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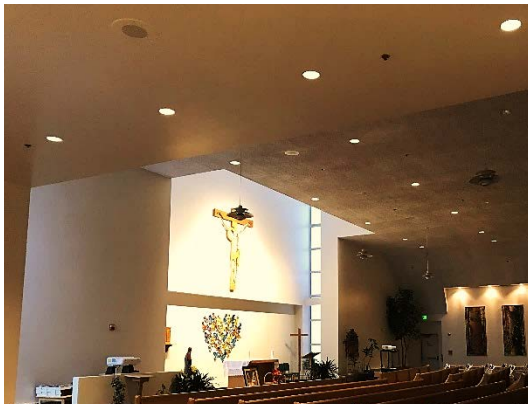
ANNUAL GROUNDWATER MONITORING AND 2018 VAPOR INTRUSION REPORT

Bentley Mall East Satellite

FAIRBANKS, ALASKA



SHANNON & WILSON

July 2019

Shannon & Wilson No: 101926-006

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The Krausz Companies, Inc.
44 Montgomery Street,
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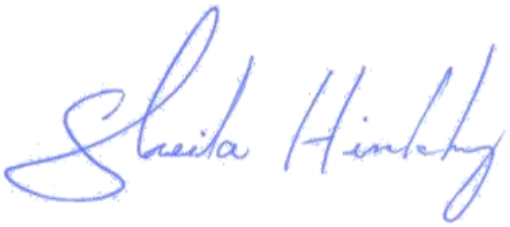
Attn: Mr. David Pyle

RE: ANNUAL GROUNDWATER MONITORING AND 2018 VAPOR INTRUSION REPORT, BENTLEY MALL EAST SATELLITE , FAIRBANKS, ALASKA

Shannon & Wilson participated in this project as a consultant to The Krausz Companies, Inc. Our scope of services was specified in our *Annual Groundwater Monitoring and 3-Year Vapor Intrusion Evaluation Work Plan* dated October 29, 2018, along with our proposals and cost estimates dated October 03, 2018 and January 22, 2019. Our services are provided under Master Services Agreement Number KCI-2016 and the January 22, 2019 proposal task order signed by you on March 14, 2019.

This report was prepared and reviewed by:



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ACRONYMS

°C	degrees Celsius
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
bgs	below ground surface
BIQ	Building Inventory and Indoor Air Sampling Questionnaire
BMES	Bentley Mall East Satellite
CCV	continuing calibration verification
CUL	cleanup level
COPC	contaminant of potential concern
COC	chain of custody
CSM	conceptual site model
1,2-DCA	1,2-Dichloroethane
1,2-DCE	1,2-dichlorethene
DL	detection limit
DQO	data quality objective
EPA	Environmental Protection Agency
ERG	Environmental Resource Group
Eurofins	eurofins Air Toxics, Inc.
FNSB	Fairbanks North Star Borough
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LDRC	Laboratory Data-Review Checklist
LOD	limit of detection
LOQ	limit of quantitation
MS	matrix spike
MSD	matrix spike duplicate
µg/L	microgram per liter
µg/m^3	microgram per cubic meter
NRC	NRC Alaska, LLC
PAN	parcel account number
PCE	tetrachloroethene
QA	quality assurance
QC	quality control
RPD	relative percent difference
SGS	SGS North America, Inc.
SVE	soil-vapor extraction
TCE	trichloroethene
1,2,3-TCP	1,2,3-trichloropropane
USGS	United States Geological Survey
VI	vapor intrusion
VOC	volatile organic compound
Work Plan	*Annual Groundwater Monitoring and 3-Year Vapor Intrusion Evaluation Work Plan*

1 INTRODUCTION

This report summarizes our Fall 2018 field efforts associated with the Bentley Mall East Satellite (BMES) building, located at 20 College Road in Fairbanks, Alaska (Figure 1). The BMES building is located in the southeast corner of the Bentley Mall property (parcel account number [PAN] 93181); it is listed by the Alaska Department of Environmental Conservation (ADEC) as a contaminated site (ADEC File 102.38.122), as a result of chlorinated-solvent contamination having been detected in soil and groundwater at the site. Chlorinated solvents are present in the groundwater extending west through the Charles Slater residential subdivision.

Shannon & Wilson prepared this report in compliance with ADEC regulations Title 18 Chapter 75 of the Alaska Administrative Code (18 AAC 75.335) and applicable ADEC guidance.

1.1 Project Objectives

The overall study goal was to evaluate groundwater quality in the area downgradient (west) of the BMES building and assess the potential for vapor intrusion (VI) into homes and buildings within the affected area. Our objectives were to collect and analyze groundwater and indoor-air samples.

1.2 Scope of Services

Our scope of services included implementing our *Annual Groundwater Monitoring and 3-Year Vapor Intrusion Evaluation Work Plan* (Work Plan) and preparing this report. Prior to field activities in 2018, the services described in the Work Plan were verbally approved by the ADEC's Project Manager, James Fish. The October 29, 2018 Work Plan was officially approved by the ADEC on December 19, 2018.

Field activities included:

- Conducting a groundwater-elevation survey at 13 monitoring wells.
- Collecting analytical groundwater samples from the 13 existing monitoring wells.
- Collecting follow-up indoor-air samples from two private properties within the groundwater plume extent, where October 2017 analytical concentrations exceeded ADEC Target Levels for chloroform.

This report includes a summary of field activities, analytical laboratory results, conclusions, and recommendations relevant to future management of the site. We have updated the

conceptual site model (CSM) presented in the work plan and provide the graphic form in Appendix A.

The authorized scope of services was based on the Work Plan. Our scope of services did not include:

- Performing an audit for regulatory compliance.
- Evaluating the presence of contaminants or naturally occurring materials, other than those for which our analyses were performed.

If a service is not specifically indicated in this report, do not assume that it was performed.

2 SITE DESCRIPTION AND PROJECT SUMMARY

Below is a description of the site and a summary of historical evaluations through the 2018 field activities.

2.1 Site Description

The BMES building is located at 20 College Road in Fairbanks, Alaska, situated on the southeast corner of the Bentley Mall property (parcel 93181; Figure 1). Tetrachloroethene (PCE) and trichloroethene (TCE) have been detected in the groundwater at and downgradient of the BMES property. The ADEC considers the BMES site to be a source of this contamination, although other suspected sources have also been identified, including VIP Cleaners directly upgradient from BMES building.

Exhibit 2-1: Various drums and containers at VIP Cleaners. Note the two 55-gallon PCE drums. The BMES upgradient monitoring well MW-1R is shown in the right foreground.

The groundwater-contaminant plume extends west of the site into the Charles Slater residential subdivision; public water and sewer service serve this area. Based on previous site-specific groundwater investigations and current survey data, groundwater flow direction is to the west and northwest.

Our study boundaries comprise the suspected source area in the vicinity of the BMES structure, and the groundwater-contaminant plume extending west of the site into the Charles Slater residential subdivision.

2.2 Project Summary

The BMES site was added to the ADEC's Contaminated Sites Database in April 2003 following detections of PCE and TCE in soil and groundwater samples collected as part of a Phase II Environmental Site Assessment. The Phase II report noted a dry cleaner in operation at the BMES building for several years in the 1980s; however, the investigation was unable to pinpoint the PCE and TCE source area due to physical proximity to an upgradient dry cleaning facility known to use products containing PCE. ERG was contracted to conduct additional site characterization activities and an August 2003 soil-gas survey indicated the historical dry-cleaning operation at the BMES building appeared to be the source of PCE and TCE at the BMES property. The results of the survey also indicated the wastewater line from the BMES building may be a preferential pathway of PCE.

In April 2005, indoor-air samples were collected by ERG from the BMES building, McDonalds, and Wells Fargo Bank; PCE and TCE were detected above target levels at the BMES building and Wells Fargo at that time. Thirteen monitoring wells (MW-1 to MW-13) were installed and sampled in fall 2005; sample results suggested a PCE and TCE plume extending off-site in a westerly direction.

Soil-vapor extraction (SVE) systems were installed around the BMES and Wells Fargo Bank buildings in September 2006 and remained active for five years. PCE and TCE concentrations in the source area decreased during this time and in August 2011, ADEC approved ERG's request to shut down the SVE systems citing approval of a groundwater-monitoring schedule. Groundwater PCE and TCE concentrations at the time were not below ADEC cleanup levels (CULs).

ERG collected 30 passive soil gas samples along the Noyes Street sewer line in October 2010. Sample results indicated relatively low levels of PCE were detected and appeared to be in a clustered formation near 620 and 640 Noyes Street. They concluded it may be indicative of a leaking sewer or storm drain.

In February 2013, ADEC met with ERG to discuss the fall 2012 results that reported increasing concentrations of PCE in MW-1, a monitoring well upgradient of the BMES building. ADEC subsequently followed up with letters to the owners of VIP Cleaners Inc. (Figure 1) and the BMES. In the BMES letter dated April 22, 2013, ADEC reopened BMES as a contaminated site and required further evaluation of vapor intrusion risks associated with the groundwater plume.

ERG collected 11 soil-gas samples in September 2015 from the Charles Slater subdivision to assess whether further investigation at the residences was necessary. Soil-gas samples were collected from seven private properties in the Charles Slater subdivision in March 2016. Soil-gas sample results for four of the private properties exceeded or nearly exceeded ADEC target levels for PCE, TCE or 1,2-dichlorethene (1,2-DCE). ERG also collected indoor-air samples from 120 Ina Street in November 2015 and January 2016; chlorinated solvents were not detected above ADEC target levels in these samples.

The Owner retained Shannon & Wilson, Inc. in 2016 as their environmental consultant. Shannon & Wilson conducted a winter 2016 sampling event (December 2016 and January 2017) collecting indoor-air samples from seven commercial businesses and soil-gas samples from properties in the Charles Slater subdivision using sampling ports installed by ERG. ADEC target levels for PCE and TCE were not exceeded during this sampling event with the exception of PCE from the AutoZone indoor-air sample.

In June 2017, ADEC requested additional samples be collected from the sampling ports to verify the lower concentrations noted between the March 2016 and winter 2016 sampling events. In October and November 2017, we collected soil-gas, sub-slab, and indoor-air samples from residential properties and indoor-air from the AutoZone and Wild Wings. PCE and TCE results from our October/November 2017 VI sampling event were comparable to the winter 2016 sampling event. Contaminants of potential concern (COPCs) were below ADEC target levels with following the exceptions at private locations:

- chloroform, from soil-gas sample *SV-13* and sub-slab sample *SS1A*, and
- PCE and TCE in soil-gas field duplicate sample pair *SVR4B*/*SVR40B*.

Groundwater sampling conducted in October 2017 resulted in COPC analytical detections exceeding ADEC regulatory limits in nine of the 13 monitoring wells. Mann-Kendall trend analysis indicated evidence of:

- increasing trends of PCE and TCE in MW-1, MW-8, and MW-11,
- decreasing trends of PCE in MW-2, MW-3, MW-4, MW-7, MW-10, and MW-13, and
- decreasing trends of TCE in MW-2, MW-4, MW-7, and MW-10

In the May 2018 comments to our *Bentley Mall East Satellite 2017 Soil Gas and Groundwater Assessment Report*, ADEC requested a work plan to cover a three-year time frame for continued annual groundwater monitoring and once every three years for VI monitoring. See our October 2018 *Annual Groundwater Monitoring and 3-Year Vapor Intrusion Evaluation Work Plan* for further details.

2.3 Contaminants of Potential Concern and Cleanup Levels

The COPCs associated with this site include PCE, PCE degradation constituents (TCE, 1,2-DCE, and vinyl chloride), and, added at ADEC's request, chloroform.

2.4 Further Discussion of Chloroform as a COPC

In 2017, chloroform was added to the VI COPCs for the site at the request of the ADEC in their response to our 2017 Soil Gas and Groundwater Assessment Work Plan. The ADEC comment states: " The compound chloroform has also been found in groundwater above its cleanup level, has been found in soil gas above target levels, and is also a volatile compound with VI target levels available. So this compound should be considered a COC for the site…"

Upon further consideration and research on chloroform, we are requesting this analyte be removed from the groundwater and VI COPC list for the BMES site. This request is based upon:

1. According to the Environmental Protection Agency (EPA) chloroform fact sheet and the United States Geological Survey (USGS) *Scientific Report 2004-5137*), chloroform produced in chemical manufacturing is used primarily for the production of hydrochlorofluorocarbon-22 (HCFC-22) also known as R-22. R-22 is a refrigerant used in air conditioners and freezers. This compound is not unique to dry cleaning facilities.
2. Chloroform is not a degradation product of PCE. Chloroform is a degradation product of carbon tetrachloride. Carbon tetrachloride disappeared from use at dry cleaner sites nationwide in the 1950's and was primarily replaced with PCE (https://drycleancoalition.org/reference.cfm). The BMES building was built in 1976 according to FNSB records, and to our knowledge carbon tetrachloride was not used in dry cleaner operations there. We do not know the history of VIP Cleaners located upgradient from BMES.
3. According to Richard Rago a contributor to *Background Indoor Air Concentrations* (Environmental Protection Agency) *EPA 530-R-10-001* (Richard Rago, written communication, May 3, 2019), background air studies have detected chloroform at concentrations in the same range and higher than the result from sample *IA1-2018*.
4. According to Stephen Ede of SGS North America, Inc. (SGS) (Stephen Ede, written communication, May 17, 2019) the laboratory has detected chloroform where no

indications of anthropogenic contamination are known; chloroform can be naturally occurring.

5. Of the 226 dry cleaning sites profiles listed in The State Coalition for Remediation of Dry Cleaners database, only four sites have chloroform as a COPC.
6. According to the USGS's *Scientific Report 2006-5015 and Scientific Report 2004-5137*, many sources of chloroform exist including: a variety of natural sources, municipally supplied chlorinated water, the practice of well disinfection through shock chlorination, laundry waste-water containing bleach, leaking sewer lines, septic systems, refrigerants, and numerous other household products.
7. Upgradient sources of chloroform are suspected as evidenced by higher chloroform concentrations in monitoring wells upgradient of the former BMES dry cleaning facility, MW-1R and MW-14.

2.5 Data Quality Objectives and Regulatory Comparison Criteria

Our analytical approach and performance criteria are in compliance with ADECs Data Quality Objectives (DQOs), Checklists, Quality Assurance (QA) requirements for Laboratory Data, and Sample Handling Technical Memorandum dated March 2017. We collected groundwater and indoor-air samples to be analyzed for select volatile organic compounds (VOCs); the above COPCs and their degradation products are included in the modified VOC lists.

To evaluate groundwater sample concentrations, we compared the analytical data to 18 AAC 75.341 *Table C Groundwater Cleanup Levels* (October 2018).

To evaluate air-sample concentrations, we compared the analytical data to residential ADEC target levels listed in Appendix D: DEC Indoor Air Target Levels from ADECs *Vapor Intrusion Guidance* (November 2017). We also compared both geometric isomers of 1,2-DCE (*cis*-1,2-dichloroethene and *trans*-1,2-dichloroethene) to the site-specific indoor-air target levels provided by ADEC in a September 20, 2017 email.

3 CONCEPTUAL SITE MODEL

A CSM describes potential pathways between a contaminant source and possible receptors (i.e., people, animals, and plants) and is used to determine who may be at risk of exposure to those contaminants. We summarize the suspected contaminant sources, migration and exposure pathways, and potential receptors on the Human Health Conceptual Site Model Graphic Form in Appendix A.

Based on our understanding of site conditions and historical information from the former dry-cleaning business located in the BMES building, potentially contaminated media include surface and subsurface soil, groundwater, and air. Contaminants that reach the groundwater table are presumed to be subject to transport with groundwater flow away from the source areas. Potential receptors include construction workers, residents, commercial or industrial workers, and other site visitors. Potential exposure routes include dermal contact with, and incidental ingestion of, contaminated soils and groundwater, and exposure to vapors in outdoor and indoor air.

4 FIELD ACTIVITIES

This section summarizes field activities performed in November 2018, to implement the ADEC-approved Work Plan.

Our field activity and sample collection logs are included in Appendix B through C. Appendix C also includes an ADEC Building Inventory and Indoor Air Sampling Questionnaire (BIQ) for the first-time sample location at the Monroe Catholic School.

4.1 Monitoring Well Survey

We subcontracted with Design Alaska, Inc. to conduct a vertical and horizontal survey of the monitoring wells on November 5, 2018.

Note that five monitoring wells were decommissioned, and four replacement wells installed between May and September 2018 as part of the BMES Starbucks upgrades. Details regarding the decommissioning and installation of these monitoring wells are reported separately, and not discussed in this report.

We calculated the groundwater gradient information using the hydraulic gradient calculator available at the EPA *On-line Tools for Site Assessment Calculation* website. We utilized the November 2018 survey data in conjunction with the depth to water measurements collected on November 1, 2018 to complete the groundwater gradient calculations. Based on the elevation data, we estimate the groundwater flow direction is west north-west with a heading of approximately 298 degrees from north.

4.2 Monitoring Well Sampling

On November 1, 2018, Shannon & Wilson staff sampled each of the site's thirteen monitoring wells. Additionally, we collected two field duplicate samples *MW-101R* and

MW-108, and one equipment blank sample *EB-11*, for the same analyses of VOCs as the monitoring well project samples.

Prior to sampling, we measured the depth to water from the top of the well casing at each well location. From each well, we purged the water to prepare for sampling using a submersible pump with new, non-reusable sampling equipment. We set the pump within the screened interval of each well using the low-flow sampling technique. We collected water-quality parameters in the field at least three minutes apart using a YSI Professional Plus multi-parameter meter. We calibrated the field-equipment according to the manufacturers' instructions.

We purged each well until water-quality parameters (pH, conductivity, temperature, dissolved oxygen, oxidation/reduction potential, and clarity) stabilized or three well-casing volumes were purged, prior to sample collection. We collected groundwater samples into laboratory-provided containers. Appendix B includes copies of our monitoring well sampling logs.

4.3 Indoor Air Sampling at Private Properties

Exhibit 4-1: 24-hour Indoor Air Sample *IA1-2018*.

We collected indoor-air samples from two private properties on November 15, 2018 at the request of ADEC. During the previous sampling event in October 2017, these two locations exceeded ADEC target levels for chloroform in their soil-gas and sub-slab samples.

The indoor-air samples were collected over a 24-hour period using 6-liter canisters with flow controllers, provided by the analytical laboratory. We collected the samples from the lowest floor of the building in high-use areas within the breathing zone (3 to 5 feet off the ground).

Indoor-air sample collection logs are presented in Appendix C and include an ADEC BIQ for the sample collected at Monroe Catholic School.

4.4 Investigative Derived Waste

Decontamination water and purge water generated during groundwater sampling activities were considered hazardous waste due to known contamination at the BMES site. Two 55-gallon drums of water were temporarily stored near the east side of the BMES building, until disposal through NRC Alaska, LLC completion on November 7, 2018. Other sampling

equipment that cannot be readily decontaminated, such as pump-discharge tubing was disposed of as the Fairbanks North Star Borough (FNSB) landfill.

4.5 Sample Custody, Storage, and Transport

After groundwater sample collection, we wrapped the sample containers in bubble wrap and placed them in hard-plastic coolers with adequate quantities of frozen ice-substitute to maintain sample temperatures between 0 degrees Celsius (°C) and 6 °C until the samples reached the laboratory. A trip blank and "temperature blank" provided by the laboratory was packed and maintained with the samples for the duration of our custody. Shannon & Wilson maintained custody of the samples until submitting them to the laboratory for analysis.

We delivered water samples to the SGS receiving office in Fairbanks on November 02, 2019, with a requested "standard turnaround" time of 14 days.

After air-sample collection, we completed a chain of custody (COC) form and placed the sample canister inside the laboratory provided container for shipment. We maintained custody of the samples at all times until submitting them to the laboratory. We placed custody seals on the container and shipped the sample to Eurofins Air Toxics, Inc. (Eurofins) via FedEx.

5 ANALYTICAL RESULTS

Summaries of the analytical results are presented in Tables 1 and 2. The analytical laboratory reports and corresponding ADEC Laboratory Data-Review Checklists (LDRCs) are included in Appendices E and F, respectively. Figure 2 presents monitoring well and indoor air sample results exceeding regulatory levels.

5.1 Monitoring Well Samples

The November 2018 analytical results had detections for 11 VOCs in one or more project samples and are consistent with historical results (Table 1). These detections were less than ADEC cleanup levels listed in Table 1, with the following exceptions:

- PCE was detected in project samples *MW-1R*, *MW-101R*, *MW-2R*, *MW-4R*, *MW-5*, *MW-6*, and *MW-12* at concentrations ranging between 42.9 microgram per liter (µg/L) and 217 µg/L.
- TCE was detected in project samples *MW-5*, *MW-6*, *MW-9*, *MW-10*, and *MW-12* at concentrations ranging between 5.50 µg/L and 11.1 µg/L.

