & Analyzed: 04/06/22						
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0729**	0.020	ug/L	0.0766		95.1	70-130			
1,3,5-Trimethylbenzene	**0.0399**	0.020	ug/L	0.0492		81.1	70-130			
1,2,4-Trimethylbenzene	**0.0377**	0.020	ug/L	0.0492		76.6	70-130			
Vinyl acetate	**0.0326**	0.020	ug/L	0.0296		110	70-130			
Vinyl chloride	**0.0248**	0.020	ug/L	0.0256		96.9	70-130			
o-Xylene	**0.0370**	0.020	ug/L	0.0434		85.3	70-130			
m,p-Xylenes	**0.0751**	0.020	ug/L	0.0868		86.5	70-130			
1,2,3-Trichloropropane	**0.0419**	0.020	ug/L	0.0603		69.5	70-130			QL-02
sec-Butylbenzene	**0.0444**	0.020	ug/L	0.0549		80.8	70-130			
Isopropylbenzene	**0.0382**	0.020	ug/L	0.0492		77.7	70-130			
n-Propylbenzene	**0.0376**	0.020	ug/L	0.0492		76.4	70-130			
4-Isopropyltoluene	**0.0453**	0.020	ug/L	0.0549		82.5	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0336*		*ug/L*	*0.0358*		*94.0*	*70-130*			
LCS Dup (B2D0625-BSD1)				Prepared & Analyzed: 04/06/22						
Acetone	**0.0241**	0.020	ug/L	0.0238		102	70-130	0.00	30	
Benzene	**0.0230**	0.0030	ug/L	0.0319		71.9	70-130	0.693	30	
Benzyl chloride	**0.0307**	0.020	ug/L	0.0445		68.8	70-130	3.32	30	QL-03
Bromodichloromethane	**0.0635**	0.0025	ug/L	0.0670		94.8	70-130	0.211	30	
Bromoform	**0.0927**	0.020	ug/L	0.103		89.7	70-130	0.112	30	
Bromomethane	**0.0360**	0.020	ug/L	0.0388		92.7	70-130	4.75	30	
2-Butanone (MEK)	**0.0256**	0.020	ug/L	0.0295		86.8	70-130	2.73	30	
Carbon Disulfide	**0.0252**	0.020	ug/L	0.0311		80.9	70-130	1.47	30	
Carbon Tetrachloride	**0.0644**	0.020	ug/L	0.0629		102	70-130	2.47	30	
Chlorobenzene	**0.0407**	0.020	ug/L	0.0460		88.4	70-130	0.564	30	
Chloroethane	**0.0235**	0.020	ug/L	0.0264		89.0	70-130	0.448	30	
Chloroform	**0.0395**	0.0040	ug/L	0.0488		80.8	70-130	0.124	30	
Chloromethane	**0.0169**	0.020	ug/L	0.0207		81.7	70-130	3.74	30	
Dibromochloromethane	**0.0737**	0.020	ug/L	0.0852		86.5	70-130	0.576	30	
1,2-Dibromoethane (EDB)	**0.0635**	0.020	ug/L	0.0768		82.6	70-130	1.56	30	
1,2-Dichlorobenzene	**0.0503**	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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0625 - *** DEFAULT PREP ****										
LCS Dup (B2D0625-BSD1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D0625 - *** DEFAULT PREP ****										
LCS Dup (B2D0625-BSD1) Continued				Prepared & Analyzed: 04/06/22						
Vinyl acetate	**0.0318**	0.020	ug/L	0.0296		107	70-130	2.63	30	
Vinyl chloride	**0.0252**	0.020	ug/L	0.0256		98.7	70-130	1.84	30	
o-Xylene	**0.0357**	0.020	ug/L	0.0434		82.3	70-130	3.58	30	
m,p-Xylenes	**0.0724**	0.020	ug/L	0.0868		83.4	70-130	3.71	30	
1,2,3-Trichloropropane	**0.0424**	0.020	ug/L	0.0603		70.3	70-130	1.14	30	
sec-Butylbenzene	**0.0433**	0.020	ug/L	0.0549		78.9	70-130	2.38	30	
Isopropylbenzene	**0.0386**	0.020	ug/L	0.0492		78.5	70-130	1.02	30	
n-Propylbenzene	**0.0366**	0.020	ug/L	0.0492		74.5	70-130	2.52	30	
4-Isopropyltoluene	**0.0450**	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 & 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 & Analyzed: 03/18/22						
Methane	**2.55**	0.10	% by Volume	2.25		113	70-130			
Oxygen	**2.12**	0.10	% by Volume	2.00		106	70-130			
Carbon Dioxide	**8.60**	0.10	% by Volume	7.50		115	70-130			
LCS Dup (B2C1801-BSD1)				Prepared & Analyzed: 03/18/22						
Methane	**2.61**	0.10	% by Volume	2.25		116	70-130	2.32	30	
Oxygen	**2.13**	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
Fixed Gases by TCD - Quality Control										
*Batch B2C1801 - *** DEFAULT PREP ****										
LCS Dup (B2C1801-BSD1) Continued				Prepared & Analyzed: 03/18/22						
Carbon Dioxide	**8.74**	0.10	% by Volume	7.50		117	70-130	1.67	30	
Duplicate (B2C1801-DUP1)			**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
*Batch B2C2122 - *** DEFAULT PREP ****										
Blank (B2C2122-BLK1)				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							
LCS (B2C2122-BS1)				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			
LCS Dup (B2C2122-BSD1)				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	
Duplicate (B2C2122-DUP1)			**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
Fixed Gases by TCD - Quality Control										
*Batch B2C2122 - *** DEFAULT PREP ****										
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**23.9**	0.20	% by Volume		22.3			6.60	30	
Carbon Dioxide	**<0.20**	0.20	% by Volume		<0.20				30	
*Batch B2C2216 - *** DEFAULT PREP ****										
Blank (B2C2216-BLK1)				Prepared & Analyzed: 03/22/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2C2216-BS1)				Prepared & Analyzed: 03/22/22						
Methane	**2.58**	0.10	% by Volume	2.25		115	70-130			
Oxygen	**2.14**	0.10	% by Volume	2.00		107	70-130			
Carbon Dioxide	**8.71**	0.10	% by Volume	7.50		116	70-130			
LCS Dup (B2C2216-BSD1)				Prepared & Analyzed: 03/22/22						
Methane	**2.61**	0.10	% by Volume	2.25		116	70-130	1.12	30	
Oxygen	**2.14**	0.10	% by Volume	2.00		107	70-130	0.187	30	
Carbon Dioxide	**8.77**	0.10	% by Volume	7.50		117	70-130	0.698	30	
Duplicate (B2C2216-DUP1)				**Source: 2C14020-34**	Prepared & Analyzed: 03/22/22					
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**21.2**	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
Fixed Gases by TCD - Quality Control										
*Batch B2C2216 - *** DEFAULT PREP ****										
Duplicate (B2C2216-DUP1) Continued			**Source: 2C14020-34**	Prepared & Analyzed: 03/22/22						
Carbon Dioxide	**0.942**	0.20	% by Volume		0.920			2.36	30	
*Batch B2C2323 - *** DEFAULT PREP ****										
Blank (B2C2323-BLK1)				Prepared & Analyzed: 03/23/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2C2323-BS1)				Prepared & Analyzed: 03/23/22						