- 1,2-Dichloroethane (1,2-DCA) was detected in project sample *MW-1R* and its field duplicate *MW-101R* at concentrations of 2.35 µg/L and 2.46 µg/L, respectively.
- Chloroform was detected in project samples *MW-1R*, *MW-101R*, *MW-2R*, and *MW-3R* at concentrations ranging between 4.09 µg/L and 18.8 µg/L.

There were no additional analytes detected in the current sampling event exceeding CULs. 1,2,3-trichloropropane (1,2,3-TCP) was not detected in the project samples but had LODs above ADEC CULs. We cannot determine if this analyte is present in project samples above the CUL Groundwater analytical results exceeding ADEC cleanup levels are shown on Figure 2.

5.2 Indoor-Air Samples

The November 2018 analytical results had detections for PCE and chloroform in project samples *IA1-2018* and *IA13-2018*, exceeding their respective LODs (Table 2). These detections were less than ADEC target levels with the exception of chloroform in project sample *IA1-2018*.

There were no additional analytes detected in the current sampling event exceeding laboratories reporting limit. Indoor-air analytical results exceeding ADEC target levels are shown on Figure 2.

6 QUALITY ASSURANCE/QUALITY CONTROL

Shannon & Wilson staff performed a QA/quality control (QC) assessment for the laboratory reports provided by SGS and Eurofins. Additional information is presented in SGS laboratory report 1189525 and Eurofins laboratory report 1811275 (Appendix E). Details regarding the results of our QA review are presented in corresponding LDRCs (Appendix F). Individual data results affected by QA/QC failures are "flagged" on Tables 1 and 2, where applicable.

The QA/QC assessment for the both the groundwater and indoor-air samples are summarized in Appendix G. Shannon & Wilson personnel conducted field activities in accordance with standard QA/QC procedures; the samples are considered representative of site conditions at the locations and times they were obtained. The QA assessment in Appendix G identifies analytical results that were qualified due to QC failures reported by the laboratory. Based on the QA review, no datum was rejected as unusable due to QC failures, and the completeness goal of obtaining 90-percent useable data was met. In the opinion of Shannon & Wilson, the data produced by SGS and Eurofins for this project are

suitable for characterizing groundwater water quality and indoor-air quality at the locations sampled.

7 DISCUSSION

7.1 Monitoring Well Sampling

Overall, the analytical results of samples collected during the 2018 sampling event were consistent with historical results. Nine of the 13 monitoring wells contained COPCs exceeding ADEC CULs for one or more of the following analytes: PCE, TCE, and 1,2-DCE (Figure 2).

All 13 monitoring wells contained detectable amounts of PCE, with results ranging from 0.850J µg/L to 217 µg/L. Note the estimated concentration of 0.850J µg/L at MW-3R is the deepest monitoring well in the network with a total well depth of approximately 45 feet below ground surface (bgs). The remaining wells have total well depths that range from approximately 20 to 30 feet bgs.

The highest PCE concentration was detected in the project sample and duplicate from MW-1R, located along the eastern property line of the Bentley Mall properties. The presence of PCE, 1,2-DCA, and chloroform at the upgradient well MW-1R, located between the former BMES dry cleaning business and the active VIP Cleaners business, suggests contaminated groundwater may be migrating onto the BMES site from an upgradient source.

The analyte 1,2,3-TCP was not detected in the project samples but had LODs (0.500 µg/L) above ADEC CULs. We cannot determine if this analyte is present in project samples above the CUL of 0.0075 µg/L. However, we note that 1,2,3-TCP was analyzed by the method listed in the ADEC-approved Work Plan. Since the analyte was not a COPC, a more sensitive method was not recommended in the Work Plan for this analyte.

7.2 Indoor-Air Sampling at Private Properties

Following soil-gas chloroform detections exceeding ADEC target levels at two residential locations, we collected one indoor-air sample (*IA1-2018* and *IA13-2018*) from each location at the request of ADEC (Table 2).

PCE and chloroform were detected in both project samples at concentrations less than ADEC residential indoor-air target levels, with the exception of chloroform detected in project sample *IA1-2018* at a concentration of 3.20 microgram per cubic meter (µg/m^3), exceeding the target level of 1.2 µg/m^3.

We calculated screening levels based on attenuation factors using the 2017 soil-gas chloroform concentration of 13 µg/m^3 and an attenuation factor of 0.1. The EPAs Vapor Intrusion Screening Level (VISL) equation conservatively predicted an expected indoor air chloroform concentration level of 1.3 µg/m^3. The analytical indoor air sample is higher, indicating the indoor-air concentration from sample *IA1-2018* may be the result of indoor or background source(s).

8 RECOMMENDATIONS

Based on analytical results and further chloroform research, we recommend the following regarding the BMES site:

- Continue with the current monitoring schedule as described in the Work Plan: annual groundwater monitoring of the current monitoring well network, and VI sampling every three years.
- As we recommended in our June 2019 *Bentley Mall East Satellite Site Investigation* report, we recommend the continued evaluation for the presences of an upgradient source; to include site-characterization at the VIP property.
- We recommend chloroform be removed as a COPC for groundwater and VI (Section 2.4).

9 CLOSURE

This report was prepared for the exclusive use of KE Bentley One, LLC and KGC Bentley Two, LLC., ADEC, and their representatives for evaluating remaining chlorinated-solvent contamination near the BMES building in Fairbanks, Alaska. Our conclusions and recommendations are based on:

- The limitations of our approved scope, schedule, and budget described in our proposals dated October 3, 2018 and January 22, 2019.
- Our understanding of the project and information provided by the ADEC and the Owner.
- Site conditions we observed during our visits in November 2018.
- The results of analytical testing performed on groundwater and air samples we collected.
- The requirements in Alaska's 18 AAC 75.341 *Table C Groundwater Cleanup Levels* (October 2018), and ADEC Vapor Intrusion Guidance for Contaminated Sites (November 2017).

Our observations are specific to the locations, depths, and times noted on the logs and may not be applicable to all areas of the site. No amount of sampling can precisely predict the characteristics, quality, or distribution of subsurface and site conditions. Potential sources of variation include, but are not limited to:

- The different conditions between sampling locations.
- Variations in the presence, distribution, and concentration of contaminants at our sampling locations; our tests may not represent the highest contaminant concentrations at the site.
- The passage of time or intervening causes (natural and manmade) may result in changes to site and subsurface conditions.
- Contaminant concentrations may change in response to natural conditions, chemical reactions, and/or other events.

If substantial time has elapsed between submission of this report and the start of activities or action based upon it, we should be retained to review the applicability of the conclusions and recommendations, considering the lapsed time or changed conditions.

This report should not be used for other purposes without our review, and it should not be used without our approval if any of the following occurs:

- Conditions change due to natural forces or human activity under, at, or adjacent to the site.
- Assumptions stated in this report have changed.
- Project details change, or new information becomes available such that our conclusions may be affected.
- The site ownership or land use has changed.
- Regulations, laws, or cleanup levels change.
- The site's regulatory status has changed.

If any of these occurs, we should be retained to review the applicability of our recommendations.

State and/or federal agencies may require reporting of the information included in this report. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this study unless specifically requested and authorized by KE Bentley One, LLC and KGC Bentley Two, LLC., or as required by law. Regulatory agencies may reach different conclusions than Shannon & Wilson. We have prepared the attachment, Important Information about Your

Geotechnical/Environmental Report, to assist you and others in understanding the uses and limitations of our reports.

10 REFERENCES

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Table 1 - 2018 Groundwater Results

Analyte	ADEC Cleanup Level	Location	MW-1R		MW-2R	MW-3R	MW-4R	MW-5	MW-6	MW-7	MW-8		MW-9	MW-10	MW-11	MW-12	MW-13
		Units	*PS*	*DUP*	*PS*	*PS*	*PS*	*PS*	*PS*	*PS*	*PS*	*DUP*	*PS*	*PS*	*PS*	*PS*	*PS*
1,1,1,2-Tetrachloroethane	5.7	µg/L	1.00	1.05	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
1,1,1-Trichloroethane	8,000	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,1,2,2-Tetrachloroethane	0.76	µg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
1,1,2-Trichloroethane	0.41	µg/L	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200
1,1-Dichloroethane	28	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,1-Dichloroethene	280	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,1-Dichloropropene	—	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,2,3-Trichlorobenzene	7	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,2,3-Trichloropropane	0.0075	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,2,4-Trichlorobenzene	4	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,2,4-Trimethylbenzene	56	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,2-Dibromo-3-chloropropane	—	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
1,2-Dibromoethane	0.075	µg/L	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375	<0.0375
1,2-Dichlorobenzene	300	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,2-Dichloroethane	1.7	µg/L	2.35	2.46	<0.250	0.440J	0.270J	0.5	0.260J	<0.250	<0.250	<0.250	0.330J	0.360J	<0.250	0.220J	0.170J
1,2-Dichloropropane	8.2	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,3,5-Trimethylbenzene	60	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,3-Dichlorobenzene	300	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
1,3-Dichloropropane	—	µg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
1,4-Dichlorobenzene	4.8	µg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
2,2-Dichloropropane	—	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
2-Butanone (MEK)	5,600	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
2-Chlorotoluene	—	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
2-Hexanone	38	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
4-Chlorotoluene	—	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
4-Methyl-2-pentanone (MIBK)	6,300	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Benzene	4.6	µg/L	<0.200	<0.200	0.240J	0.240J	<0.200	0.180J	<0.200	<0.200	<0.200	<0.200	<0.200	0.130J	<0.200	0.150J	<0.200
Bromobenzene	62	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Bromochloromethane	—	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Bromodichloromethane	1.3	µg/L	0.420J	0.440J	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
Bromoform	33	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Bromomethane	7.5	µg/L	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
Carbon disulfide	810	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Carbon tetrachloride	4.6	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Chlorobenzene	78	µg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
Chloroethane	21,000	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Chloroform	2.2	µg/L	18.2	18.8	7.13	4.09	<0.500	0.700J	0.870J	<0.500	0.450J	0.460J	0.400J	<0.500	<0.500	0.710J	1.95

Table 1 - 2018 Groundwater Results

Analyte	ADEC Cleanup Level	Location	MW-1R		MW-2R	MW-3R	MW-4R	MW-5	MW-6	MW-7	MW-8		MW-9	MW-10	MW-11	MW-12	MW-13
		Units	*PS*	*DUP*	*PS*	*PS*	*PS*	*PS*	*PS*	*PS*	*PS*	*DUP*	*PS*	*PS*	*PS*	*PS*	*PS*
Chloromethane	190	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
cis-1,2-Dichloroethene	36	µg/L	<0.500	<0.500	1.89	0.440J	<0.500	1.6	1.29	2.34	1.15	1.17	3.73	1.21	1.11	0.750J	<0.500
cis-1,3-Dichloropropene	4.7	µg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
Dibromochloromethane	8.7	µg/L	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250
Dibromomethane	8.3	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Dichlorodifluoromethane	200	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Ethylbenzene	15	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Hexachlorobutadiene	1.4	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Isopropylbenzene	450	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Methylene chloride	110	µg/L	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50	<2.50
Methyl-t-butyl ether	140	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Naphthalene	1.7	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
n-Butylbenzene	1,000	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
n-Propylbenzene	660	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
o-Xylene	190	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
P & M -Xylene	190	µg/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
p-Isopropyltoluene	—	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
sec-Butylbenzene	2,000	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Styrene	1,200	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
tert-Butylbenzene	690	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Tetrachloroethene (PCE)	41	µg/L	217	214	211	0.850J	42.9	80.7	48.4	5.57	3.78	3.85	25.5	31	4.36	177	23.4
Toluene	1,100	µg/L	<0.500	<0.500	<0.500	<0.500	0.450J	<0.500	<0.500	<0.500	<0.500	0.310J	<0.500	<0.500	<0.500	<0.500	<0.500
Total Xylenes	190	µg/L	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50	<1.50
trans-1,2-Dichloroethene	360	µg/L	<0.500	<0.500	<0.500	<0.500	0.710J	0.400J	<0.500	<0.500	9.98	10.3	3.71	0.330J	8.18	<0.500	<0.500
trans-1,3-Dichloropropene	4.7	µg/L	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Trichloroethene (TCE)	2.8	µg/L	1.08	1.06	1.94	<0.500	1.48	11.1	5.77	2.69	1.45	1.47	7.35	6.48	1.8	5.5	<0.500
Trichlorofluoromethane	5200	µg/L	39.9	41.2	16.1	1.53	5.35	4.73	3.87	<0.500	<0.500	<0.500	<0.500	<0.500	3.18	2.02	1.86
Trichlorotrifluoroethane	10,000	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Vinyl acetate	410	µg/L	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
Vinyl chloride	0.19	µg/L	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750	<0.0750

NOTES:
PS = project sample
DUP = field-duplicate sample
Bold = LOD or concentration exceed ADEC cleanup level
< = analyte not reported above specific LOD
— = ADEC cleanup level not established
J = estimated result, detected below the LOQ; flag applied by the laboratory
ADEC cleanup levels obtained from 18 AAC 75.341 *Table C Groundwater Cleanup Levels* (October 2018).
ADEC = Alaska Department of Environmental Conservation; LOD = limit of detection; LOQ = limit of quantitation; µg/L = microgram per liter

Table 2 - 2018 RESIDENTIAL INDOOR-AIR RESULTS

Analyte	CAS Number	ADEC Target Levels	Units	Sample Identification	
				IA1-2018	*IA13-2018*
Chloroform	67-66-3	1.2	µg/m^3	**3.20**	0.150
1,1,1-Trichloroethane (TCA)	71-55-6	3,800	µg/m^3	<0.180	<0.170
1,1-Dichloroethane (1,1-DCE)	75-34-3	18	µg/m^3	<0.130	<0.120
1,1-Dichloroethene (1,1-DCE)	75-35-4	79	µg/m^3	<0.0640	<0.0610
cis-1,2-Dichloroethene (1,2-DCE)	156-59-2	8.3 †	µg/m^3	<0.130	<0.120
trans-1,2-Dichloroethene (1,2-DCE)	156-60-5	83.4 †	µg/m^3	<0.640	<0.610
Tetrachloroethene (PCE)	127-18-4	41	µg/m^3	2.00	0.290
Trichloroethene (TCE)	79-01-6	2.0	µg/m^3	<0.170	<0.170
Vinyl Chloride	75-01-4	1.7	µg/m^3	<0.0410	<0.0400

NOTES:

† = ADEC e-mail (September 20, 2017) on Proposed Screening Levels, where no ADEC target levels have been established.

< = Analyte not detected above specific reporting limit. Reporting limit listed.

Bold = Analyte concentration exceeds ADEC Target Level.

Indoor-Air samples collected on November 16, 2018 and analyzed by method TO-15 SIM Modified.

ADEC Target Levels obtained from November 2017 ADEC Vapor Intrusion Guidance for Residential Indoor-Air.

ADEC = Alaska Department of Environmental Conservation; CAS = Chemical Abstracts Service; µg/m^3 = micrograms per cubic meter

Notes: MW-1, MW-2, MW-3, MW-4, and MW-14 have been decomissioned.
MW-1R, MW-2R, MW-3R, and MW-4R were reinstalled following completion of the Starbucks construction project in 2018.

LEGEND

Bentley Mall Property

Residential Vapor Intrusion Properties

Commercial Indoor-Air Properties

BMES Building

Commercial Vapor Intrusion Property

Monitoring Wells

2016 - 2018 Range Groundwater Gradient

0 200 400 800 1,200

Feet

N

Bentley Mall East Satellite (BMES)
Fairbanks, Alaska

Site Vicinity

July 2019 101926-006

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 1

College Road

Noyes St

Ellingson St

Ina St

Charles St

Minnie St

Monroe St

Betty St

Fulton St

Clara St

Old Steese Hwy

IA13-2018

IA1-2018

MW-7

MW-8

MW-9

MW-10

MW-11

MW-12

MW-13

MW-5

MW-6

MW-4R

MW-2R

MW-3R

MW-1R

Bentley Mall East Satellite

TCE: 7.35 µg/L

Chloroform: 3.20 µg/m3

TCE: 6.48 µg/L

MW-5
PCE: 80.7 µg/L
TCE: 11.1 µg/L

MW-6
PCE: 48.4 µg/L
TCE: 5.77 µg/L

PCE: 177 µg/L
TCE: 5.50 µg/L

MW-2R
PCE: 211 µg/L
Chloroform: 7.13 µg/L

MW-3R
Chloroform: 4.09 µg/L

PCE: 42.9 µg/L

PCE: 217 µg/L
1,2-DCE: 2.46 µg/L
Chloroform: 18.8 µg/L

Notes: Only results exceeding regulatory levels are displayed. See report tables for further information.
MW-1, MW-2, MW-3, MW-4, and MW-14 have been decomissioned.
MW-1R, MW-2R, MW-3R, and MW-4R were reinstalled following completion of the Starbucks construction project in 2018.

LEGEND

Monitoring Wells

- Does Not Exceed ADEC Cleanup Levels
- Exceeds ADEC Cleanup Levels

2018 Indoor-Air Samples

- Does Not Exceed ADEC Target Levels
- Exceeds ADEC Target Levels

Bentley Mall Properties

2018 Soil-Gas Properties

2018 Groundwater Gradient
298 degrees from North

0 100 200 400 600
Feet

N

Bentley Mall East Satellite
Fairbanks, Alaska

2018 RESULTS - EXCEEDING REGULATORY LEVELS

July 2019 101926-006

SHANNON & WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Figure 2

APPENDIX A: CONCEPTUAL SITE MODEL - UPDATED

Appendix A

Conceptual Site Model

Print Form

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Bentley Mall East Satellite (BMES)
ADEC File No. 102.38.122

Completed By: Sheila Hinckley / Shannon & Wilson, Inc.
Date Completed: March 18, 2019

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)
Check all exposure media identified in (2).

(4)
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Current & Future Receptors

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion				C/F			
	☑ Migration to subsurface — check soil		☐ Dermal Absorption of Contaminants from Soil							
	☑ Migration to groundwater — check groundwater		☐ Inhalation of Fugitive Dust							
	☑ Volatilization — check air									
	☐ Runoff or erosion — check surface water									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☑ Direct release to subsurface soil — check soil	☑ groundwater	☑ Ingestion of Groundwater	C/F	C/F		C/F			
	☑ Migration to groundwater — check groundwater		☑ Dermal Absorption of Contaminants in Groundwater	C/F	C/F		C/F			
	☑ Volatilization — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Ground-water	☑ Direct release to groundwater — check groundwater	☑ air	☑ Inhalation of Outdoor Air	C/F	C/F	C/F	C/F			
	☑ Volatilization — check air		☑ Inhalation of Indoor Air	C/F	C/F	C/F	C/F			
	☐ Flow to surface water body — check surface water		☐ Inhalation of Fugitive Dust							
	☐ Flow to sediment — check sediment									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Surface Water	☐ Direct release to surface water — check surface water	☐ surface water	☐ Ingestion of Surface Water							
	☐ Volatilization — check air		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☐ Sediment	☐ Direct release to sediment — check sediment	☐ sediment	☐ Direct Contact with Sediment							
	☐ Resuspension, runoff, or erosion — check surface water									
	☐ Uptake by plants or animals — check biota	☐ biota	☐ Ingestion of Wild or Farmed Foods							
	☐ Other (list):									

Revised, 10/01/2010

APPENDIX B: MONITORING WELL SAMPLE LOGS

Appendix B

Monitoring Well Sample Logs

MONITORING WELL SAMPLING LOG

Owner/Client: BMES
Location: BMES
Sampling Personnel: KLC
Weather Conditions: Sunny
Air Temp. (°F): 7

Project No.: 101926-002
Date: 11/1/18
Well: MW-4
Time started: 9:35
Time completed: 10:19

Sample No.: MW-4R
Time: 10:07
Duplicate: —
Time: —
Equipment Blank: —
Time: —

Pump: Mega Monsoon
Purging Method: *portable / dedicated pump*
Pumping Start: 9:53
Purge Rate (gal./min.): .05
Pumping End: 10:07

Pump Set Depth Below MP (ft.): ~19
KuriTec Tubing (ft.): 30
TruPoly Tubing (ft.): —

Diameter and Type of Casing: 2" PVC
Approximate Total Depth of Well Below MP (ft.): —
Measured Total Depth of Well Below MP (ft.): 20.0
Depth to Water Below MP (ft.): 13.09
Depth to Ice (if frozen) Below MP (ft.): —
Feet of Water in Well: 6.91
Gallons per foot: 0.17
Gallons in Well: 1.2
Purge Water Volume (gal.): 7
Purge Water Disposal: 55 gallon drum behind starbucks

Monument Condition: Good
Casing Condition: Good
Wiring Condition (dedicated pumps): —

Measuring Point (MP): *Top of Casing (TOC)*
Monument type: *Stickup / Flushmount*
Measurement method: *Rod & level / Tape measure*

Top-of-casing to monument (ft.): —
Monument to ground surface (ft.): Flush

Datalogger type: n/a
Datalogger serial #: n/a
Measured cable length (ft.): n/a

- ☑ Lock present and operational
- ☑ Well name legible on outside of well
- ☐ Evidence of frost-jacking: No

Notes: —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW-4R
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI Circle one: *Parameters stabilized or ≥3 well volumes purged*

Sample Observations clear

Notes —

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
9:53	pump started					
9:54	5.1	2.26	621	6.13	279.1	clear
9:57	5.1	1.29	620	6.33	263.3	clear
10:00	5.3	1.11	626	6.42	246.2	clear
10:03	5.3	0.96	622	6.47	237.6	clear
10:06	5.3	0.88	622	6.48	234.2	clear
10:07	sample collected					

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC			☐
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

MW-4
Well No.

SMA

MONITORING WELL SAMPLING LOG

Owner/Client: BMES
Location: BMES
Sampling Personnel: KLC
Weather Conditions: Sunny
Air Temp. (°F): 7

Project No.: 101926-002
Date: 11/1/18
Well: MW-3R
Time started: 10:30
Time completed: 11:15

Sample No.: MW-3R — Time: 11:08
Duplicate: — — Time: —
Equipment Blank: — — Time: —

Pump: Mega Monsoon
Purging Method: ~~portable~~ / *dedicated pump*
Pumping Start: 10:48
Purge Rate (gal./min.): ~0.5
Pumping End: 11:08

Pump Set Depth Below MP (ft.): ~43.5
KuriTec Tubing (ft.): ~~43.5~~ 50
TruPoly Tubing (ft.): —

Diameter and Type of Casing: 2" PVC
Approximate Total Depth of Well Below MP (ft.): —
Measured Total Depth of Well Below MP (ft.): 45.56
Depth to Water Below MP (ft.): 14.26
Depth to Ice (if frozen) Below MP (ft.): —
Feet of Water in Well: 31.3
Gallons per foot: 0.17
Gallons in Well: 5.32
Purge Water Volume (gal.): ~10
Purge Water Disposal: 55 gallon drum

Monument Condition: Good
Casing Condition: Good
Wiring Condition (dedicated pumps): —

Measuring Point (MP): *Top of Casing (TOC)*
Monument type: *Stickup* / ~~*Flushmount*~~
Measurement method: *Rod & level* / *Tape measure*

Top-of-casing to monument (ft.): 0.32
Monument to ground surface (ft.): flush

Datalogger type: n/a
Datalogger serial #: n/a
Measured cable length (ft.): n/a

- ☐ Lock present and operational
- ☑ Well name legible on outside of well
- ☑ Evidence of frost-jacking — No.

Notes: —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW-3R
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations clear

Notes

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
10:48	pump started					
10:49	4.9	0.27	311.9	6.96	212.6	clear
10:52	4.5	0.14	338.5	6.67	200.9	clear
10:55	4.4	0.12	339.2	6.68	184.6	clear
10:58	4.4	0.12	339.4	6.72	174.2	clear
11:01	4.4	0.10	339.6	6.75	164.2	clear
11:04	4.4	0.11	339.5	6.76	159.5	clear
11:07	4.4	0.11	339.6	6.74	157.4	clear
11:08	sample	collected				

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
X	VOC			

SMH

MW-3R
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client: BMES
Location: BMES
Sampling Personnel: KLC
Weather Conditions: Sunny Air Temp. (°F): 7

Project No.: 101926-002
Date: 11/1/18
Well: MW-2R
Time started: 10:30
Time completed: 11:46

Sample No.: MW-2R Time: 11:36
Duplicate: – Time: –
Equipment Blank: – Time: –

Pump: Mega Monsoon
Purging Method: *portable / dedicated pump*
Pumping Start: 11:32
Purge Rate (gal./min.): ~0.5
Pumping End: 11:36

Pump Set Depth Below MP (ft.): ~19.77
KuriTec Tubing (ft.): 25
TruPoly Tubing (ft.): –

Diameter and Type of Casing: 2" PVC
Approximate Total Depth of Well Below MP (ft.): –
Measured Total Depth of Well Below MP (ft.): 21.77
Depth to Water Below MP (ft.): 14.29
Depth to Ice (if frozen) Below MP (ft.): –
Feet of Water in Well: 7.5
Gallons per foot: 0.17
Gallons in Well: 1.3
Purge Water Volume (gal.): 7
Purge Water Disposal: 55 gallon drum

Monument Condition: Good
Casing Condition: Good
Wiring Condition (dedicated pumps): –

Measuring Point (MP): *Top of Casing (TOC)*
Monument type: *Stickup / Flushmount*
Measurement method: *Rod & level / Tape measure*

Top-of-casing to monument (ft.): 0.39
Monument to ground surface (ft.): flush

Datalogger type: n/a
Datalogger serial #: n/a
Measured cable length (ft.): n/a

- ☑ Lock present and operational
- ☑ Well name legible on outside of well
- ☑ Evidence of frost-jacking: No

Notes: –

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW-2R
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument: YSI Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations: clear

Notes: —

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
11:22	Pump	start				
11:23	5.1	3.40	638	6.70	161.0	clear
11:26	5.8	3.10	630	6.76	160.7	clear
11:29	5.3	2.67	609	6.80	160.3	clear
11:32	5.4	2.44	612	6.80	161.3	clear
11:35	5.3	2.41	609	6.79	161.8	clear
11:36	Sample	Collected				

Laboratory: SGS

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC			☐
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

SMH

MW-2R
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client: BMES
Location: BMES
Sampling Personnel: KLC
Weather Conditions: Sunny Air Temp. (°F): 7

Project No.: 101926-007
Date: 4/1/18
Well: MW-12
Time started: 12:00
Time completed: 12:48

Sample No.: MW-12 Time: 12:35
Duplicate: ~ Time: ~
Equipment Blank: ~ Time:

Pump: Mega Monsoon
Purging Method: portable / dedicated pump
Pumping Start: 12:21
Purge Rate (gal./min.): ~0.5
Pumping End: 12:35

Pump Set Depth Below MP (ft.): ~18
KuriTec Tubing (ft.): 30
TruPoly Tubing (ft.): ~

Diameter and Type of Casing: 2" PVC
Approximate Total Depth of Well Below MP (ft.): ~
Measured Total Depth of Well Below MP (ft.): 20.21
Depth to Water Below MP (ft.): 13.95
Depth to Ice (if frozen) Below MP (ft.): —
Feet of Water in Well: 6.26
Gallons per foot: 0.17
Gallons in Well: 1.06
Purge Water Volume (gal.): 7
Purge Water Disposal: 55 gallon drum

Monument Condition: Good
Casing Condition: Good
Wiring Condition (dedicated pumps): —

Measuring Point (MP): Top of Casing (TOC)
Monument type: Stickup / Flushmount
Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.): 0.45
Monument to ground surface (ft.): flush

Datalogger type: n/a
Datalogger serial #: n/a
Measured cable length (ft.): n/a

- ☑ Lock present and operational
- ☑ Well name legible on outside of well
- ☑ Evidence of frost-jacking: No

Notes: cut casing to allow plug to fit

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW-12
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument: YSI Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations: clear

Notes:

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1231	pump started					
1232	5.9	3.38	1083	6.56	201.3	slightly turbid
1235	5.8	2.49	1055	6.56	202.3	clear
1238	5.7	2.22	1016	6.58	201.6	clear
1241	5.7	1.97	955	6.60	200.7	clear
1244	5.7	1.77	906	6.62	200.3	clear
1245	sample	collected				

Laboratory: SGS

	Analysis	Sample Containers	Preservatives	Dup
X	VOC			

SMH

MW-12

Well No.

MONITORING WELL SAMPLING LOG

Owner/Client: BMEG
Location: BMEG
Sampling Personnel: KLC
Weather Conditions: clear Air Temp. (°F): 15

Project No.: 101926-002
Date: 11/1/18
Well: ~~1250~~ MW-13
Time started: 1250
Time completed: 1335

Sample No.: MW-13 Time: 1319
Duplicate: — Time: —
Equipment Blank: — Time: —

Pump: _____
Purging Method: *portable / dedicated pump*
Pumping Start: 1305
Purge Rate (gal./min.): ~0.5
Pumping End: 1319

Pump Set Depth Below MP (ft.): ~18.42
KuriTec Tubing (ft.): 30
TruPoly Tubing (ft.): —

Diameter and Type of Casing: 2" PVC
Approximate Total Depth of Well Below MP (ft.): -
Measured Total Depth of Well Below MP (ft.): 20.42
Depth to Water Below MP (ft.): 14.28
Depth to Ice (if frozen) Below MP (ft.): -
Feet of Water in Well: 6.14
Gallons per foot: 0.17
Gallons in Well: 1.04
Purge Water Volume (gal.): 7
Purge Water Disposal: 55 gallon drum

Monument Condition: Good
Casing Condition: Good
Wiring Condition (dedicated pumps): —

Measuring Point (MP): *Top of Casing (TOC)*
Monument type: *Stickup / Flushmount*
Measurement method: *Rod & level / Tape measure*

Top-of-casing to monument (ft.): —
Monument to ground surface (ft.): flush

Datalogger type: n/a
Datalogger serial #: n/a
Measured cable length (ft.): n/a

☑ Lock present and operational
☐ Well name legible on outside of well
☑ Evidence of frost-jacking: No

Notes: cut casing - so plug will fit

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW-13
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument VF Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations clear

Notes —

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
13:05	pump started					
13:06	8.6	5.06	979	673	208.6	clear slightly turbid
13:09	6.2	0.70	643	6.61	207.6	slightly turbid
13:12	6.2	0.85	675	6.62	207.2	~~clear~~ "
13:15	6.2	0.84	657	6.63	206.3	clear
13:18	6.2	0.87	632	6.63	206.3	clear
13:19	sample	collected				

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC			☐
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

sim H

MW-13
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client: BMES
Location: BMES
Sampling Personnel: KLC
Weather Conditions: clear
Air Temp. (°F): 15

Project No.: 101926-002
Date: 11/1/18
Well: MW-7
Time started: 14:08
Time completed: 14:48

Sample No.: MW-7 — Time: 14:35
Duplicate: — — Time: —
Equipment Blank: — — Time: —

Pump: Mega Monsoon
Purging Method: *portable / dedicated* pump
Pumping Start: 14:21
Purge Rate (gal./min.): ~0.5
Pumping End: 14:35

Pump Set Depth Below MP (ft.): ~21
KuriTec Tubing (ft.): 35
TruPoly Tubing (ft.): —

Diameter and Type of Casing: 2" PVC
Approximate Total Depth of Well Below MP (ft.): —
Measured Total Depth of Well Below MP (ft.): 23.56
Depth to Water Below MP (ft.): 18.82
Depth to Ice (if frozen) Below MP (ft.): —
Feet of Water in Well: 4.74
Gallons per foot: 0.17
Gallons in Well: 0.8
Purge Water Volume (gal.): 7
Purge Water Disposal: 55 gallon drum

Monument Condition: Good
Casing Condition: Good
Wiring Condition (dedicated pumps): —

Measuring Point (MP): *Top of Casing (TOC)*
Monument type: *Stickup* / *Flushmount*
Measurement method: *Rod & level* / *Tape measure*

Top-of-casing to monument (ft.): 0.34
Monument to ground surface (ft.): 2.86

Datalogger type: n/a
Datalogger serial #: n/a
Measured cable length (ft.): n/a

- ☑ Lock present and operational: No
- ☐ Well name legible on outside of well: No
- ☑ Evidence of frost-jacking: No

Notes: —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW-7
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations clear

Notes

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
14:21	pump	started				
1422	5.0	1.05	451.5	6.79	214.3	slightly turbid
1425	5.2	1.29	468.2	6.77	203.1	clear
1428	5.2	1.52	473.2	6.81	187.0	clear
1431	5.2	1.39	473.5	6.83	173.8	clear
1434	5.2	1.36	476.2	6.84	166.8	clear
1435	sample	collected				

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
X	VOC			

SMH

MW-7
Well No.

MONITORING WELL SAMPLING LOG

Owner/Client: BMES
Location: KLC
Sampling Personnel: BMES
Weather Conditions: Sunny
Air Temp. (°F): 21

Project No.: 101976-002
Date: 11/1/18
Well: MW-1R
Time started: 16:08
Time completed: 16:50

Sample No.: MW-1R — Time: 16:34
Duplicate: MW-101R — Time: 16:24
Equipment Blank: — — Time: —

Pump: Mega Monsoon
Purging Method: portable / dedicated pump
Pumping Start: 16:20
Purge Rate (gal./min.): ~0.5
Pumping End: 16:34

Pump Set Depth Below MP (ft.): ~19
KuriTec Tubing (ft.): 35
TruPoly Tubing (ft.): —

Diameter and Type of Casing: 2" PVC
Approximate Total Depth of Well Below MP (ft.): —
Measured Total Depth of Well Below MP (ft.): 21.07
Depth to Water Below MP (ft.): ~~21.07~~ 14.46
Depth to Ice (if frozen) Below MP (ft.): —
Feet of Water in Well: 6.61
Gallons per foot: 0.17
Gallons in Well: 1.1
Purge Water Volume (gal.): 2
Purge Water Disposal: 55 gallon drum

Monument Condition: Good
Casing Condition: Good

Wiring Condition (dedicated pumps): —

Measuring Point (MP): Top of Casing (TOC)

Monument type: Stickup / Flushmount
Measurement method: Rod & level / Tape measure

Top-of-casing to monument (ft.): 0.36
Monument to ground surface (ft.): flush

Datalogger type: n/a
Datalogger serial #: n/a
Measured cable length (ft.): n/a

- [x] Lock present and operational
- [x] Well name legible on outside of well
- [x] Evidence of frost-jacking — No

Notes: —

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MW-1R
Well No.

MONITORING WELL SAMPLING LOG

Field Parameter Instrument YSI Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations clear

Notes —

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
16:20	pump	start				
16:21	8.8	4.01	620	6.64	205.8	turbid
16:24	8.3	3.16	589	6.64	202.5	slightly turbid
16:27	8.3	3.27	575	6.59	201.3	clear
16:30	8.2	3.40	558	6.65	202.2	clear
16:33	8.5	3.28	552	6.66	202.8	clear
16:34	sample	collected				

Laboratory SGS

	Analysis	Sample Containers	Preservatives	Dup
X	VOC			X

MW-1R
Well No.

SMH

MONITORING WELL SAMPLING LOG

Owner/Client BMES
Location ~~MW-10~~ MW-9
Sampling Personnel FLG
Weather Conditions 10° Clear Air Temp. (°F) 10°

Project No. 101926-001
Date 11/1/18
Well ~~MW-10~~ MW-9
Time started 10:11
Time completed 11:35

Sample No. MW-9 Time 1116
Duplicate — Time —
Equipment Blank — Time —

Pump Mega Monsoon Pro
Purging Method *portable / dedicated pump*
Pumping Start 1059
Purge Rate (gal./min.) 0.23
Pumping End 1114

Pump Set Depth Below MP (ft.) 17.00'
KuriTec Tubing (ft.) 25'
TruPoly Tubing (ft.) —

Diameter and Type of Casing 2" PVC
Approximate Total Depth of Well Below MP (ft.) —
Measured Total Depth of Well Below MP (ft.) 20.44'
Depth to Water Below MP (ft.) 10.78'
Depth to Ice (if frozen) Below MP (ft.) —
Feet of Water in Well 9.66
Gallons per foot 0.17
Gallons in Well 1.64
Purge Water Volume (gal.) 3.5 gal
Purge Water Disposal Drums

Monument Condition Good
Casing Condition Good
Wiring Condition (dedicated pumps) N/A —

Measuring Point (MP) *Top of Casing (TOC)*
Monument type: *Stickup* / *Flushmount*
Measurement method: *Rod & level* / *Tape measure*

Top-of-casing to monument (ft.) 0.83'
Monument to ground surface (ft.) 0.0

Datalogger type n/a
Datalogger serial # n/a
Measured cable length (ft.) n/a

- ☐ Lock present and operational N/A
- ☐ Well name legible on outside of well N/A
- ☐ Evidence of frost-jacking no

Notes

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument _____ Circle one: *Parameters stabilized or >3 well volumes purged* 1.64

Sample Observations 3.5 gal purged

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1059	3.6	18.07	451.8	6.65	298.1	Clear
1102	4.2	7.43	432.1	6.53	297.5	"
1105	4.2	6.68	436.2	6.51	297.1	"
1108	4.3	6.00	434.1	6.51	297.3	"
1111	4.2	6.53	434.1	6.53	295.1	"
1114	4.3	6.53	432.4	6.53	294.9	↓
1116	Sample time					

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup
☑	VOC	3 VOAs	HCL	☐
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

Well No. MW-9

MONITORING WELL SAMPLING LOG

Owner/Client BMES
Location MW-10
Sampling Personnel FLG
Weather Conditions Clear Air Temp. (°F) 10

Project No. 101926-001
Date 11/1/18
Well MW-10
Time started 11:39
Time completed 1240

Sample No. MW-10 Time 1225
Duplicate — Time —
Equipment Blank — Time —

Pump Mega Monsoon Pro
Purging Method *portable / dedicated pump*
Pumping Start 1207
Purge Rate (gal./min.) 0.33
Pumping End 1240

Pump Set Depth Below MP (ft.) 16.5'
KuriTec Tubing (ft.) 25'
TruPoly Tubing (ft.) —

Diameter and Type of Casing 2" PVC
Approximate Total Depth of Well Below MP (ft.) —
Measured Total Depth of Well Below MP (ft.) 19.91
Depth to Water Below MP (ft.) 11.89'
Depth to Ice (if frozen) Below MP (ft.) —
Feet of Water in Well 8.02
Gallons per foot 0.17
Gallons in Well 1.36
Purge Water Volume (gal.) 5.29
Purge Water Disposal Drum

Monument Condition Good
Casing Condition Good
Wiring Condition (dedicated pumps) N/A —

Measuring Point (MP) *Top of Casing (TOC)*
Monument type: *Stickup* / *Flushmount*
Measurement method: *Rod & level* / *Tape measure*

Top-of-casing to monument (ft.) 0
Monument to ground surface (ft.) 0.68

Datalogger type n/a
Datalogger serial # n/a
Measured cable length (ft.) n/a

- ☐ Lock present and operational n/A
- ☐ Well name legible on outside of well n/A
- ☐ Evidence of frost-jacking no

Notes

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

SMH

Field Parameter Instrument _____ Circle one: *Parameters stabilized* or *>3 well volumes purged*

Sample Observations _____

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1202	4.2	6.20	436.3	6.77	104.8	Cloudy
1205	5.1	4.59	448.8	6.78	77.8	Slightly Cloudy
1208	5.3	3.30	450.6	6.81	56.9	Clear
1211	5.4	2.72	451.2	6.82	45.3	↓
1214	5.8	2.33	455.1	6.83	33.2	↓
1217	5.6	1.83	453.4	6.84	22.0	↓
1220	5.6	1.50	453.7	6.85	16.0	↓
1223	5.6	1.49	449.8	6.85	18.0	↓
1225	Sample time					

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC	3 VOA	HCl	☐
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

SMH

Well No. MW-10

MONITORING WELL SAMPLING LOG

Owner/Client BMES
Location MW-11
Sampling Personnel FLG
Weather Conditions 10 Clear Air Temp. (°F) 10

Project No. 101926-001
Date 11/1/18
Well MW-11
Time started 1251
Time completed 1335

Sample No. MW-11 Time 1315
Duplicate — Time —
Equipment Blank ~~MW-11~~ EB-11 Time 1325

Pump Mega Monsoon Pro
Purging Method *portable / dedicated pump*
Pumping Start 1301
Purge Rate (gal./min.) 0.18
Pumping End 1315

Pump Set Depth Below MP (ft.) 18.1
KuriTec Tubing (ft.) 25
TruPoly Tubing (ft.) —

Diameter and Type of Casing 2" PVC
Approximate Total Depth of Well Below MP (ft.) —
Measured Total Depth of Well Below MP (ft.) 20.16
Depth to Water Below MP (ft.) 11.05'
Depth to Ice (if frozen) Below MP (ft.) —
Feet of Water in Well 9.11
Gallons per foot 0.17
Gallons in Well 1.54
Purge Water Volume (gal.) 2.5
Purge Water Disposal Drum