Methane	**2.66**	0.10	% by Volume	2.25		118	70-130			
Oxygen	**2.20**	0.10	% by Volume	2.00		110	70-130			
Carbon Dioxide	**8.94**	0.10	% by Volume	7.50		119	70-130			
LCS Dup (B2C2323-BSD1)				Prepared & Analyzed: 03/23/22						
Methane	**2.63**	0.10	% by Volume	2.25		117	70-130	1.17	30	
Oxygen	**2.18**	0.10	% by Volume	2.00		109	70-130	0.685	30	
Carbon Dioxide	**8.87**	0.10	% by Volume	7.50		118	70-130	0.764	30	
Duplicate (B2C2323-DUP1)			**Source: 2C14020-48**	Prepared & Analyzed: 03/23/22						
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**19.8**	0.20	% by Volume		20.4			2.81	30	
Carbon Dioxide	**2.07**	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
Fixed Gases by TCD - Quality Control										
*Batch B2C2401 - *** DEFAULT PREP ****										
Blank (B2C2401-BLK1)				Prepared & Analyzed: 03/24/22						
Methane	<0.10	0.10	% by Volume							
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2C2401-BS1)				Prepared & Analyzed: 03/24/22						
Methane	**2.62**	0.10	% by Volume	2.25		117	70-130			
Oxygen	**2.18**	0.10	% by Volume	2.00		109	70-130			
Carbon Dioxide	**8.83**	0.10	% by Volume	7.50		118	70-130			
LCS Dup (B2C2401-BSD1)				Prepared & Analyzed: 03/24/22						
Methane	**2.60**	0.10	% by Volume	2.25		116	70-130	0.804	30	
Oxygen	**2.14**	0.10	% by Volume	2.00		107	70-130	2.13	30	
Carbon Dioxide	**8.74**	0.10	% by Volume	7.50		117	70-130	1.02	30	
Duplicate (B2C2401-DUP1)				**Source: 2C14020-61**	Prepared & Analyzed: 03/24/22					
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**20.2**	0.20	% by Volume		20.1			0.596	30	
Carbon Dioxide	**<0.20**	0.20	% by Volume		<0.20				30	
*Batch B2C2501 - *** DEFAULT PREP ****										
Blank (B2C2501-BLK1)				Prepared & Analyzed: 03/25/22						
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
Fixed Gases by TCD - Quality Control										
*Batch B2C2501 - *** DEFAULT PREP ****										
Blank (B2C2501-BLK1) Continued				Prepared & Analyzed: 03/25/22						
Oxygen	<0.10	0.10	% by Volume							
Carbon Dioxide	<0.10	0.10	% by Volume							
LCS (B2C2501-BS1)				Prepared & Analyzed: 03/25/22						
Methane	**2.61**	0.10	% by Volume	2.25		116	70-130			
Oxygen	**2.16**	0.10	% by Volume	2.00		108	70-130			
Carbon Dioxide	**8.75**	0.10	% by Volume	7.50		117	70-130			
LCS Dup (B2C2501-BSD1)				Prepared & Analyzed: 03/25/22						
Methane	**2.58**	0.10	% by Volume	2.25		115	70-130	1.04	30	
Oxygen	**2.15**	0.10	% by Volume	2.00		107	70-130	0.742	30	
Carbon Dioxide	**8.72**	0.10	% by Volume	7.50		116	70-130	0.309	30	
Duplicate (B2C2501-DUP1)				**Source: 2C14020-72**	Prepared & Analyzed: 03/25/22					
Methane	**<0.20**	0.20	% by Volume		<0.20				30	
Oxygen	**19.5**	0.20	% by Volume		20.8			6.53	30	
Carbon Dioxide	**<0.20**	0.20	% by Volume		<0.20				30	