Monument Condition Good
Casing Condition Good
Wiring Condition (dedicated pumps) N/A —

Measuring Point (MP) *Top of Casing (TOC)*
Monument type: *Stickup* / *Flushmount*
Measurement method: *Rod & level* / *Tape measure*

Top-of-casing to monument (ft.) 0.71'
Monument to ground surface (ft.) 0

Datalogger type n/a
Datalogger serial # n/a
Measured cable length (ft.) n/a

- ☐ Lock present and operational N/A
- ☐ Well name legible on outside of well N/A
- ☐ Evidence of frost-jacking NO

Notes

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument _____ Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations _____

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
13:01	6.9	7.49	573	6.78	174.6	Brown
13:07	7.2	6.47	591	6.79	162.8	↑
13:13	7.4	5.82	595	6.81	166.7	
13:19	7.5	5.39	594	6.81	171.4	
13:25	7.6	5.91	595	6.81	172.3	↓
13:35	8.2	[illegible]	[illegible]			

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC	3 VOA	HCl	☐ ☒
☐	4 PFAS			☐
☐				☐
☐				☐
☐				☐
☐				☐

SMH

Well No. MW-11

MONITORING WELL SAMPLING LOG

Owner/Client BMES
Location MW-8
Sampling Personnel RLG
Weather Conditions 15 Clear Air Temp. (°F) 15

Project No. 101926-001
Date 11/11/8
Well MW-8
Time started 1340
Time completed 1438

Sample No. MW-8 Time 1416
Duplicate MW-103 Time 1406
Equipment Blank — Time —

Pump Mega Monsoon Pro
Purging Method (portable) / dedicated pump
Pumping Start 1356
Purge Rate (gal./min.) 0.17
Pumping End 1416

Diameter and Type of Casing 2" PVC
Approximate Total Depth of Well Below MP (ft.) —
Measured Total Depth of Well Below MP (ft.) 20.07
Depth to Water Below MP (ft.) 11.04
Depth to Ice (if frozen) Below MP (ft.) —
Feet of Water in Well 9.03
Gallons per foot 0.17
Gallons in Well 1.53
Purge Water Volume (gal.) 3.0
Purge Water Disposal Drum

Pump Set Depth Below MP (ft.) 17.6
KuriTec Tubing (ft.) 2
TruPoly Tubing (ft.) —

Monument Condition Good

Casing Condition Good

Wiring Condition N/A
(dedicated pumps) —

Measuring Point (MP) *Top of Casing (TOC)*

Monument type: *Stickup* / *Flushmount*
Measurement method: *Rod & level* / *Tape measure*

Top-of-casing to monument (ft.) 0.50
Monument to ground surface (ft.) 0

Datalogger type n/a
Datalogger serial # n/a
Measured cable length (ft.) n/a

- ☐ Lock present and operational N/A
- ☐ Well name legible on outside of well N/A
- ☐ Evidence of frost-jacking no

Notes

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument _____ Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations _____

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1356	5.9	7.32	5[illegible]	[illegible]	194.0	Clear
1359	6.4	6.31	588	6.76	[illegible]	↓
1406	7.4	5.46	602	6.89	197.6	
1403	7.5	5.23	604	6.82	198.4	
1408	7.5	5.12	605	6.86	[illegible]	
1411	7.4	5.10	605	6.86	[illegible]	
1414	7.4	5.07	603	6.86	[illegible]	
1416	Sa[illegible]	[illegible]				

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC	3 [illegible]	[illegible]	☒
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

SM4

Well No. MW-3

MONITORING WELL SAMPLING LOG

Owner/Client BMES
Location MW-6
Sampling Personnel FLG
Weather Conditions Clear Air Temp. (°F) 10

Project No. 101926-001
Date 11/1/18
Well MW-6
Time started 1602
Time completed 1651

Sample No. MW-6 Time 1633
Duplicate — Time —
Equipment Blank — Time —

Pump Mega Monsoon Pro
Purging Method *portable / dedicated pump*
Pumping Start 1613
Purge Rate (gal./min.) 0.23
Pumping End 1633

Pump Set Depth Below MP (ft.) 19.16
KuriTec Tubing (ft.) —
TruPoly Tubing (ft.) —

Diameter and Type of Casing 2" PVC
Approximate Total Depth of Well Below MP (ft.) —
Measured Total Depth of Well Below MP (ft.) 21.16
Depth to Water Below MP (ft.) 16.51
Depth to Ice (if frozen) Below MP (ft.) —
Feet of Water in Well 4.65
Gallons per foot 0.17
Gallons in Well 0.79
Purge Water Volume (gal.) 4.6
Purge Water Disposal Drum

Monument Condition Lock ear on cap is broken

Casing Condition Good

Wiring Condition N/A
(dedicated pumps) —

Measuring Point (MP) *Top of Casing (TOC)*
Monument type: *Stickup* / *Flushmount*
Measurement method: *Rod & level* / *Tape measure*

Top-of-casing to monument (ft.) 0.41
Monument to ground surface (ft.) 1.65

Datalogger type n/a
Datalogger serial # n/a
Measured cable length (ft.) n/a

- ☐ Lock present and operational NO, [illegible] Bent from Road Grading
- ☐ Well name legible on outside of well NO
- ☐ Evidence of frost-jacking NO

Notes

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

Well No. MW-6

MONITORING WELL SAMPLING LOG

Field Parameter Instrument _____ Circle one: *Parameters stabilized or >3 well volumes purged*

Sample Observations _____

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1613	3.0	4.90	500	6.36	142.3	Slightly Turbid
1616	4.0	3.44	514	6.32	143.9	Slightly
1619	3.0	2.62	538	6.34	145.3	
1622	3.8	2.11	540	6.35	144.1	
1625	4.0	1.82	563	6.31	147.9	
1628	5.4	1.96	576	6.30	151.0	
1631	5.4	1.76	571	6.31	151.0	
1632	5.0	1.76	571			

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC	3 VOA	HCl	☐
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

5 MH

Well No. MW-6

MONITORING WELL SAMPLING LOG

Owner/Client BMES
Location MW-5
Sampling Personnel FLG
Weather Conditions 15 Clear Air Temp. (°F) 15

Project No. 101926-004
Date 11/1/18
Well MW-5
Time started 1506
Time completed 1555

Sample No. MW-5 Time 1549
Duplicate — Time —
Equipment Blank — Time —

Pump Mega Monsoon Pro
Purging Method *portable / dedicated pump*
Pumping Start 1526
Purge Rate (gal./min.) 0.4
Pumping End 1549

Pump Set Depth Below MP (ft.) 27.41
KuriTec Tubing (ft.) 35
TruPoly Tubing (ft.) —

Diameter and Type of Casing 2" PVC
Approximate Total Depth of Well Below MP (ft.) —
Measured Total Depth of Well Below MP (ft.) 29.41'
Depth to Water Below MP (ft.) 16.59'
Depth to Ice (if frozen) Below MP (ft.) —
Feet of Water in Well 12.82
Gallons per foot 0.17
Gallons in Well 2.17
Purge Water Volume (gal.) 9 2
Purge Water Disposal Drum

Monument Condition Good
Casing Condition Good
Wiring Condition (dedicated pumps) N/A —

Measuring Point (MP) *Top of Casing (TOC)*
Monument type: *Stickup / Flushmount*
Measurement method: *Rod & level / Tape measure*

Top-of-casing to monument (ft.) 0.60
Monument to ground surface (ft.) 1.78

Datalogger type n/a
Datalogger serial # n/a
Measured cable length (ft.) n/a

- ☐ Lock present and operational no
- ☐ Well name legible on outside of well no
- ☐ Evidence of frost-jacking no

Notes

WELL CASING VOLUMES

Diameter of Well [ID-inches]	CMT	1¼	2	3	4	6	8
Gallons per lineal foot	0.000253	0.08	0.17	0.38	0.66	1.5	2.6

MONITORING WELL SAMPLING LOG

SMH

Field Parameter Instrument _____ Circle one ~~Parameters stabilized~~ or >3 well volumes purged

Sample Observations _____

Notes _____

FIELD PARAMETERS [stabilization criteria]

Time	Temp. (°C) [± 3%]	Dissolved Oxygen (mg/L) [±10%]	Conductivity (µS/cm) [± 3%]	pH [± 0.1]	ORP (mV) [± 10 mV]	Water Clarity (visual)
1526	3.2	10.44	448.8	6.84	161.0	Cloudy
1529	4.2	4.45	456.8	6.72	152.2	Slightly Cloudy
1532	4.4	2.88	458.1	6.72	143.0	Clear
1535	4.4	2.46	458.5	6.71	136.8	↓
1538	4.6	2.12	460.5	6.75	124.2	↓
1541	4.6	1.98	461.6	6.74	123.5	↓
1544	4.6	1.94	460.5	6.75	127.3	↓
1547	4.6	1.74	460.5	6.76	121.2	↓
1549	Sample time					

Laboratory *SGS*

	Analysis	Sample Containers	Preservatives	Dup
☒	VOC	3 VOA	HCl	☐
☐				☐
☐				☐
☐				☐
☐				☐
☐				☐

SMH

Well No. MW-5

APPENDIX C: INDOOR AIR SAMPLING LOGS

Appendix C

Indoor Air Sampling Logs

CONTENTS

SHANNON & WILSON, INC.

INDOOR AIR SAMPLING LOG

Owner/Occupant: Dana Smith
Location: 518 Fulton Street, Fairbanks AK.
Mailing Address: —
Weather: 10°F, cloudy

Project number: 101926-005
Project name: 2018 Indoor-Air BMES
Date: 11/15/18
Time: 1430
Sampling personnel: SMH

Sample No.: IA1-2018
Date (start): 11/15/18 Time (start): 1435
Date (end): 11/16/18 Time (end): 1438

Duplicate: —
Date (start): ____ Time (start): ____
Date (end): ____ Time (end): ____

Sample Location: Downstairs. Laundry and boiler room. In close proximity to sub-slab ports; directly between sub-slab samples SS1A and SS1B collected in 2017.

Sample height (ft.): 4'10" Above ground surface

Canister ID: 640987
Canister volume (L): 6
Relative humidity: 80%
Barometric pressure: 30.08 inHg

Canister vacuum (in. Hg): 30 Initial
Canister vacuum (in. Hg): 6 Final
Laboratory: Eurofins
Analysis: TO-15 Modified

Notes: No changes to location; see initial Building Inventory Questionnaire conducted on January 17, 2017.

SHANNON & WILSON, INC.

School District Building Supervisor

INDOOR AIR SAMPLING LOG

~~Owner/Occupant~~ Cindy Jacobson

Location 615 Monroe Street Fairbanks Ak.

Mailing Address 1316 Peger Rd. Fairbanks

Weather 10° F, cloudy

Project number 101926-005

Project name 2018 Indoor-Air BMES

Date 11/15/18

Time 1445

Sampling personnel SMH

Sample No. IA13-2018

Date (start) 11/15/18 Time (start) 1507

Date (end) 11/16/18 Time (end) 1453

Duplicate ———

Date (start) / Time (start) /

Date (end) / Time (end) /

Sample Location: Inside the Chapel. Closest to the west wall; near outside sub-slab port SV13.

Sample height (ft.) 4'5" Above ground surface

Canister ID 6L1580

Canister volume (L) 6

Relative humidity 80%

Barometric pressure 30.08 inHg

Canister vacuum (in. Hg) 30 Initial

Canister vacuum (in. Hg) 5 Final

Laboratory Eurofins

Analysis TO-15 Modified

Notes: Filled out Building Inventory Questionnaire (BIQ). The building is approximately 80,000 ft^2 and the inventory mainly focus' on the area of sample collection (The Chapel)

eurofins | Air Toxics

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: _____

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

Client: Shannon & Wilson
Project Name: 2018 Indoor-Air
Project Manager: Sheila Hinckley Project # 101926-005
Sampler: Sheila
Site Name: Bentley Mall East Satellite

Special Instructions/Notes: See list provided by Shannon & Wilson for requested analytes.

Turnaround Time (Rush surcharges may apply)
Standard X Rush _____(specify)

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	TO-15 Mod SIM			
	IA1-2018	610987	1831	11/15/18	1435	11/16/18	1438	30	6			X			
	IA13-2018	611580	1743	11/15/18	1507	11/16/18	1453	30	5			X			

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Sheila Hinckley Shannon & Wilson	11/19/18	0900			
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: | Custody Seals Intact? | Yes | No | None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

APPENDIX I

DEC Building Survey and Indoor Air Sampling Questionnaire

Monroe Catholic School

ALASKA DEPARTMENT OF ENVIRONMENAL CONSERVATION
BUILDING INVENTORY AND INDOOR AIR SAMPLING QUESTIONNAIRE

Note: The school is comprised of approximately 80,000 ft². For the purpose of this single indoor-air sample, the main focus of this BIQ is the chapel.

This form should be prepared by a person familiar with indoor air assessments with assistance from a person knowledgeable about the building. Complete this form for each building where interior samples (e.g., indoor air, crawl space, or subslab soil gas samples) will be collected. Section I of this form should be used to assist in choosing an investigative strategy during workplan development. Section II should be used to assist in identification of complicating factors during a presampling building walk-through.

Preparer's Name Sheila Hinckley Date/Time Prepared 11/15/18 at ~1400

Preparer's Affiliation Shannon & Wilson, Inc. Phone No. 907-479-0600

Purpose of Investigation Indoor-Air Sample Collection

SECTION I: BUILDING INVENTORY

1. **OCCUPANT OR BUILDING PERSONNEL:** Plant Manager

Interviewed: Y / N

Last Name Weis First Name Bill

Address 615 Monroe Street

City Fairbanks

Phone No. 907-374-9521 – Cindy Jacobson (Building Supervisor)

Number of Occupants/people at this location ~300 Age of Occupants various

2. **OWNER or LANDLORD:** (Check if same as occupant ____.) Monroe Catholic School see contact # above

Interviewed: Y / N

Last Name First Name

Address

City

Phone No.

3. **BUILDING CHARACTERISTICS**

Type of Building: (Circle appropriate response.)

Residential (School) Commercial/Multi-use
Industrial (Church) Other

If the property is residential, what type? (Circle appropriate response.)

(Ranch)	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouse/Condo
Modular	Log Home	Other_____

If multiple units, how many?_____

If the property is commercial, what type?

Business types(s) School

Does it include residences (i.e., multi-use)? Y / (N) If yes, how many?_____

Other characteristics: classrooms on the west side of the school.

Number of floors 1 - 2 Building age unknown

Is the building insulated? Y / N How airtight? Tight / (Average) / Not Tight

Have occupants noticed chemical odors in the building? Y / (N)

If yes, please describe:_____

4. AIRFLOW

Use air current tubes, tracer smoke, or knowledge about the building to evaluate airflow patterns and qualitatively describe:

Airflow between floors
N/A

Airflow in building near suspected source
unknown

Outdoor air infiltration
low

Infiltration into air ducts
low

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply.)

a. Above-grade construction: wood frame | log | concrete | brick
unknown
constructed on pilings with enclosed air space | constructed on pilings with open air space

b. Basement type: full | crawlspace | slab-on-grade | other_____

c. Basement floor: concrete | dirt | stone | other _____

d. Basement floor: unsealed | sealed | sealed with_____

e. Foundation walls: poured | block | stone | other _____
unknown

f. Foundation walls: unsealed | sealed | sealed with _____

g. The basement is: wet | damp | dry

h. The basement is: unknown finished | unfinished | partially finished

i. Sump present? Y / N – none observed

j. Water in sump? Y / N / not applicable

Basement or lowest level depth below grade slab on grade (feet).

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, and drains).

Cracks, drains, etc. not observed in the chapel or the main hallways.

6. HEATING, VENTING, and AIR CONDITIONING (Circle all that apply.)

Type of heating system(s) used in this building: (Circle all that apply – not just primary.)

Hot air circulation	Heat pump	Hot water baseboard	
Space heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other_____

SMH

The primary type of fuel used is:

Natural gas	Fuel oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank is fueled by:_____

Boiler/furnace is located in: Basement | Outdoors | Main floor | Other Mechanical Room

Do any of the heating appliances have cold-air intakes? Y / N

Type of air conditioning or ventilation used in this building:

Central air	Window units	Open windows	None
Commercial HVAC	Heat-recovery system	Passive air system	

SMH

Are there air distribution ducts present? Y / N

Describe the ventilation system in the building, its condition where visible, and the tightness of duct joints. Indicate the location of air supply and exhaust points on the floor plan.

See attached figure

Is there a radon mitigation system for the building/structure? Y / (N) Date of Installation_____

Is the system active or passive? Active/Passive

7. **OCCUPANCY**

Is basement/lowest level occupied? (Full-time) Occasionally Seldom Almost never

Level	**General Use of Each Floor (e.g., family room, bedroom, laundry, workshop, or storage).**
~~Basement~~	None,
1st Floor	School building
2nd Floor	classrooms (2nd floor at north west area of school only)
3rd Floor	

8. **WATER AND SEWAGE**

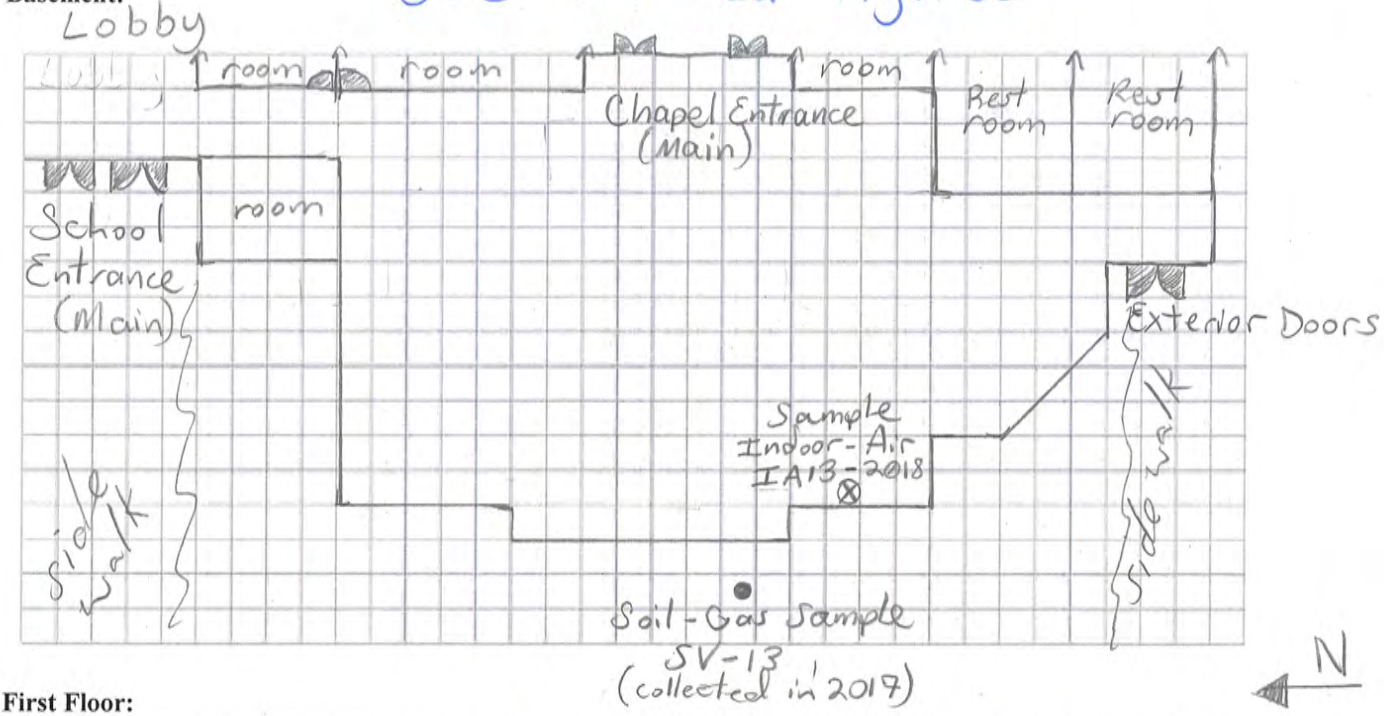
Water supply: (Public water) Drilled well Driven well Dug well Other_____

Sewage disposal: (Public sewer) Septic tank Leach field Dry well Other_____

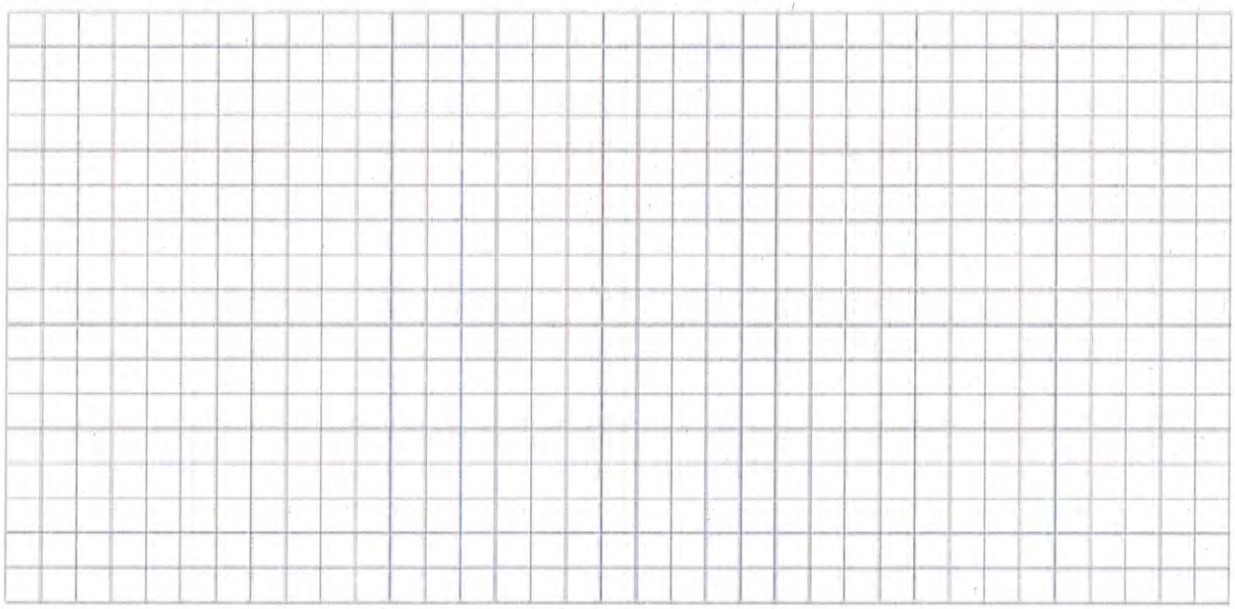
9. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note that.

Basement: See attached figures



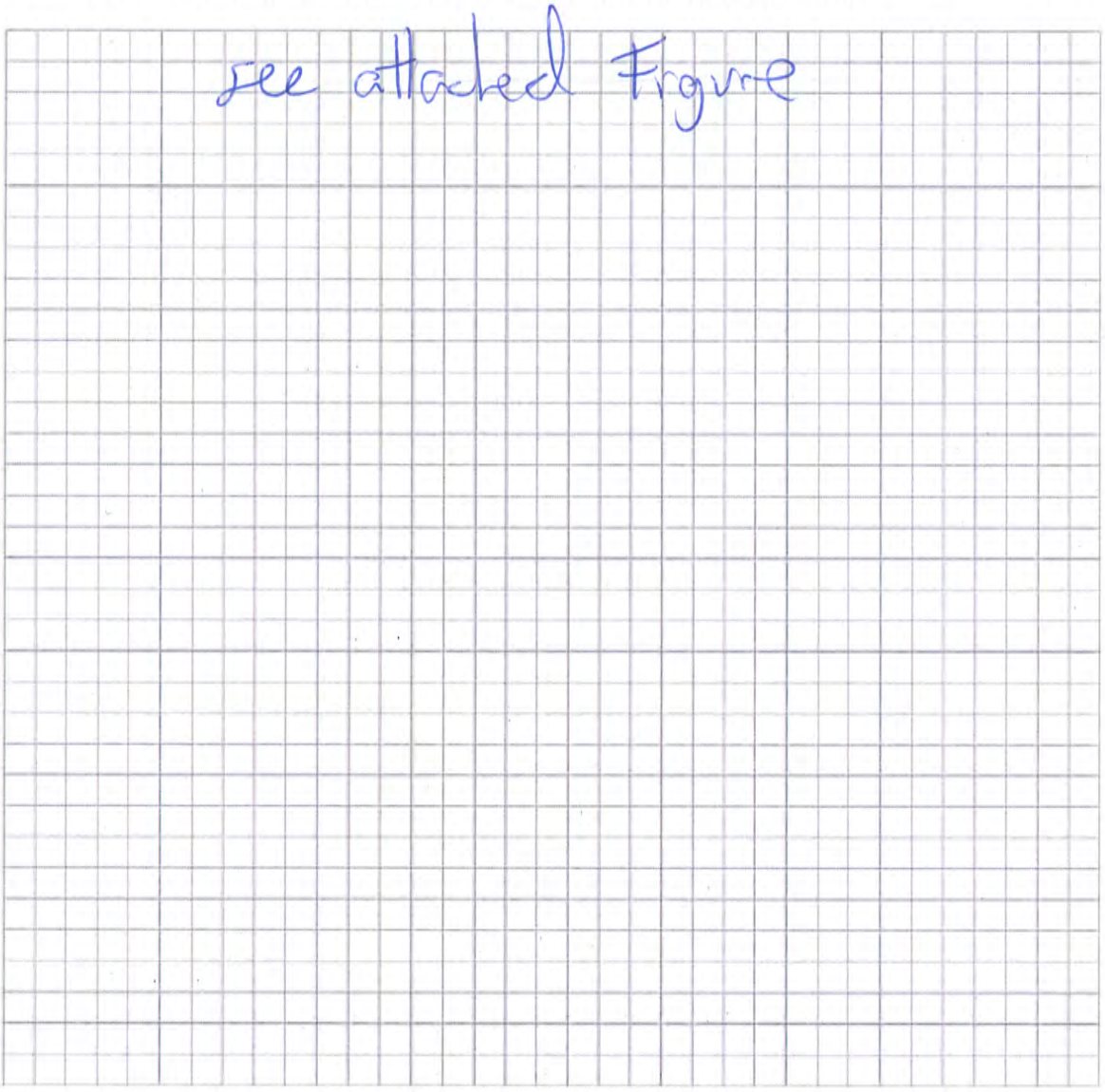
First Floor:



10. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (e.g., industries, gas stations, repair shops, landfills, etc.), outdoor air sampling locations and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the location of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



SECTION II: INDOOR AIR SAMPLING QUESTIONNAIRE

This section should be completed during a presampling walk-through. If indoor air sources of COCs are identified and removed, consider ventilating the building prior to sampling. However, ventilation and heating systems should be operating normally for 24 hours prior to sampling.

a) **1. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY**

Is there an attached garage? Y / (N)

Does the garage have a separate heating unit? Y / N / (NA)

Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, ATV, or car) Y / N / (NA)
Unknown Please specify_____

Has the building ever had a fire? Unknown Y / N When?_____

Is a kerosene or unvented gas space heater present? Y / (N) Where? not in chapel

Is there a workshop or hobby/craft area? Y / N Where and type_____

Is there smoking in the building? Y / (N) How frequently?_____

Has painting/staining been done in the last six months? Y / (N) Where and when?_____

Is there new carpet, drapes or other textiles? Y / (N) Where and when?_____

Is there a kitchen exhaust fan? (Y) / N If yes, where is it vented?_____

Is there a bathroom exhaust fan? (Y) / N If yes, where is it vented?_____

Is there a clothes dryer? unknown Y / N If yes, is it vented outside? Y / N

Are cleaning products, cosmetic products, or pesticides used that could interfere with indoor air sampling? Y / N

If yes, please describe_____

_____

_____

Do any of the building occupants use solvents at work? Y / N unknown
Building is not used for any of the below examples

(For example, is the building used for chemical manufacturing or a laboratory, auto mechanic or auto body shop, painting shop, fuel oil delivery area, or do any of the occupants work as a boiler mechanic, pesticide applicator, or cosmetologist?)

If yes, what types of solvents are used?_____

If yes, are his/her/their clothes washed at work? Y / (N)

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry cleaning regularly (weekly) No

Yes, use dry cleaning infrequently (monthly or less) (Unknown)

Yes, work at a dry cleaning services

2. **PRODUCT INVENTORY FORM** (For use during building walk-through.)

Make and model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality:

Location	Product Description	Site (units)	Condition[1]	Chemical Ingredients	Field Instrument Reading (units)	Photo[2] Y / N
No products observed in the chapel						

[1] Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**.

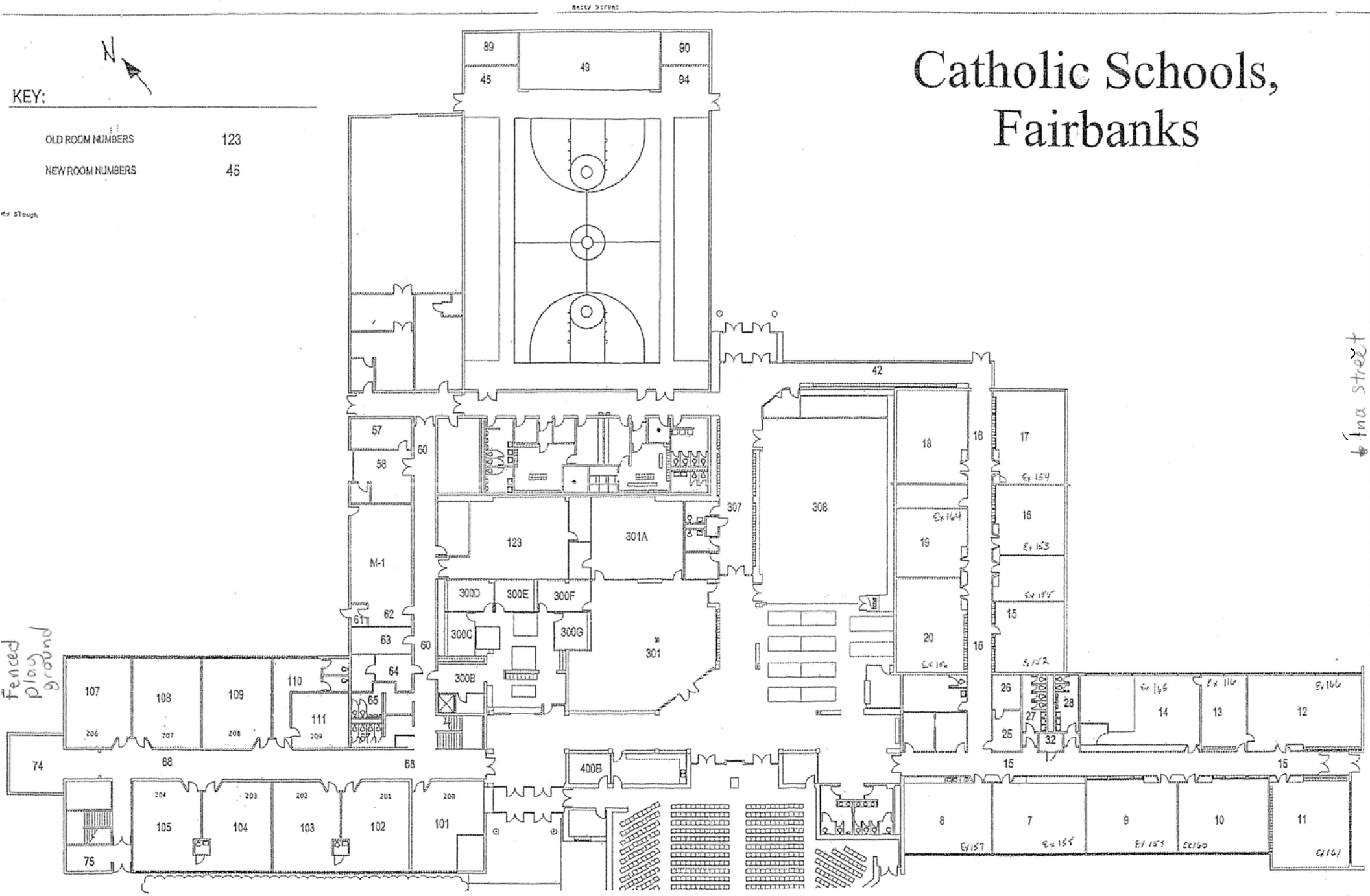
[2] Photographs of the front and back of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

This form was modified from:

ITRC (Interstate Technology and Regulatory Council). 2007. *Vapor Intrusion Pathway: A Practical Guideline.* VI-1. Washington, D.C.: Interstate Technology and Regulatory Council, Vapor Intrusion Team. Available at: www.itrcweb.org.

BETTY ST
North
C-1
MONROE CATHOLIC SCHOOLS SECOND ADD
MONROE ST

Catholic Schools, Fairbanks

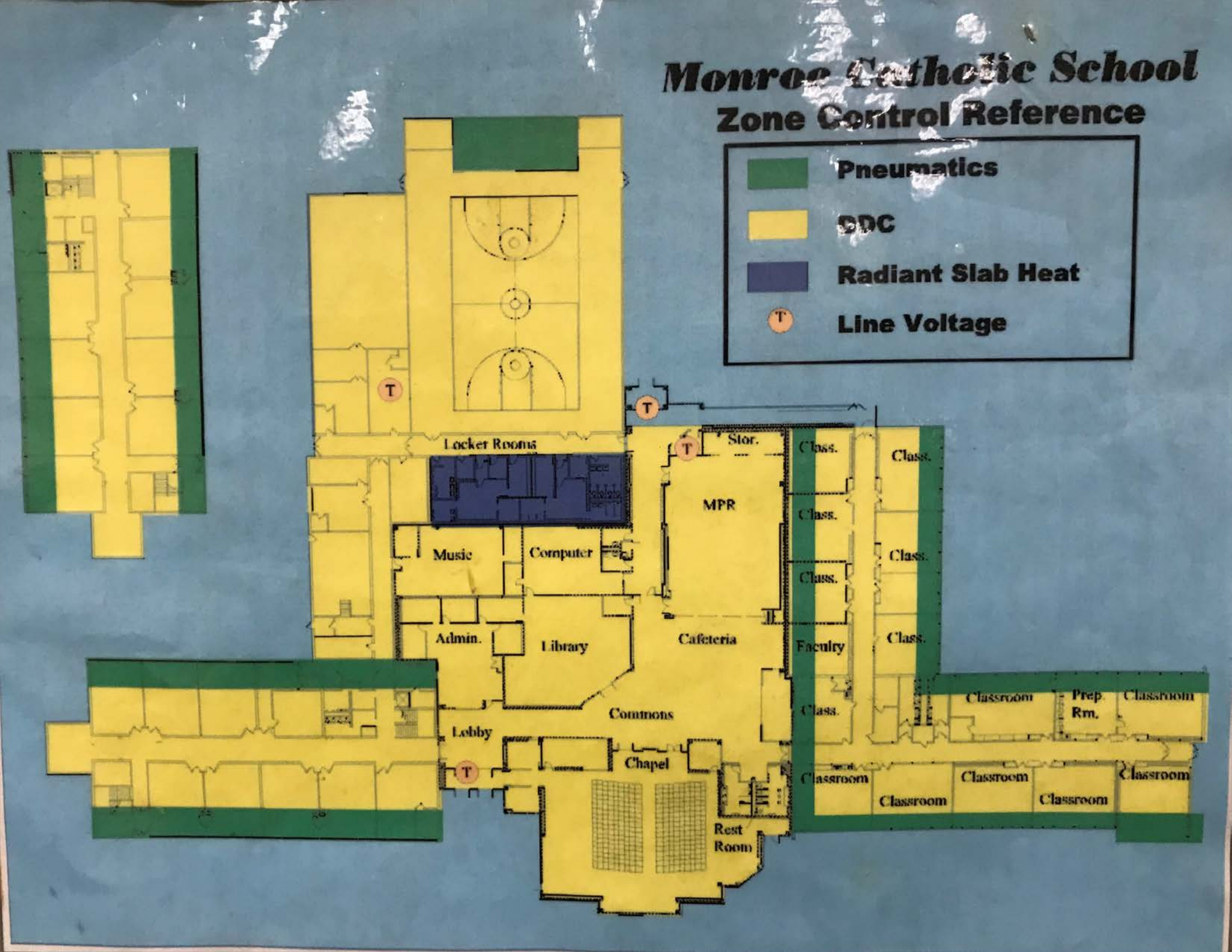


Chapel


CATHOLIC SCHOOLS OF FAIRBANKS
EMERGENCY EXIT PLAN
KEY
= AED
= Pull Station
= Fire Extinguisher
= Display Panel
= Exterior Relocation
= You are Here
E
S
N
W
MF Offices
STAGE
Nancy's Office
MF Warehouse
Gym
Kitchen
Rear Entrance
Storage
Shop
Boiler Room 62
Electrical Rm. 63
ICS Copy Rm. 64
BOYS
GIRLS
Music 123 Room
Room 301 A
Office
Academic Center RM 301
Mail room
MPR RM. 308
Commons
Room 18
Room 19
Room 20
Room 17
Room 16
MHS Copy Rm.
Room 15
Room 14
Room 13
Room 12
Room 11
Room 10
Room 9
Room 8
Room 7
Room ASP LAB
Room 107 206
Room 108 207
Room 109 208
Room 110 209
Room 111
ASP
Room 105 204
Room 104 203
Room 103 202
Room 102 201
Room 101 200
Rm. 75 205
Chapel
Boys
Girls
ICS
Monroe
Main Entrance
3/7/14

Monroe Catholic School

Zone Control Reference



APPENDIX D: MONITORING WELL SURVEY

Appendix D

Monitoring Well Survey

CONTENTS

MONITOR WELL SURVEY

BENTLEY MALL EAST SATELLITE

Fairbanks, Alaska

	ALASKA STATE PLANE ZONE 3, NAD83, USft.		NAVD88 ELEVATION	
WELL ID	NORTHING	EASTING	PVC PIPE	GROUND
BM-MW-1R	3968800.00	1375862.06	446.23	446.6
BM-MW-2R	3968848.89	1375709.75	445.96	446.4
BM-MW-3R	3968850.74	1375708.13	445.99	446.4
BM-MW-4R	3968943.56	1375723.21	444.79	445.1
BM-MW-5	3969118.40	1374819.90	447.73	446.1
BM-MW-6	3969124.45	1374818.59	447.56	446.1
BM-MW-7	3969410.57	1374417.21	449.67	447.2
BM-MW-8	3969218.39	1373663.25	441.62	442.1
BM-MW-9	3969203.76	1374201.91	441.46	442.3
BM-MW-10	3968967.07	1374612.88	442.95	443.7
BM-MW-11	3968941.18	1374060.37	441.82	442.6
BM-MW-12	3968917.64	1375316.66	445.45	446.1
BM-MW-13	3968766.05	1375576.75	445.87	446.5

Surveyed November, 2018

Prepared For Shannon & Wilson

Design Alaska Inc. Architects • Engineers • Surveyors
601 College Road Fairbanks Alaska 99701 907 452 1241
Fax 907 456 6883 E-Mail mail@designalaska.com

EPA OnSite Calculators

Feedback

Hydraulic Gradient Calculator

Feedback

Acknowledgement

Gradient Calculation **from fitting a plane to as many as fifteen points**

$a x_1 + b y_1 + c = h_1$
$a x_2 + b y_2 + c = h_2$
$a x_3 + b y_3 + c = h_3$
. . .
$a x_{15} + b y_{15} + c = h_{15}$

where (x_i, y_i) are the coordinates of the well and
h_i is the head

i = 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15
The coefficients a, b, and c are calculated by a least-squares fitting of the the data to a plane

The gradient is calculated from the square root of $(a^2 + b^2)$ and the angle from the arctangent of a/b or b/a depending on the quadrant

Example Data Set 1 | Example Data Set 2 | Calculate | Clear

Site Name	BMES
Date	12/11/18 Current Date
Calculation basis	Head

Coordinates ft			
I.D.	**x-coordinate**	**y-coordinate**	**head ft**
MW-1R	1375862.06	3968800.00	431.77
MW-2R	1375709.75	3968848.89	431.69
MW-3R	1375708.13	3968850.74	431.73
MW-4R	1375723.21	3968943.56	431.70
MW-5	1374819.90	3969118.40	431.14
MW-6	1374818.59	3969124.45	431.05
MW-7	1374417.21	3969410.57	430.85
MW-8	1373663.25	3969218.39	430.58
MW-9	1374201.91	3969203.76	430.68
MW-10	1374612.88	3968967.07	431.06
MW-11	1374060.37	3968941.18	430.77
MW-12	1375316.66	3968917.64	431.50
MW-13	1375576.75	3968766.05	431.59

Number of Points Used in Calculation	13
Max. Difference Between Head Values	0.3627
Gradient Magnitude (i)	0.0006073
Flow direction as degrees from North (positive y axis)	298.4
Coefficient of Determination (R^2)	0.986