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

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.

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:

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

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Vinyl Chloride	TPH-M	TPH-D (Extracted)								Special Instructions
SVP-105-5	2114020 -01	3/14/22	804	Soilgas	1	X	X	X								
SVP-105-10	-02		809		1	X	X	X								
SVP-105-10-Dup	-03		809		1	X	X	X								
SVP-106-5	-04		824		1	X	X	X								
SVP-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

REVIEWED
Date 3/14/22 Time 17:13
TAT 10 Days Sign:

A.A. Project No.: MA18X7343 / 2114020

Relinquished by	Date	Time	Received by
Kris Barreca	3/14/22	1510	
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by

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

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

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Special Instructions
SVM-13-15	2414020 -16	3/14/22	1026	Soilgas	1	
SVM-13-22	-17		1031		1	
SVM-14R-8	-18		1050		1	
SVM-14R-16	-19		1050		1	
SVM-14R-22	-20		1050		1	

'22 MAR 14 1

For Laboratory Use

REVIEWED
Date 3/14/22 Time 1713
TAT 10 Days Sign:

A.A. Project No.: MB187343/ 2414020

Relinquished by	Date	Time	Received by
Kris Barreca	3/14/22	310pm	
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by

Note: Sample(s) sent 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.

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:
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

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Fixed gases	TO-3	TO-15	Special Instructions
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 DUP	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	

For Laboratory Use

REVIEWED
Date 3/16/22 Time 16:49
TAT 10 Days Sign:

A.A. Project No.: MB15343/2014020

Relinquished by	Date	Time	Received by
Kris Barreca	3/15/22	1427	
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by

22 MAR 15

Note: 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.

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

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

A.A. COC No.: 2407
20203568
Page 1 of 1

Client: Jacob | Project Name / No.: Norwalk | Sampler's Name: Kris B.
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

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Fixed Gases	TO-3	TO-15	Special Instructions
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

For Laboratory Use

RECEIVED
Date 3/16/22 Time 16:49
TAT 10 Days Sign:

	Date	Time	
Relinquished by: Kris Barreca	3/15/22	1427	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:

A.A. Project No.: M13813243 / 2014020

By signing this form, 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.: 24414
20203570
Page 1 of 1

Client: Jacob | Project Name / No.: Norwalk | Sampler's Name: Kris B.
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

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Fixed gases	TO-3	TO-15	Special Instructions
SVM-25-5	2014020 - 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	

For Laboratory Use

RECEIVED
Date 3/16/22 Time 1614
TAT 10 Days Sign:

A.A. Project No.: MB18734B/2014020

	Date	Time	
Relinquished by	3-16-22	1230	Received by
Relinquished by	3/16/22	1400	Received by
Relinquished by	Date	Time	Received by

AMERICAN ANALYTICS CHAIN-OF-CUSTODY RECORD

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

A.A. COC No.: 24416
20203569
Page 2 of

Client: Jacob | Project Name / No.: Norwalk | Sampler's Name: Kris B.
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

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	Fixed gases	TO-3	TO-15	Special Instruction
SVM-15-15	2014020 -63	3/16/22	1045	Vapor	1	X	X	X	
SVM-15-22	64		1045		1	X	X	X	
Ambient Air	65		1034		1	X	X	X	
SVM-16-7	66		1124		1	X	X	X	
SVM-16-16	67		1124		1	X	X	X	
SVM-16-22	68		1140		1	X	X	X	
SVM-5-5	69		1157		1	X	X	X	
SVM-5-15	70		1200		1	X	X	X	
SVM-8-5	71		1155		1	X	X	X	
SVM-8-15	72		1149		1	X	X	X	
									22MAR16

For Laboratory Use

REVIEWED
Date 3/16/22 Time 1654 9
TAT 10 Days Sign:

A.A. Project No.: MS197343 / 2014020

	Relinquished by	Date	Time	Received by
		3-16-22	1230	
		3/16/22	1400	
		Date	Time	Received by

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

AMERICAN ANALYTICS

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

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 Analytics.

Sincerely,

Allen Aminian

QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

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

Sample ID	Laboratory ID	Matrix	TAT	Date Sampled	Date Received
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

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
Fixed Gases by TCD								
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

Date Sampled:	04/12/22	04/12/22	
Date Prepared:	04/13/22	04/13/22	
Date Analyzed:	04/13/22	04/13/22	
AA ID No:	2D12011-01	2D12011-02	
Client ID No:	SVM-13-15	SVM-26-5	
Matrix:	Vapor	Vapor	
Dilution Factor:	1	1	MRL
TO-3 (TO-3)			
Gasoline Range Organics (GRO)	<0.50	<0.50	0.50
Surrogates			**%REC Limits**
4-Bromofluorobenzene	86%	83%	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: MB187344
Date Received: 04/12/22
Date Reported: 04/21/22
Units: ug/L