Top

APPENDIX E: ANALYTICAL LABORATORY REPORTS

Appendix E

Analytical Laboratory Reports

CONTENTS

- SGS Laboratory Work Order 1189931
- Eurofins Laboratory Work Order 1811545

Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks
2355 Hill Rd
Fairbanks, AK 99707

Report Number: **1189931**

Client Project: **101926-002 BMES Annual GW**

Dear Sheila Hinckley,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Alaska Division Technical Director

Stephen Ede
2018.11.07
15:54:08 -09'00'

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**
SGS Project: **1189931**
Project Name/Site: **101926-002 BMES Annual GW**
Project Contact: **Sheila Hinckley**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/07/2018 2:22:46PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-5	1189931001	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-10	1189931002	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-11	1189931003	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
EB-11	1189931004	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-8	1189931005	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-108	1189931006	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-9	1189931007	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-6	1189931008	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
Trip Blank 1	1189931009	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-1R	1189931010	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-101R	1189931011	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-7	1189931012	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-13	1189931013	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-12	1189931014	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-2R	1189931015	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-3R	1189931016	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
MW-4	1189931017	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)
Trip Blank 2	1189931018	11/01/2018	11/03/2018	Water (Surface, Eff., Ground)

Method	Method Description
SW8260C	Volatile Organic Compounds (W) FULL

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
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Detectable Results Summary

Client Sample ID: **MW-5**
Lab Sample ID: 1189931001
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.500	ug/L
Benzene	0.180J	ug/L
Chloroform	0.700J	ug/L
cis-1,2-Dichloroethene	1.60	ug/L
Tetrachloroethene	80.7	ug/L
trans-1,2-Dichloroethene	0.400J	ug/L
Trichloroethene	11.1	ug/L
Trichlorofluoromethane	4.73	ug/L

Client Sample ID: **MW-10**
Lab Sample ID: 1189931002
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.360J	ug/L
Benzene	0.130J	ug/L
cis-1,2-Dichloroethene	1.21	ug/L
Tetrachloroethene	31.0	ug/L
trans-1,2-Dichloroethene	0.330J	ug/L
Trichloroethene	6.48	ug/L

Client Sample ID: **MW-11**
Lab Sample ID: 1189931003
Volatile GC/MS

Parameter	Result	Units
cis-1,2-Dichloroethene	1.11	ug/L
Tetrachloroethene	4.36	ug/L
trans-1,2-Dichloroethene	8.18	ug/L
Trichloroethene	1.80	ug/L
Trichlorofluoromethane	3.18	ug/L

Client Sample ID: **MW-8**
Lab Sample ID: 1189931005
Volatile GC/MS

Parameter	Result	Units
Chloroform	0.450J	ug/L
cis-1,2-Dichloroethene	1.15	ug/L
Tetrachloroethene	3.78	ug/L
trans-1,2-Dichloroethene	9.98	ug/L
Trichloroethene	1.45	ug/L

Client Sample ID: **MW-108**
Lab Sample ID: 1189931006
Volatile GC/MS

Parameter	Result	Units
Chloroform	0.460J	ug/L
cis-1,2-Dichloroethene	1.17	ug/L
Tetrachloroethene	3.85	ug/L
Toluene	0.310J	ug/L
trans-1,2-Dichloroethene	10.3	ug/L
Trichloroethene	1.47	ug/L

Detectable Results Summary

Client Sample ID: **MW-9**
Lab Sample ID: 1189931007
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.330J	ug/L
Chloroform	0.400J	ug/L
cis-1,2-Dichloroethene	3.73	ug/L
Tetrachloroethene	25.5	ug/L
trans-1,2-Dichloroethene	3.71	ug/L
Trichloroethene	7.35	ug/L

Client Sample ID: **MW-6**
Lab Sample ID: 1189931008
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.260J	ug/L
Chloroform	0.870J	ug/L
cis-1,2-Dichloroethene	1.29	ug/L
Tetrachloroethene	48.4	ug/L
Trichloroethene	5.77	ug/L
Trichlorofluoromethane	3.87	ug/L

Client Sample ID: **MW-1R**
Lab Sample ID: 1189931010
Volatile GC/MS

Parameter	Result	Units
1,1,1,2-Tetrachloroethane	1.00	ug/L
1,2-Dichloroethane	2.35	ug/L
Bromodichloromethane	0.420J	ug/L
Chloroform	18.2	ug/L
Tetrachloroethene	217	ug/L
Trichloroethene	1.08	ug/L
Trichlorofluoromethane	39.9	ug/L

Client Sample ID: **MW-101R**
Lab Sample ID: 1189931011
Volatile GC/MS

Parameter	Result	Units
1,1,1,2-Tetrachloroethane	1.05	ug/L
1,2-Dichloroethane	2.46	ug/L
Bromodichloromethane	0.440J	ug/L
Chloroform	18.8	ug/L
Tetrachloroethene	214	ug/L
Trichloroethene	1.06	ug/L
Trichlorofluoromethane	41.2	ug/L

Client Sample ID: **MW-7**
Lab Sample ID: 1189931012
Volatile GC/MS

Parameter	Result	Units
cis-1,2-Dichloroethene	2.34	ug/L
Tetrachloroethene	5.57	ug/L
Trichloroethene	2.69	ug/L

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Detectable Results Summary

Client Sample ID: **MW-13**
Lab Sample ID: 1189931013
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.170J	ug/L
Chloroform	1.95	ug/L
Tetrachloroethene	23.4	ug/L
Trichlorofluoromethane	1.86	ug/L

Client Sample ID: **MW-12**
Lab Sample ID: 1189931014
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.220J	ug/L
Benzene	0.150J	ug/L
Chloroform	0.710J	ug/L
cis-1,2-Dichloroethene	0.750J	ug/L
Tetrachloroethene	177	ug/L
Trichloroethene	5.50	ug/L
Trichlorofluoromethane	2.02	ug/L

Client Sample ID: **MW-2R**
Lab Sample ID: 1189931015
Volatile GC/MS

Parameter	Result	Units
Benzene	0.240J	ug/L
Chloroform	7.13	ug/L
cis-1,2-Dichloroethene	1.89	ug/L
Tetrachloroethene	211	ug/L
Trichloroethene	1.94	ug/L
Trichlorofluoromethane	16.1	ug/L

Client Sample ID: **MW-3R**
Lab Sample ID: 1189931016
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.440J	ug/L
Benzene	0.240J	ug/L
Chloroform	4.09	ug/L
cis-1,2-Dichloroethene	0.440J	ug/L
Tetrachloroethene	0.850J	ug/L
Trichlorofluoromethane	1.53	ug/L

Client Sample ID: **MW-4**
Lab Sample ID: 1189931017
Volatile GC/MS

Parameter	Result	Units
1,2-Dichloroethane	0.270J	ug/L
Tetrachloroethene	42.9	ug/L
Toluene	0.450J	ug/L
trans-1,2-Dichloroethene	0.710J	ug/L
Trichloroethene	1.48	ug/L
Trichlorofluoromethane	5.35	ug/L

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Results of **MW-5**

Client Sample ID: **MW-5**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931001
Lab Project ID: 1189931

Collection Date: 11/01/18 15:49
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 14:52
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 14:52
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,2-Dichloroethane	0.500		0.500	0.150	ug/L	1		11/05/18 14:52
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
Benzene	0.180	J	0.400	0.120	ug/L	1		11/05/18 14:52
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 14:52
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52

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Results of **MW-5**

Client Sample ID: **MW-5**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931001
Lab Project ID: 1189931

Collection Date: 11/01/18 15:49
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.700	J	1.00	0.310	ug/L	1		11/05/18 14:52
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
cis-1,2-Dichloroethene	1.60		1.00	0.310	ug/L	1		11/05/18 14:52
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:52
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 14:52
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 14:52
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Tetrachloroethene	80.7		1.00	0.310	ug/L	1		11/05/18 14:52
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
trans-1,2-Dichloroethene	0.400	J	1.00	0.310	ug/L	1		11/05/18 14:52
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:52
Trichloroethene	11.1		1.00	0.310	ug/L	1		11/05/18 14:52
Trichlorofluoromethane	4.73		1.00	0.310	ug/L	1		11/05/18 14:52
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:52
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 14:52
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 14:52
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		11/05/18 14:52
4-Bromofluorobenzene (surr)	103		85-114		%	1		11/05/18 14:52
Toluene-d8 (surr)	102		89-112		%	1		11/05/18 14:52

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Results of **MW-5**

Client Sample ID: **MW-5**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931001
Lab Project ID: 1189931

Collection Date: 11/01/18 15:49
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 14:52
Container ID: 1189931001-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-10**

Client Sample ID: **MW-10**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931002
Lab Project ID: 1189931

Collection Date: 11/01/18 12:25
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 15:07
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 15:07
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,2-Dichloroethane	0.360	J	0.500	0.150	ug/L	1		11/05/18 15:07
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
Benzene	0.130	J	0.400	0.120	ug/L	1		11/05/18 15:07
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 15:07
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07

Results of **MW-10**

Client Sample ID: **MW-10**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931002
Lab Project ID: 1189931

Collection Date: 11/01/18 12:25
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
cis-1,2-Dichloroethene	1.21		1.00	0.310	ug/L	1		11/05/18 15:07
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:07
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 15:07
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 15:07
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Tetrachloroethene	31.0		1.00	0.310	ug/L	1		11/05/18 15:07
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
trans-1,2-Dichloroethene	0.330	J	1.00	0.310	ug/L	1		11/05/18 15:07
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Trichloroethene	6.48		1.00	0.310	ug/L	1		11/05/18 15:07
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:07
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:07
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 15:07
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 15:07
Surrogates								
1,2-Dichloroethane-D4 (surr)	102		81-118		%	1		11/05/18 15:07
4-Bromofluorobenzene (surr)	103		85-114		%	1		11/05/18 15:07
Toluene-d8 (surr)	99.6		89-112		%	1		11/05/18 15:07

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Results of **MW-10**

Client Sample ID: **MW-10**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931002
Lab Project ID: 1189931

Collection Date: 11/01/18 12:25
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 15:07
Container ID: 1189931002-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-11**

Client Sample ID: **MW-11**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931003
Lab Project ID: 1189931

Collection Date: 11/01/18 13:15
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 15:22
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 15:22
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 15:22
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 15:22
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22

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Results of **MW-11**

Client Sample ID: **MW-11**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931003
Lab Project ID: 1189931

Collection Date: 11/01/18 13:15
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
cis-1,2-Dichloroethene	1.11		1.00	0.310	ug/L	1		11/05/18 15:22
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:22
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 15:22
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 15:22
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Tetrachloroethene	4.36		1.00	0.310	ug/L	1		11/05/18 15:22
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
trans-1,2-Dichloroethene	8.18		1.00	0.310	ug/L	1		11/05/18 15:22
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:22
Trichloroethene	1.80		1.00	0.310	ug/L	1		11/05/18 15:22
Trichlorofluoromethane	3.18		1.00	0.310	ug/L	1		11/05/18 15:22
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:22
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 15:22
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 15:22
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		81-118		%	1		11/05/18 15:22
4-Bromofluorobenzene (surr)	101		85-114		%	1		11/05/18 15:22
Toluene-d8 (surr)	99.7		89-112		%	1		11/05/18 15:22

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J flagging is activated

Results of **MW-11**

Client Sample ID: **MW-11**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931003
Lab Project ID: 1189931

Collection Date: 11/01/18 13:15
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 15:22
Container ID: 1189931003-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **EB-11**

Client Sample ID: **EB-11**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931004
Lab Project ID: 1189931

Collection Date: 11/01/18 13:25
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 15:38
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 15:38
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 15:38
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 15:38
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38

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Results of **EB-11**

Client Sample ID: **EB-11**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931004
Lab Project ID: 1189931

Collection Date: 11/01/18 13:25
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:38
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 15:38
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 15:38
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:38
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:38
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 15:38
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 15:38
Surrogates								
1,2-Dichloroethane-D4 (surr)	109		81-118		%	1		11/05/18 15:38
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 15:38
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 15:38

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Results of **EB-11**

Client Sample ID: **EB-11**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931004
Lab Project ID: 1189931

Collection Date: 11/01/18 13:25
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 15:38
Container ID: 1189931004-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-8**

Client Sample ID: **MW-8**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931005
Lab Project ID: 1189931

Collection Date: 11/01/18 14:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 15:53
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 15:53
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 15:53
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 15:53
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53

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J flagging is activated

Results of **MW-8**

Client Sample ID: **MW-8**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931005
Lab Project ID: 1189931

Collection Date: 11/01/18 14:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.450	J	1.00	0.310	ug/L	1		11/05/18 15:53
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
cis-1,2-Dichloroethene	1.15		1.00	0.310	ug/L	1		11/05/18 15:53
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 15:53
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 15:53
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 15:53
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Tetrachloroethene	3.78		1.00	0.310	ug/L	1		11/05/18 15:53
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
trans-1,2-Dichloroethene	9.98		1.00	0.310	ug/L	1		11/05/18 15:53
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Trichloroethene	1.45		1.00	0.310	ug/L	1		11/05/18 15:53
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 15:53
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 15:53
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 15:53
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 15:53
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		11/05/18 15:53
4-Bromofluorobenzene (surr)	103		85-114		%	1		11/05/18 15:53
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 15:53

Print Date: 11/07/2018 2:22:50PM

J flagging is activated

Results of **MW-8**

Client Sample ID: **MW-8**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931005
Lab Project ID: 1189931

Collection Date: 11/01/18 14:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 15:53
Container ID: 1189931005-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-108**

Client Sample ID: **MW-108**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931006
Lab Project ID: 1189931

Collection Date: 11/01/18 14:06
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:08
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 16:08
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:08
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 16:08
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08

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J flagging is activated

Results of **MW-108**

Client Sample ID: **MW-108**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931006
Lab Project ID: 1189931

Collection Date: 11/01/18 14:06
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.460	J	1.00	0.310	ug/L	1		11/05/18 16:08
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
cis-1,2-Dichloroethene	1.17		1.00	0.310	ug/L	1		11/05/18 16:08
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:08
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 16:08
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 16:08
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Tetrachloroethene	3.85		1.00	0.310	ug/L	1		11/05/18 16:08
Toluene	0.310	J	1.00	0.310	ug/L	1		11/05/18 16:08
trans-1,2-Dichloroethene	10.3		1.00	0.310	ug/L	1		11/05/18 16:08
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Trichloroethene	1.47		1.00	0.310	ug/L	1		11/05/18 16:08
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:08
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:08
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 16:08
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 16:08
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		81-118		%	1		11/05/18 16:08
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 16:08
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 16:08

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Results of **MW-108**

Client Sample ID: **MW-108**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931006
Lab Project ID: 1189931

Collection Date: 11/01/18 14:06
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 16:08
Container ID: 1189931006-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-9**

Client Sample ID: **MW-9**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931007
Lab Project ID: 1189931

Collection Date: 11/01/18 11:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:23
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 16:23
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,2-Dichloroethane	0.330	J	0.500	0.150	ug/L	1		11/05/18 16:23
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:23
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 16:23
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23

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J flagging is activated

Results of **MW-9**

Client Sample ID: **MW-9**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931007
Lab Project ID: 1189931

Collection Date: 11/01/18 11:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.400	J	1.00	0.310	ug/L	1		11/05/18 16:23
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
cis-1,2-Dichloroethene	3.73		1.00	0.310	ug/L	1		11/05/18 16:23
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:23
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 16:23
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 16:23
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Tetrachloroethene	25.5		1.00	0.310	ug/L	1		11/05/18 16:23
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
trans-1,2-Dichloroethene	3.71		1.00	0.310	ug/L	1		11/05/18 16:23
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Trichloroethene	7.35		1.00	0.310	ug/L	1		11/05/18 16:23
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:23
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:23
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 16:23
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 16:23
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		11/05/18 16:23
4-Bromofluorobenzene (surr)	103		85-114		%	1		11/05/18 16:23
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 16:23

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J flagging is activated

Results of **MW-9**

Client Sample ID: **MW-9**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931007
Lab Project ID: 1189931

Collection Date: 11/01/18 11:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 16:23
Container ID: 1189931007-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-6**

Client Sample ID: **MW-6**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931008
Lab Project ID: 1189931

Collection Date: 11/01/18 16:33
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:39
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 16:39
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,2-Dichloroethane	0.260	J	0.500	0.150	ug/L	1		11/05/18 16:39
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:39
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 16:39
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39

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Results of **MW-6**

Client Sample ID: **MW-6**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931008
Lab Project ID: 1189931

Collection Date: 11/01/18 16:33
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.870	J	1.00	0.310	ug/L	1		11/05/18 16:39
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
cis-1,2-Dichloroethene	1.29		1.00	0.310	ug/L	1		11/05/18 16:39
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:39
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 16:39
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 16:39
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Tetrachloroethene	48.4		1.00	0.310	ug/L	1		11/05/18 16:39
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:39
Trichloroethene	5.77		1.00	0.310	ug/L	1		11/05/18 16:39
Trichlorofluoromethane	3.87		1.00	0.310	ug/L	1		11/05/18 16:39
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:39
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 16:39
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 16:39
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		11/05/18 16:39
4-Bromofluorobenzene (surr)	105		85-114		%	1		11/05/18 16:39
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 16:39

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Results of **MW-6**

Client Sample ID: **MW-6**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931008
Lab Project ID: 1189931

Collection Date: 11/01/18 16:33
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 16:39
Container ID: 1189931008-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Trip Blank 1**

Client Sample ID: **Trip Blank 1**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931009
Lab Project ID: 1189931

Collection Date: 11/01/18 11:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:21
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:21
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 14:21
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:21
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 14:21
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:21
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:21
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:21
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:21
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:21
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:21
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 14:21
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:21
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 14:21
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:21
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:21
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:21

Results of **Trip Blank 1**

Client Sample ID: **Trip Blank 1**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931009
Lab Project ID: 1189931

Collection Date: 11/01/18 11:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/05/18 14:21
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/05/18 14:21
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/05/18 14:21
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/05/18 14:21
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/05/18 14:21
Naphthalene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
o-Xylene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		11/05/18 14:21
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Styrene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Toluene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 14:21
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/05/18 14:21
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		11/05/18 14:21
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		11/05/18 14:21
Surrogates								
1,2-Dichloroethane-D4 (surr)	102		81-118		%	1		11/05/18 14:21
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 14:21
Toluene-d8 (surr)	102		89-112		%	1		11/05/18 14:21

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Results of **Trip Blank 1**

Client Sample ID: **Trip Blank 1**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931009
Lab Project ID: 1189931

Collection Date: 11/01/18 11:16
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 14:21
Container ID: 1189931009-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **MW-1R**

Client Sample ID: **MW-1R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931010
Lab Project ID: 1189931

Collection Date: 11/01/18 16:34
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	1.00		0.500	0.150	ug/L	1		11/05/18 16:54
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:54
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:54
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:54
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 16:54
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,2-Dichloroethane	2.35		0.500	0.150	ug/L	1		11/05/18 16:54
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:54
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:54
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:54
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:54
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:54
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 16:54
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
Bromodichloromethane	0.420	J	0.500	0.150	ug/L	1		11/05/18 16:54
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 16:54
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 16:54
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 16:54
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 16:54

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J flagging is activated

Results of **MW-1R**

Client Sample ID: **MW-1R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931010
Lab Project ID: 1189931

Collection Date: 11/01/18 16:34
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	18.2		1.00	0.310	ug/L	1		11/05/18 16:54
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/05/18 16:54
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/05/18 16:54
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/05/18 16:54
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/05/18 16:54
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/05/18 16:54
Naphthalene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
o-Xylene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		11/05/18 16:54
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Styrene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Tetrachloroethene	217		10.0	3.10	ug/L	10		11/06/18 15:30
Toluene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/05/18 16:54
Trichloroethene	1.08		1.00	0.310	ug/L	1		11/05/18 16:54
Trichlorofluoromethane	39.9		1.00	0.310	ug/L	1		11/05/18 16:54
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/05/18 16:54
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		11/05/18 16:54
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		11/05/18 16:54
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		11/05/18 16:54
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 16:54
Toluene-d8 (surr)	103		89-112		%	1		11/05/18 16:54

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Results of **MW-1R**

Client Sample ID: **MW-1R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931010
Lab Project ID: 1189931

Collection Date: 11/01/18 16:34
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18548
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/06/18 15:30
Container ID: 1189931010-A

Prep Batch: VXX33511
Prep Method: SW5030B
Prep Date/Time: 11/06/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 16:54
Container ID: 1189931010-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-101R**

Client Sample ID: **MW-101R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931011
Lab Project ID: 1189931