Date Sampled:	04/12/22	04/12/22	
Date Prepared:	04/13/22	04/13/22	
Date Analyzed:	04/13/22	04/13/22	
AA ID No:	2D12011-01	2D12011-02	
Client ID No:	SVM-13-15	SVM-26-5	
Matrix:	Vapor	Vapor	
Dilution Factor:	1	1	MRL
TO-15 (Mid Level) (TO-15)			
Acetone	<0.020	<0.020	0.020
Allyl chloride	<0.020	<0.020	0.020
tert-Amyl-Methyl Ether (TAME)	<0.020	<0.020	0.020
Benzene	<0.0030	<0.0030	0.0030
Benzyl chloride	<0.020	<0.020	0.020
Bromodichloromethane	<0.0025	<0.0025	0.0025
Bromoform	<0.020	<0.020	0.020
Bromomethane	<0.020	<0.020	0.020
1,3-Butadiene	<0.020	<0.020	0.020
2-Butanone (MEK)	<0.020	<0.020	0.020
tert-Butyl Alcohol (TBA)	<2.0	<2.0	2.0
Carbon Disulfide	<0.020	<0.020	0.020
Carbon Tetrachloride	<0.020	<0.020	0.020
Chlorobenzene	<0.020	<0.020	0.020
Chloroethane	<0.020	<0.020	0.020
Chloroform	<0.0040	<0.0040	0.0040
Chloromethane	<0.020	<0.020	0.020
Cyclohexane	<0.020	<0.020	0.020
Dibromochloromethane	<0.020	<0.020	0.020
1,2-Dibromoethane (EDB)	<0.020	<0.020	0.020
1,2-Dichlorobenzene	<0.020	<0.020	0.020
1,3-Dichlorobenzene	<0.020	<0.020	0.020
1,4-Dichlorobenzene	<0.020	<0.020	0.020
Dichlorodifluoromethane (R12)	<0.020	<0.020	0.020
1,1-Dichloroethane	<0.020	<0.020	0.020
1,2-Dichloroethane (EDC)	<0.0040	<0.0040	0.0040
cis-1,2-Dichloroethylene	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

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

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

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

1,1-Dichloroethylene	<0.020	<0.020	0.020
trans-1,2-Dichloroethylene	<0.020	<0.020	0.020
1,2-Dichloropropane	<0.020	<0.020	0.020
trans-1,3-Dichloropropylene	<0.020	<0.020	0.020
cis-1,3-Dichloropropylene	<0.020	<0.020	0.020
Dichlorotetrafluoroethane	<0.020	<0.020	0.020
Diisopropyl ether (DIPE)	<0.020	<0.020	0.020
1,4-Dioxane	<0.020	<0.020	0.020
Ethanol	<0.020	<0.020	0.020
Ethyl Acetate	<0.020	<0.020	0.020
Ethylbenzene	<0.020	<0.020	0.020
Ethyl-tert-Butyl Ether (ETBE)	<0.020	<0.020	0.020
4-Ethyltoluene	<0.020	<0.020	0.020
Heptane	<0.020	<0.020	0.020
Hexachlorobutadiene	<0.020	<0.020	0.020
n-Hexane	<0.020	<0.020	0.020
2-Hexanone (MBK)	<0.020	<0.020	0.020
Isopropanol (IPA)	<0.20	<0.20	0.20
Methyl-tert-Butyl Ether (MTBE)	<0.020	<0.020	0.020
Methylene Chloride	<0.020	<0.020	0.020
4-Methyl-2-pentanone (MIBK)	<0.020	<0.020	0.020
Naphthalene	<0.0030	<0.0030	0.0030
Propylene	<0.020	<0.020	0.020
Styrene	<0.020	<0.020	0.020
1,1,2,2-Tetrachloroethane	<0.020	<0.020	0.020
Tetrachloroethylene (PCE)	<0.010	<0.010	0.010
Tetrahydrofuran (THF)	<0.020	<0.020	0.020

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

Client: CH2M Hill, Inc.
Project No: 693142
Project Name: KMEP Norwalk Biosparge Startup
Method: VOCs by GCMS EPA TO-15 (Mid Level)

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

Date Sampled:	04/12/22	04/12/22	
Date Prepared:	04/13/22	04/13/22	
Date Analyzed:	04/13/22	04/13/22	
AA ID No:	2D12011-01	2D12011-02	
Client ID No:	SVM-13-15	SVM-26-5	
Matrix:	Vapor	Vapor	
Dilution Factor:	1	1	MRL
TO-15 (Mid Level) (TO-15) (continued)			
Toluene	<0.020	<0.020	0.020
1,2,4-Trichlorobenzene	<0.020	<0.020	0.020
1,1,2-Trichloroethane	<0.020	<0.020	0.020
1,1,1-Trichloroethane	<0.020	<0.020	0.020
Trichloroethylene (TCE)	<0.020	<0.020	0.020
Trichlorofluoromethane (R11)	<0.020	<0.020	0.020
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	<0.020	<0.020	0.020
1,3,5-Trimethylbenzene	<0.020	<0.020	0.020
1,2,4-Trimethylbenzene	<0.020	<0.020	0.020
2,2,4-Trimethylpentane	<0.020	<0.020	0.020
Vinyl acetate	<0.020	<0.020	0.020
Vinyl bromide	<0.020	<0.020	0.020
Vinyl chloride	<0.020	<0.020	0.020
o-Xylene	<0.020	<0.020	0.020
m,p-Xylenes	<0.020	<0.020	0.020
1,2,3-Trichloropropane	<0.020	<0.020	0.020
sec-Butylbenzene	<0.020	<0.020	0.020
Isopropylbenzene	<0.020	<0.020	0.020
n-Propylbenzene	<0.020	<0.020	0.020
4-Isopropyltoluene	<0.020	<0.020	0.020
n-Butylbenzene	<0.020	<0.020	0.020
Surrogates			**%REC Limits**
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

Date Sampled:	04/12/22	04/12/22	
Date Prepared:	04/14/22	04/14/22	
Date Analyzed:	04/14/22	04/14/22	
AA ID No:	2D12011-01	2D12011-02	
Client ID No:	SVM-13-15	SVM-26-5	
Matrix:	Vapor	Vapor	
Dilution Factor:	2	2	MRL
Fixed Gases (ASTM D1946M)			
Methane	<0.20	<0.20	0.10
Oxygen	**19**	**17**	0.10
Carbon Dioxide	**0.56**	**1.7**	0.10

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

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
VOCs by EPA TO-3 - Quality Control										
*Batch B2D1505 - *** DEFAULT PREP ****										
Blank (B2D1505-BLK1)				Prepared & Analyzed: 04/13/22						
Gasoline Range Organics (GRO)	<0.50	0.50	ug/L							
Surrogate: 4-Bromofluorobenzene	*0.0288*		*ug/L*	*0.0358*		*80.6*	*70-130*			
LCS (B2D1505-BS1)				Prepared & Analyzed: 04/13/22						
Gasoline Range Organics (GRO)	**0.830**	0.50	ug/L	0.802		104	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0304*		*ug/L*	*0.0358*		*85.0*	*70-130*			
LCS Dup (B2D1505-BSD1)				Prepared & Analyzed: 04/13/22						
Gasoline Range Organics (GRO)	**0.833**	0.50	ug/L	0.802		104	70-130	0.325	30	
Surrogate: 4-Bromofluorobenzene	*0.0309*		*ug/L*	*0.0358*		*86.4*	*70-130*			
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D1412 - *** DEFAULT PREP ****										
Blank (B2D1412-BLK1)				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D1412 - *** DEFAULT PREP ****										
Blank (B2D1412-BLK1) Continued				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
VOCs by GCMS EPA TO-15 (Mid Level) - Quality Control										
*Batch B2D1412 - *** DEFAULT PREP ****										
Blank (B2D1412-BLK1) Continued				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*			
LCS (B2D1412-BS1)				Prepared & Analyzed: 04/13/22						
Acetone	**0.0249**	0.020	ug/L	0.0238		105	70-130			
Benzene	**0.0258**	0.0030	ug/L	0.0319		80.8	70-130			
Benzyl chloride	**0.0482**	0.020	ug/L	0.0445		108	70-130			
Bromodichloromethane	**0.0726**	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