Collection Date: 11/01/18 16:24
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	1.05		0.500	0.150	ug/L	1		11/05/18 17:09
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:09
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 17:09
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:09
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 17:09
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,2-Dichloroethane	2.46		0.500	0.150	ug/L	1		11/05/18 17:09
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:09
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:09
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:09
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:09
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:09
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 17:09
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
Bromodichloromethane	0.440	J	0.500	0.150	ug/L	1		11/05/18 17:09
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 17:09
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:09
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:09
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:09

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Results of **MW-101R**

Client Sample ID: **MW-101R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931011
Lab Project ID: 1189931

Collection Date: 11/01/18 16:24
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	18.8		1.00	0.310	ug/L	1		11/05/18 17:09
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/05/18 17:09
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/05/18 17:09
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/05/18 17:09
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/05/18 17:09
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/05/18 17:09
Naphthalene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
o-Xylene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		11/05/18 17:09
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Styrene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Tetrachloroethene	214		10.0	3.10	ug/L	10		11/06/18 15:47
Toluene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:09
Trichloroethene	1.06		1.00	0.310	ug/L	1		11/05/18 17:09
Trichlorofluoromethane	41.2		1.00	0.310	ug/L	1		11/05/18 17:09
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/05/18 17:09
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		11/05/18 17:09
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		11/05/18 17:09
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		81-118		%	1		11/05/18 17:09
4-Bromofluorobenzene (surr)	101		85-114		%	1		11/05/18 17:09
Toluene-d8 (surr)	102		89-112		%	1		11/05/18 17:09

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Results of **MW-101R**

Client Sample ID: **MW-101R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931011
Lab Project ID: 1189931

Collection Date: 11/01/18 16:24
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18548
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/06/18 15:47
Container ID: 1189931011-A

Prep Batch: VXX33511
Prep Method: SW5030B
Prep Date/Time: 11/06/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 17:09
Container ID: 1189931011-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-7**

Client Sample ID: **MW-7**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931012
Lab Project ID: 1189931

Collection Date: 11/01/18 14:35
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 17:24
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 17:24
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 17:24
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 17:24
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24

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Results of **MW-7**

Client Sample ID: **MW-7**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931012
Lab Project ID: 1189931

Collection Date: 11/01/18 14:35
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
cis-1,2-Dichloroethene	2.34		1.00	0.310	ug/L	1		11/05/18 17:24
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:24
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 17:24
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 17:24
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Tetrachloroethene	5.57		1.00	0.310	ug/L	1		11/05/18 17:24
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Trichloroethene	2.69		1.00	0.310	ug/L	1		11/05/18 17:24
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:24
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:24
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 17:24
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 17:24
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		81-118		%	1		11/05/18 17:24
4-Bromofluorobenzene (surr)	103		85-114		%	1		11/05/18 17:24
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 17:24

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Results of **MW-7**

Client Sample ID: **MW-7**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931012
Lab Project ID: 1189931

Collection Date: 11/01/18 14:35
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 17:24
Container ID: 1189931012-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-13**

Client Sample ID: **MW-13**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931013
Lab Project ID: 1189931

Collection Date: 11/01/18 13:19
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:40
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:40
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 17:40
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:40
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 17:40
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,2-Dichloroethane	0.170	J	0.500	0.150	ug/L	1		11/05/18 17:40
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:40
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:40
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:40
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:40
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:40
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 17:40
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:40
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 17:40
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:40
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:40
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:40

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Results of **MW-13**

Client Sample ID: **MW-13**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931013
Lab Project ID: 1189931

Collection Date: 11/01/18 13:19
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	1.95		1.00	0.310	ug/L	1		11/05/18 17:40
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/05/18 17:40
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/05/18 17:40
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/05/18 17:40
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/05/18 17:40
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/05/18 17:40
Naphthalene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
o-Xylene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		11/05/18 17:40
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Styrene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Tetrachloroethene	23.4		1.00	0.310	ug/L	1		11/05/18 17:40
Toluene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 17:40
Trichlorofluoromethane	1.86		1.00	0.310	ug/L	1		11/05/18 17:40
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/05/18 17:40
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		11/05/18 17:40
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		11/05/18 17:40
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		11/05/18 17:40
4-Bromofluorobenzene (surr)	104		85-114		%	1		11/05/18 17:40
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 17:40

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Results of **MW-13**

Client Sample ID: **MW-13**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931013
Lab Project ID: 1189931

Collection Date: 11/01/18 13:19
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 17:40
Container ID: 1189931013-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-12**

Client Sample ID: **MW-12**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931014
Lab Project ID: 1189931

Collection Date: 11/01/18 12:35
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 17:55
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 17:55
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,2-Dichloroethane	0.220	J	0.500	0.150	ug/L	1		11/05/18 17:55
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
Benzene	0.150	J	0.400	0.120	ug/L	1		11/05/18 17:55
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 17:55
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55

Results of **MW-12**

Client Sample ID: **MW-12**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931014
Lab Project ID: 1189931

Collection Date: 11/01/18 12:35
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.710	J	1.00	0.310	ug/L	1		11/05/18 17:55
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
cis-1,2-Dichloroethene	0.750	J	1.00	0.310	ug/L	1		11/05/18 17:55
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 17:55
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 17:55
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 17:55
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Tetrachloroethene	177		1.00	0.310	ug/L	1		11/05/18 17:55
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 17:55
Trichloroethene	5.50		1.00	0.310	ug/L	1		11/05/18 17:55
Trichlorofluoromethane	2.02		1.00	0.310	ug/L	1		11/05/18 17:55
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 17:55
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 17:55
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 17:55
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		11/05/18 17:55
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 17:55
Toluene-d8 (surr)	103		89-112		%	1		11/05/18 17:55

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Results of **MW-12**

Client Sample ID: **MW-12**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931014
Lab Project ID: 1189931

Collection Date: 11/01/18 12:35
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 17:55
Container ID: 1189931014-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-2R**

Client Sample ID: **MW-2R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931015
Lab Project ID: 1189931

Collection Date: 11/01/18 11:36
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:10
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:10
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 18:10
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:10
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 18:10
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:10
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:10
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:10
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:10
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:10
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:10
Benzene	0.240	J	0.400	0.120	ug/L	1		11/05/18 18:10
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:10
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 18:10
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:10
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:10
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:10

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Results of **MW-2R**

Client Sample ID: **MW-2R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931015
Lab Project ID: 1189931

Collection Date: 11/01/18 11:36
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	7.13		1.00	0.310	ug/L	1		11/05/18 18:10
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
cis-1,2-Dichloroethene	1.89		1.00	0.310	ug/L	1		11/05/18 18:10
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/05/18 18:10
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/05/18 18:10
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/05/18 18:10
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/05/18 18:10
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/05/18 18:10
Naphthalene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
o-Xylene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		11/05/18 18:10
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Styrene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Tetrachloroethene	211		10.0	3.10	ug/L	10		11/06/18 16:04
Toluene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:10
Trichloroethene	1.94		1.00	0.310	ug/L	1		11/05/18 18:10
Trichlorofluoromethane	16.1		1.00	0.310	ug/L	1		11/05/18 18:10
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/05/18 18:10
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		11/05/18 18:10
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		11/05/18 18:10
Surrogates								
1,2-Dichloroethane-D4 (surr)	102		81-118		%	1		11/05/18 18:10
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 18:10
Toluene-d8 (surr)	104		89-112		%	1		11/05/18 18:10

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Results of **MW-2R**

Client Sample ID: **MW-2R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931015
Lab Project ID: 1189931

Collection Date: 11/01/18 11:36
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18548
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/06/18 16:04
Container ID: 1189931015-A

Prep Batch: VXX33511
Prep Method: SW5030B
Prep Date/Time: 11/06/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 18:10
Container ID: 1189931015-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-3R**

Client Sample ID: **MW-3R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931016
Lab Project ID: 1189931

Collection Date: 11/01/18 11:08
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:25
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:25
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 18:25
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:25
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 18:25
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,2-Dichloroethane	0.440	J	0.500	0.150	ug/L	1		11/05/18 18:25
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:25
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:25
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:25
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:25
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:25
Benzene	0.240	J	0.400	0.120	ug/L	1		11/05/18 18:25
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:25
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 18:25
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:25
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:25
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:25

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Results of **MW-3R**

Client Sample ID: **MW-3R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931016
Lab Project ID: 1189931

Collection Date: 11/01/18 11:08
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	4.09		1.00	0.310	ug/L	1		11/05/18 18:25
Chloromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
cis-1,2-Dichloroethene	0.440 J		1.00	0.310	ug/L	1		11/05/18 18:25
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		11/05/18 18:25
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		11/05/18 18:25
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Freon-113	5.00 U		10.0	3.10	ug/L	1		11/05/18 18:25
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		11/05/18 18:25
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		11/05/18 18:25
Naphthalene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
o-Xylene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		11/05/18 18:25
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Styrene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Tetrachloroethene	0.850 J		1.00	0.310	ug/L	1		11/05/18 18:25
Toluene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		11/05/18 18:25
Trichlorofluoromethane	1.53		1.00	0.310	ug/L	1		11/05/18 18:25
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		11/05/18 18:25
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		11/05/18 18:25
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		11/05/18 18:25
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		11/05/18 18:25
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 18:25
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 18:25

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Results of **MW-3R**

Client Sample ID: **MW-3R**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931016
Lab Project ID: 1189931

Collection Date: 11/01/18 11:08
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 18:25
Container ID: 1189931016-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW-4**

Client Sample ID: **MW-4**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931017
Lab Project ID: 1189931

Collection Date: 11/01/18 10:07
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 18:41
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 18:41
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,2-Dichloroethane	0.270	J	0.500	0.150	ug/L	1		11/05/18 18:41
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 18:41
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 18:41
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41

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Results of **MW-4**

Client Sample ID: **MW-4**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931017
Lab Project ID: 1189931

Collection Date: 11/01/18 10:07
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 18:41
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 18:41
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 18:41
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Tetrachloroethene	42.9		1.00	0.310	ug/L	1		11/05/18 18:41
Toluene	0.450	J	1.00	0.310	ug/L	1		11/05/18 18:41
trans-1,2-Dichloroethene	0.710	J	1.00	0.310	ug/L	1		11/05/18 18:41
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 18:41
Trichloroethene	1.48		1.00	0.310	ug/L	1		11/05/18 18:41
Trichlorofluoromethane	5.35		1.00	0.310	ug/L	1		11/05/18 18:41
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 18:41
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 18:41
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 18:41
Surrogates								
1,2-Dichloroethane-D4 (surr)	106		81-118		%	1		11/05/18 18:41
4-Bromofluorobenzene (surr)	102		85-114		%	1		11/05/18 18:41
Toluene-d8 (surr)	101		89-112		%	1		11/05/18 18:41

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Results of **MW-4**

Client Sample ID: **MW-4**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931017
Lab Project ID: 1189931

Collection Date: 11/01/18 10:07
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 18:41
Container ID: 1189931017-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Trip Blank 2**

Client Sample ID: **Trip Blank 2**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931018
Lab Project ID: 1189931

Collection Date: 11/01/18 10:07
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		11/05/18 14:37
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		11/05/18 14:37
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
Benzene	0.200	U	0.400	0.120	ug/L	1		11/05/18 14:37
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
Bromoform	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Bromomethane	2.50	U	5.00	1.50	ug/L	1		11/05/18 14:37
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
Chloroethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37

Results of **Trip Blank 2**

Client Sample ID: **Trip Blank 2**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931018
Lab Project ID: 1189931

Collection Date: 11/01/18 10:07
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Chloromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		11/05/18 14:37
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Freon-113	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		11/05/18 14:37
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
Naphthalene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
o-Xylene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		11/05/18 14:37
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Styrene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Toluene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		11/05/18 14:37
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		11/05/18 14:37
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		11/05/18 14:37
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		11/05/18 14:37
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		11/05/18 14:37
4-Bromofluorobenzene (surr)	104		85-114		%	1		11/05/18 14:37
Toluene-d8 (surr)	99.1		89-112		%	1		11/05/18 14:37

Print Date: 11/07/2018 2:22:50PM

J flagging is activated

Results of **Trip Blank 2**

Client Sample ID: **Trip Blank 2**
Client Project ID: **101926-002 BMES Annual GW**
Lab Sample ID: 1189931018
Lab Project ID: 1189931

Collection Date: 11/01/18 10:07
Received Date: 11/03/18 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 11/05/18 14:37
Container ID: 1189931018-A

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/05/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1788711 [VXX/33503]
Blank Lab ID: 1487017

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189931001, 1189931002, 1189931003, 1189931004, 1189931005, 1189931006, 1189931007, 1189931008, 1189931009, 1189931010, 1189931011, 1189931012, 1189931013, 1189931014, 1189931015, 1189931016, 1189931017, 1189931018

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Method Blank

Blank ID: MB for HBN 1788711 [VXX/33503]
Blank Lab ID: 1487017

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189931001, 1189931002, 1189931003, 1189931004, 1189931005, 1189931006, 1189931007, 1189931008, 1189931009, 1189931010, 1189931011, 1189931012, 1189931013, 1189931014, 1189931015, 1189931016, 1189931017, 1189931018

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	100	89-112		%

Method Blank

Blank ID: MB for HBN 1788711 [VXX/33503]
Blank Lab ID: 1487017

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189931001, 1189931002, 1189931003, 1189931004, 1189931005, 1189931006, 1189931007, 1189931008, 1189931009, 1189931010, 1189931011, 1189931012, 1189931013, 1189931014, 1189931015, 1189931016, 1189931017, 1189931018

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS18541
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: FDR
Analytical Date/Time: 11/5/2018 12:20:00PM

Prep Batch: VXX33503
Prep Method: SW5030B
Prep Date/Time: 11/5/2018 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189931 [VXX33503]
Blank Spike Lab ID: 1487018
Date Analyzed: 11/05/2018 13:06

Spike Duplicate ID: LCSD for HBN 1189931 [VXX33503]
Spike Duplicate Lab ID: 1487019
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189931001, 1189931002, 1189931003, 1189931004, 1189931005, 1189931006, 1189931007, 1189931008, 1189931009, 1189931010, 1189931011, 1189931012, 1189931013, 1189931014, 1189931015, 1189931016, 1189931017, 1189931018

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	29.5	98	30	29.7	99	(78-124)	0.68	(< 20)
1,1,1-Trichloroethane	30	30.4	101	30	30.4	101	(74-131)	0.03	(< 20)
1,1,2,2-Tetrachloroethane	30	29.7	99	30	30.3	101	(71-121)	2.00	(< 20)
1,1,2-Trichloroethane	30	29.1	97	30	29.9	100	(80-119)	2.40	(< 20)
1,1-Dichloroethane	30	29.7	99	30	29.9	100	(77-125)	0.77	(< 20)
1,1-Dichloroethene	30	29.1	97	30	29.1	97	(71-131)	0.10	(< 20)
1,1-Dichloropropene	30	31.3	104	30	31.0	103	(79-125)	0.96	(< 20)
1,2,3-Trichlorobenzene	30	28.5	95	30	29.4	98	(69-129)	3.00	(< 20)
1,2,3-Trichloropropane	30	28.7	96	30	29.2	97	(73-122)	1.70	(< 20)
1,2,4-Trichlorobenzene	30	29.7	99	30	29.7	99	(69-130)	0.07	(< 20)
1,2,4-Trimethylbenzene	30	29.9	100	30	29.8	99	(79-124)	0.20	(< 20)
1,2-Dibromo-3-chloropropane	30	29.3	98	30	30.7	102	(62-128)	4.60	(< 20)
1,2-Dibromoethane	30	28.7	96	30	29.6	99	(77-121)	3.20	(< 20)
1,2-Dichlorobenzene	30	29.4	98	30	29.4	98	(80-119)	0.00	(< 20)
1,2-Dichloroethane	30	29.8	99	30	30.6	102	(73-128)	2.60	(< 20)
1,2-Dichloropropane	30	30.3	101	30	30.6	102	(78-122)	1.10	(< 20)
1,3,5-Trimethylbenzene	30	29.8	99	30	29.3	98	(75-124)	1.70	(< 20)
1,3-Dichlorobenzene	30	29.3	98	30	29.2	97	(80-119)	0.31	(< 20)
1,3-Dichloropropane	30	29.7	99	30	30.3	101	(80-119)	1.80	(< 20)
1,4-Dichlorobenzene	30	29.9	100	30	30.0	100	(79-118)	0.43	(< 20)
2,2-Dichloropropane	30	33.5	112	30	33.3	111	(60-139)	0.69	(< 20)
2-Butanone (MEK)	90	76.3	85	90	81.9	91	(56-143)	7.10	(< 20)
2-Chlorotoluene	30	30.2	101	30	30.1	100	(79-122)	0.33	(< 20)
2-Hexanone	90	82.8	92	90	87.2	97	(57-139)	5.20	(< 20)
4-Chlorotoluene	30	30.5	102	30	30.0	100	(78-122)	1.60	(< 20)
4-Isopropyltoluene	30	30.4	101	30	29.7	99	(77-127)	2.20	(< 20)
4-Methyl-2-pentanone (MIBK)	90	85.2	95	90	90.1	100	(67-130)	5.60	(< 20)
Benzene	30	29.7	99	30	29.8	99	(79-120)	0.44	(< 20)
Bromobenzene	30	29.4	98	30	29.0	97	(80-120)	1.20	(< 20)
Bromochloromethane	30	28.6	95	30	29.2	97	(78-123)	2.20	(< 20)
Bromodichloromethane	30	30.6	102	30	31.3	104	(79-125)	2.30	(< 20)
Bromoform	30	30.0	100	30	30.8	103	(66-130)	2.70	(< 20)
Bromomethane	30	33.2	111	30	34.2	114	(53-141)	2.90	(< 20)
Carbon disulfide	45	44.7	99	45	44.6	99	(64-133)	0.43	(< 20)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189931 [VXX33503]
Blank Spike Lab ID: 1487018
Date Analyzed: 11/05/2018 13:06

Spike Duplicate ID: LCSD for HBN 1189931 [VXX33503]
Spike Duplicate Lab ID: 1487019
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189931001, 1189931002, 1189931003, 1189931004, 1189931005, 1189931006, 1189931007, 1189931008, 1189931009, 1189931010, 1189931011, 1189931012, 1189931013, 1189931014, 1189931015, 1189931016, 1189931017, 1189931018

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	31.6	105	30	31.6	105	(72-136)	0.10	(< 20)
Chlorobenzene	30	27.5	92	30	27.8	93	(82-118)	1.20	(< 20)
Chloroethane	30	26.6	89	30	27.5	92	(60-138)	3.00	(< 20)
Chloroform	30	28.5	95	30	28.7	96	(79-124)	0.77	(< 20)
Chloromethane	30	34.2	114	30	34.1	114	(50-139)	0.32	(< 20)
cis-1,2-Dichloroethene	30	29.5	99	30	29.7	99	(78-123)	0.64	(< 20)
cis-1,3-Dichloropropene	30	31.8	106	30	32.4	108	(75-124)	1.90	(< 20)
Dibromochloromethane	30	30.2	101	30	31.0	103	(74-126)	2.60	(< 20)
Dibromomethane	30	29.5	98	30	30.1	100	(79-123)	2.10	(< 20)
Dichlorodifluoromethane	30	36.1	120	30	35.7	119	(32-152)	1.20	(< 20)
Ethylbenzene	30	29.5	98	30	29.8	99	(79-121)	1.00	(< 20)
Freon-113	45	45.5	101	45	45.4	101	(70-136)	0.09	(< 20)
Hexachlorobutadiene	30	30.7	102	30	29.3	98	(66-134)	4.70	(< 20)
Isopropylbenzene (Cumene)	30	29.9	100	30	29.5	98	(72-131)	1.20	(< 20)
Methylene chloride	30	29.3	98	30	29.5	98	(74-124)	0.75	(< 20)
Methyl-t-butyl ether	45	44.9	100	45	46.2	103	(71-124)	2.90	(< 20)
Naphthalene	30	29.7	99	30	31.3	104	(61-128)	5.30	(< 20)
n-Butylbenzene	30	31.8	106	30	30.7	102	(75-128)	3.50	(< 20)
n-Propylbenzene	30	30.6	102	30	29.8	99	(76-126)	2.80	(< 20)
o-Xylene	30	29.1	97	30	29.5	98	(78-122)	1.30	(< 20)
P & M -Xylene	60	58.3	97	60	57.8	96	(80-121)	0.83	(< 20)
sec-Butylbenzene	30	30.9	103	30	30.0	100	(77-126)	3.10	(< 20)
Styrene	30	29.8	99	30	30.3	101	(78-123)	1.90	(< 20)
tert-Butylbenzene	30	29.6	99	30	29.4	98	(78-124)	0.44	(< 20)
Tetrachloroethene	30	28.7	96	30	28.6	95	(74-129)	0.38	(< 20)
Toluene	30	27.5	92	30	27.6	92	(80-121)	0.40	(< 20)
trans-1,2-Dichloroethene	30	29.7	99	30	29.5	98	(75-124)	0.54	(< 20)
trans-1,3-Dichloropropene	30	31.8	106	30	32.5	108	(73-127)	2.20	(< 20)
Trichloroethene	30	29.5	98	30	29.5	99	(79-123)	0.14	(< 20)
Trichlorofluoromethane	30	30.5	102	30	30.8	103	(65-141)	1.00	(< 20)
Vinyl acetate	30	36.0	120	30	37.4	125	(54-146)	3.90	(< 20)
Vinyl chloride	30	32.0	107	30	31.7	106	(58-137)	0.97	(< 20)
Xylenes (total)	90	87.4	97	90	87.3	97	(79-121)	0.10	(< 20)