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

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

LCS (B2D1412-BS1) Continued — Prepared & Analyzed: 04/13/22

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

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

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

LCS Dup (B2D1412-BSD1) Continued — Prepared & Analyzed: 04/13/22

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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
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	**0.0523**	0.020	ug/L	0.0546		95.9	70-130	0.313	30	
1,1,1-Trichloroethane	**0.0491**	0.020	ug/L	0.0546		90.0	70-130	0.893	30	
Trichloroethylene (TCE)	**0.0543**	0.020	ug/L	0.0537		101	70-130	0.395	30	
Trichlorofluoromethane (R11)	**0.0649**	0.020	ug/L	0.0562		116	70-130	2.63	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (R113)	**0.0854**	0.020	ug/L	0.0766		111	70-130	2.09	30	
1,3,5-Trimethylbenzene	**0.0529**	0.020	ug/L	0.0492		108	70-130	0.372	30	
1,2,4-Trimethylbenzene	**0.0504**	0.020	ug/L	0.0492		102	70-130	1.18	30	
Vinyl acetate	**0.0358**	0.020	ug/L	0.0296		121	70-130	0.197	30	
Vinyl chloride	**0.0268**	0.020	ug/L	0.0256		105	70-130	2.41	30	
o-Xylene	**0.0473**	0.020	ug/L	0.0434		109	70-130	1.76	30	
m,p-Xylenes	**0.0940**	0.020	ug/L	0.0868		108	70-130	1.44	30	
1,2,3-Trichloropropane	**0.0517**	0.020	ug/L	0.0603		85.7	70-130	5.52	30	
sec-Butylbenzene	**0.0478**	0.020	ug/L	0.0549		87.1	70-130	2.32	30	
Isopropylbenzene	**0.0447**	0.020	ug/L	0.0492		91.0	70-130	0.772	30	
n-Propylbenzene	**0.0423**	0.020	ug/L	0.0492		86.1	70-130	1.64	30	
4-Isopropyltoluene	**0.0474**	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	**2.64**	0.10	% by Volume	2.25		117	70-130			

Allen Aminian
QA/QC Manager

LABORATORY ANALYSIS RESULTS

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

AA Project No: 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
Fixed Gases by TCD - Quality Control										
*Batch B2D1405 - *** DEFAULT PREP ****										
LCS (B2D1405-BS1) Continued				Prepared & Analyzed: 04/14/22						
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			
LCS Dup (B2D1405-BSD1)				Prepared & Analyzed: 04/14/22						
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	
Duplicate (B2D1405-DUP1)				**Source: 2D12011-02**	Prepared & Analyzed: 04/14/22					
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.	**AA Project No:**	MB187344
Project No:	693142	**Date Received:**	04/12/22
Project Name:	KMEP Norwalk Biosparge Startup	**Date Reported:**	04/21/22

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.

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.: 24528
20203756
Page 1 of 1

Client: Jacobs	**Project Name / No.:** Norwalk	**Sampler's Name:** Juan Rodriguez	
Project Manager: Nils	**Site Address:** 15306 Norwalk blvd	**Sampler's Signature:**	
Phone:	**City:** Norwalk	**P.O. No.:**	
Fax:	**State & Zip:** ca	**Quote No.:**	

TAT Turnaround Codes **

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

ANALYSIS REQUESTED (Test Name)

Please enter the TAT Turnaround Codes ** below

Client I.D.	A.A. I.D.	Date	Time	Sample Matrix	No. of Cont	TO15	TO3	fixed gases							Special Instructions
SUM-13-15	2D12011-01	4/12/22	1248	sumo	1	X	X	X							
SUM-26-5	-02		1318	↓	1	X	X	X							
															'22 APR 12 17:1

For Laboratory Use

REVIEWED
Date 4/12/22 Time 18:00
TAT 3 Days Sign:

A.A. Project No.: MB45734/2D12011

Relinquished by	Date	Time	Received by
	4/12/22	17 11	
Relinquished by	Date	Time	Received by
Relinquished by	Date	Time	Received by

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