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200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1189931 [VXX33503]
Blank Spike Lab ID: 1487018
Date Analyzed: 11/05/2018 13:06

Spike Duplicate ID: LCSD for HBN 1189931 [VXX33503]
Spike Duplicate Lab ID: 1487019
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189931001, 1189931002, 1189931003, 1189931004, 1189931005, 1189931006, 1189931007, 1189931008, 1189931009, 1189931010, 1189931011, 1189931012, 1189931013, 1189931014, 1189931015, 1189931016, 1189931017, 1189931018

Results by **SW8260C**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	98.4	98	30	99.1	99	(81-118)	0.64	
4-Bromofluorobenzene (surr)	30	103	103	30	101	101	(85-114)	1.40	
Toluene-d8 (surr)	30	98.1	98	30	98.5	99	(89-112)	0.41	

Batch Information

Analytical Batch: **VMS18541**
Analytical Method: **SW8260C**
Instrument: **Agilent 7890-75MS**
Analyst: **FDR**

Prep Batch: **VXX33503**
Prep Method: **SW5030B**
Prep Date/Time: **11/05/2018 00:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1788777 [VXX/33511]
Blank Lab ID: 1487300

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1189931010, 1189931011, 1189931015

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Sf uor ateg				
1,2-Dichloroethane-D4 (surr)	94.7	81-118		%
4-Bromofluorobenzene (surr)	102	85-114		%
Toluene-d8 (surr)	97.1	89-112		%

Batsh ɑlɔumation

Analytical Batch: VMS18548
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: FDR
Analytical Date/Time: 11/6/2018 12:15:00PM

Prep Batch: VXX33511
Prep Method: SW5030B
Prep Date/Time: 11/6/2018 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1189931 [VXX33511]
Blank Spike Lab ID: 1487301
Date Analyzed: 11/06/2018 12:32

Spike Duplicate ID: LCSD for HBN 1189931 [VXX33511]
Spike Duplicate Lab ID: 1487302
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1189931010, 1189931011, 1189931015

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Tetrachloroethene	30	31.7	106	30	30.6	102	(74-129)	3.70	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	90.6	91	30	91	91	(81-118)	0.48	
4-Bromofluorobenzene (surr)	30	103	103	30	103	103	(85-114)	0.81	
Toluene-d8 (surr)	30	97.9	98	30	96.2	96	(89-112)	1.80	

Batch Information

Analytical Batch: **VMS18548**
Analytical Method: **SW8260C**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **FDR**

Prep Batch: **VXX33511**
Prep Method: **SW5030B**
Prep Date/Time: **11/06/2018 00:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

REVIEWED S.D

1189931

SHANNON & WILSON, INC. CHAIN-O[illegible]ECORD

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

Page 1 of 2

Laboratory SGS

Attn:

Analytical Methods (include preservative if used)

Turn Around Time:	Quote No:
[X] Normal [ ] Rush	J-Flags: [ ] Yes [ ] No
Please Specify	

Sample Identity	Lab No.	Time	Date Sampled	VOC (SW8260B)	Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-5	(1) A-C	15:49	11/1/18	X	3	Groundwater
MW-10	(2) A-C	12:25				
MW-11	(3) A-C	13:15				
EB-11	(4) A-C	13:25				
MW-8	(5) A-C	14:16				
MW-108	(6) A-C	14:06				
MW-9	(7) A-C	11:16				
MW-6	(8) A-C	16:33				
Trip Blank 1	(9) A-C			X	3	

Project Information	Sample Receipt	
Number: 101926-002	Total No. of Containers:	27
Name: BMES Annual Groundwater	VOC Seals/Intact? Y/N/NA	
Contact: Sheila Hinckley	Received Good Cond./Cold	
Ongoing Project? Yes [X] No [ ]	Temp: 2.8	
Sampler: KLC, FLG	Delivery Method:	

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature:	Signature:	Signature:
Time: 9:45	Time: 1400	Time:
Printed Name: Kevin Chancey	Printed Name: Ben D.	Printed Name:
Date: 11/2/18	Date: 11-2-18	Date:
Company:	Company: SGS	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature:
Time: 0945	Time:	Time: 1025
Printed Name: Ben Hawkins	Printed Name:	Printed Name: Amanda Tabon
Date: 11-3-18	Date:	Date: 11/3/18
Company: SGS	Company:	Company: SGS

Notes:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

ANC: 0.9011, 1.001

I-FI-B No. 35747

1189931

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Page 2 of 2
Laboratory SGS
Attn:

Turn Around Time: [X] Normal [ ] Rush
Please Specify

Quote No:

J-Flags: [ ] Yes [ ] No

Analytical Methods (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	VOC (SW8260B)							Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
MW-1R	(10) A-C	16:34	11/1/18	X							3	Groundwater
MW-101R	(11) A-C	16:24	↓	↓							↓	↓
MW-7	(12) A-C	14:35	↓	↓							↓	↓
MW-13	(13) A-C	13:19	↓	↓							↓	↓
MW-12	(14) A-C	12:35	↓	↓							↓	↓
MW-2R	(15) A-C	11:36	↓	↓							↓	↓
MW-3R	(16) A-C	11:08	↓	↓							↓	↓
MW-4	(17) A-C	10:07	↓	↓							↓	↓
Trip Blank 2	(18) A-C			X							3	

Project Information
Number: 101926-002
Name: BMES Annual Groundwater
Contact: Sheila Hinckley
Ongoing Project? Yes [X] No [ ]
Sampler: KLC, FLG

Sample Receipt
Total No. of Containers: 27
COC Seals/Intact? Y/N/NA
Received Good Cond./Cold
Temp: 2.6
Delivery Method:

Notes:

Reliquished By: 1.	Reliquished By: 2.	Reliquished By: 3.
Signature: [signature] Time: 9:45	Signature: [signature] Time: 1400	Signature: Time:
Printed Name: Kevin Chancey Date: 11/2/18	Printed Name: Sean D. Date: 11-2-18	Printed Name: Date:
Company:	Company: SGS	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: [signature] Time: 0945	Signature: Time:	Signature: [signature] Time: 1025
Printed Name: Sean Dawkins Date: 11-2-18	Printed Name: Date:	Printed Name: Amanda Tabor Date: 11/3/18
Company: SGS	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

ANC: 0.9D11 1.0D11
1-F1-B
No. 35746

SGS

1189931

FAIRBANKS SAMPLE RECEIPT FORM

Note: This form is to be completed by Fairbanks Receiving Staff for all samples

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No ~~N/A~~ ~~Yes~~ No N/A	□*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID: 1 @ 2.8 w/Therm. ID: D23 Cooler ID: 2 @ 2.6 w/Therm. ID: D30 Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ Cooler ID: ____ @ ____ w/Therm. ID: ____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note ambient ( ) or chilled ( ). Please check one.	(Yes) No Yes No ~~N/A~~ Yes No (N/A)	□*Exemption permitted if chilled & collected <8hrs ago* ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery Method: (Client (hand carried) Other: ____	Tracking/AB# : Or see attached ~~Or N/A~~	
→For samples received with payment, note amount ($) and whether cash / check / CC **(circle one)** was received.		
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other: ____	(Yes) No N/A	***Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.***
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A	See below
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No ~~N/A~~ Yes No (N/A)	

Additional notes (if applicable):

* Trip blank 1 w/ page 1 of samples.
Trip blank 2 w/ page 2 of samples.

Profile #: 362915

Note to Client: any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

e-Sample Receipt Form

SGS Workorder #: **1189931**

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		n/a Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	yes	1-front 1-back
COC accompanied samples?	yes	
n/a **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	yes	Cooler ID: 1 @ 0.9 °C Therm. ID: D11
	yes	Cooler ID: 2 @ 1.0 °C Therm. ID: D11
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	n/a	
If <0°C, were sample containers ice free?	n/a	
If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	yes	
		n/a ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	yes	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	yes	**Samples 1-8 were received in cooler 1 as Trip Blank 1 (sample 9); Samples 10-17 were received in cooler 2 as Trip Blank 2 (sample 18)**
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	yes	
Were all soil VOAs field extracted with MeOH+BFB?	n/a	

Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition
1189931001-A	HCL to pH < 2	OK
1189931001-B	HCL to pH < 2	OK
1189931001-C	HCL to pH < 2	OK
1189931002-A	HCL to pH < 2	OK
1189931002-B	HCL to pH < 2	OK
1189931002-C	HCL to pH < 2	OK
1189931003-A	HCL to pH < 2	OK
1189931003-B	HCL to pH < 2	OK
1189931003-C	HCL to pH < 2	OK
1189931004-A	HCL to pH < 2	OK
1189931004-B	HCL to pH < 2	OK
1189931004-C	HCL to pH < 2	OK
1189931005-A	HCL to pH < 2	OK
1189931005-B	HCL to pH < 2	OK
1189931005-C	HCL to pH < 2	OK
1189931006-A	HCL to pH < 2	OK
1189931006-B	HCL to pH < 2	OK
1189931006-C	HCL to pH < 2	OK
1189931007-A	HCL to pH < 2	OK
1189931007-B	HCL to pH < 2	OK
1189931007-C	HCL to pH < 2	OK
1189931008-A	HCL to pH < 2	OK
1189931008-B	HCL to pH < 2	OK
1189931008-C	HCL to pH < 2	OK
1189931009-A	HCL to pH < 2	OK
1189931009-B	HCL to pH < 2	OK
1189931009-C	HCL to pH < 2	OK
1189931010-A	HCL to pH < 2	OK
1189931010-B	HCL to pH < 2	OK
1189931010-C	HCL to pH < 2	OK
1189931011-A	HCL to pH < 2	OK
1189931011-B	HCL to pH < 2	OK
1189931011-C	HCL to pH < 2	OK
1189931012-A	HCL to pH < 2	OK
1189931012-B	HCL to pH < 2	OK
1189931012-C	HCL to pH < 2	OK
1189931013-A	HCL to pH < 2	OK
1189931013-B	HCL to pH < 2	OK
1189931013-C	HCL to pH < 2	OK
1189931014-A	HCL to pH < 2	OK
1189931014-B	HCL to pH < 2	OK
1189931014-C	HCL to pH < 2	OK
1189931015-A	HCL to pH < 2	OK
1189931015-B	HCL to pH < 2	OK
1189931015-C	HCL to pH < 2	OK
1189931016-A	HCL to pH < 2	OK
1189931016-B	HCL to pH < 2	OK
1189931016-C	HCL to pH < 2	OK
1189931017-A	HCL to pH < 2	OK
1189931017-B	HCL to pH < 2	OK
1189931017-C	HCL to pH < 2	OK
1189931018-A	HCL to pH < 2	OK
1189931018-B	HCL to pH < 2	OK
1189931018-C	HCL to pH < 2	OK

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

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12/6/2018
Ms. Sheila Hinckley
Shannon & Wilson, Inc.
2355 Hill Road

Fairbanks AK 99709

Project Name: 2018 Indoor-Air
Project #: 101926-005
Workorder #: 1811545

Dear Ms. Sheila Hinckley

The following report includes the data for the above referenced project for sample(s) received on 11/26/2018 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1811545

Work Order Summary

CLIENT:	Ms. Sheila Hinckley Shannon & Wilson, Inc. 2355 Hill Road Fairbanks, AK 99709	**BILL TO:**	Ms. Sheila Hinckley Shannon & Wilson, Inc. 2355 Hill Road Fairbanks, AK 99709
PHONE:	907-479-0600	**P.O. #**	
FAX:	907-479-5691	**PROJECT #**	101926-005 2018 Indoor-Air
DATE RECEIVED:	11/26/2018	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	12/06/2018		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	IA1-2018	Modified TO-15 SIM	4.9 "Hg	5.2 psi
02A	IA13-2018	Modified TO-15 SIM	3.9 "Hg	5.1 psi
03A	Lab Blank	Modified TO-15 SIM	NA	NA
04A	CCV	Modified TO-15 SIM	NA	NA
05A	LCS	Modified TO-15 SIM	NA	NA
05AA	LCSD	Modified TO-15 SIM	NA	NA

CERTIFIED BY:  DATE: 12/06/18

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP - E8 , LA NELAP - 02089, NH NELAP - 209218, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-18-13, UT NELAP CA009332018-10, VA NELAP - 9505, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-011, Effective date: 10/18/2018, Expiration date: 10/17/2019.
Eurofins Air Toxics LLC. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 SIM
Shannon & Wilson, Inc.
Workorder# 1811545

Two 6 Liter Summa Canister (SIM Certified) samples were received on November 26, 2018. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: IA1-2018

Lab ID#: 1811545-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.032	0.66	0.16	3.2
Tetrachloroethene	0.032	0.30	0.22	2.0

Client Sample ID: IA13-2018

Lab ID#: 1811545-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Chloroform	0.031	0.031	0.15	0.15
Tetrachloroethene	0.031	0.043	0.21	0.29

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Client Sample ID: IA1-2018

Lab ID#: 1811545-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**21112911sim**	**Date of Collection: 11/16/18 14:38:00**	
Dil. Factor:	**1.62**	**Date of Analysis: 11/29/18 03:39 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Chloroform	0.032	0.66	0.16	3.2
1,1,1-Trichloroethane	0.032	Not Detected	0.18	Not Detected
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Tetrachloroethene	0.032	0.30	0.22	2.0

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	115	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	89	70-130

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Client Sample ID: IA13-2018

Lab ID#: 1811545-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**21112912sim**	**Date of Collection: 11/16/18 14:53:00**	
Dil. Factor:	**1.55**	**Date of Analysis: 11/29/18 04:15 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.061	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.61	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	0.031	0.15	0.15
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Trichloroethene	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	0.043	0.21	0.29

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	86	70-130

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1811545-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**21112910sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/18 02:44 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	87	70-130

eurofins | Air Toxics

Client Sample ID: CCV

Lab ID#: 1811545-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**21112902sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/18 08:51 AM**	

Compound	%Recovery
Vinyl Chloride	88
1,1-Dichloroethene	80
trans-1,2-Dichloroethene	87
1,1-Dichloroethane	91
cis-1,2-Dichloroethene	86
Chloroform	97
1,1,1-Trichloroethane	89
Trichloroethene	88
Tetrachloroethene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	96	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1811545-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**21112903sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/18 09:32 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	88	70-130
1,1-Dichloroethene	77	70-130
trans-1,2-Dichloroethene	92	70-130
1,1-Dichloroethane	87	70-130
cis-1,2-Dichloroethene	78	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	88	70-130
Trichloroethene	88	70-130
Tetrachloroethene	87	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	97	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1811545-05AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**21112904sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 11/29/18 10:09 AM**	

Compound	%Recovery	Method Limits
Vinyl Chloride	88	70-130
1,1-Dichloroethene	78	70-130
trans-1,2-Dichloroethene	92	70-130
1,1-Dichloroethane	88	70-130
cis-1,2-Dichloroethene	78	70-130
Chloroform	94	70-130
1,1,1-Trichloroethane	88	70-130
Trichloroethene	90	70-130
Tetrachloroethene	88	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	96	70-130

eurofins | Air Toxics

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 1811545

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

page 1 of 1

Client: Shannon & Wilson
Project Name: 2018 Indoor-Air
Project Manager: Sheila Hinckley Project # 101926-025
Sampler: Sheila
Site Name: Bentley Mall East Satellite

Special Instructions/Notes: See list provided by Shannon & Wilson for requested analytes.

Turnaround Time (Rush surcharges may apply)
Standard X Rush _____ (specify)

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	TO-15 Mod. SIM			
01A	IA1-2018	610987	1831	11/15/18	1435	11/16/18	1438	30	6			X			
02A	IA13-2018	611580	1743	11/15/18	1507	11/16/18	1453	30	5			X			

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Sheila Hinckley Shannon & Wilson	11/19/18	0900	GATL	11/26/18	0950
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: FedEx | Custody Seals Intact? | Yes | No | None

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

APPENDIX F: ADEC LABORATORY DATA REVIEW CHECKLISTS

Appendix F

ADEC Laboratory Data Review Checklists

CONTENTS

Laboratory Data Review Checklist

Completed By:

Sheila Hinckley

Title:

Environmental Scientist

Date:

December 11, 2018

CS Report Name:

Bentley Mall East Satellite

Report Date:

November 07, 2018

Consultant Firm:

Shannon & Wilson, Inc.

Laboratory Name:

SGS North America Laboratories, Inc. (SGS)

Laboratory Report Number:

1189931

ADEC File Number:

102.38.122

Hazard Identification Number:

4033

1189931

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   (•) Yes ( ) No Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   ( ) Yes (•) No Comments:

   Analyses were performed by SGS in Anchorage, AK.

2. Chain of Custody (CoC)

   a. CoC information completed, signed, and dated (including released/received by)?

   (•) Yes ( ) No Comments:

   b. Correct Analyses requested?

   (•) Yes ( ) No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   (•) Yes ( ) No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   (•) Yes ( ) No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   (•) Yes ( ) No Comments:

   The sample receipt form notes that the samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

(•) Yes ( ) No Comments:

There were no discrepancies noted in the sample receipt documentation.

e. Data quality or usability affected?

Comments:

No; see above.

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

( ) Yes (•) No Comments:

There were no discrepancies, errors, or QC failures reported in the case narrative.

c. Were all corrective actions documented?

( ) Yes (•) No Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

The case narrative does not specify an effect on data quality or usability.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No Comments:

b. All applicable holding times met?

(•) Yes ( ) No Comments:

c. All soils reported on a dry weight basis?

○ Yes ◉ No Comments:

Soil samples were not submitted with this work order.

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

○ Yes ◉ No Comments:

The reported limits of detection (LODs) were below the groundwater cleanup levels for the requested analytes with the exception of 1,2,3-trichloropropane.

e. Data quality or usability affected?

◉ Yes ○ No Comments:

We cannot assess if 1,2,3-trichloropropane is present in the project sample at a concentration greater than the groundwater cleanup levels but less than the LOD.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

None; VOCs were not detected in the method blank samples.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ◉ No Comments:

N/A; no samples were affected.

v. Data quality or usability affected?

Comments:

No; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

(•) Yes ( ) No Comments:

LCS/LCSD and MS/MSD samples were reported for analysis of VOCs.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

( ) Yes (•) No Comments:

Metals/Inorganics analyses were not requested with this work order.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

(•) Yes ( ) No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

(•) Yes ( ) No Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

( ) Yes (•) No Comments:

No; see above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

N/A; see above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

(•) Yes ( ) No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

(•) Yes ( ) No Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

( ) Yes (•) No Comments:

N/A; there were no reported surrogate-recovery failures.

iv. Data quality or usability affected?

Comments:

No; see above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

(•) Yes ( ) No Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

(•) Yes ( ) No Comments:

iii. All results less than LOQ?

(•) Yes ( ) No Comments:

iv. If above LOQ, what samples are affected?

Comments:

None; project analytes were not detected in the trip blank.

v. Data quality or usability affected?

Comments:

No; see above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

◉ Yes ○ No Comments:

ii. Submitted blind to lab?

◉ Yes ○ No Comments:

The field-duplicate pairs *MW-1R*/*MW-101R* and *MW-8*/*MW-108* were submitted with this work order.

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

◉ Yes ○ No Comments:

The analytical precision demonstrated between the field-duplicate samples was within the project specific DQOs (30% for water samples), where calculable, for all analytes.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No; see above.

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

◉ Yes ○ No ○ Not Applicable

Equipment blank sample *EB-11* was submitted with this work order.

i. All results less than LOQ?

(•) Yes ( ) No Comments:

ii. If above LOQ, what samples are affected?

Comments:

N/A; see above.

iii. Data quality or usability affected?

Comments:

No; see above.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

( ) Yes (•) No Comments:

Additional data flags or qualifiers are not required.

Laboratory Data Review Checklist for Air Samples

Completed by:	Sheila Hinckley		
Title:	Environmental Scientist	Date:	Dec 7, 2018
CS Report Name:	Bentley Mall East Satellite	Report Date:	Dec 6, 2018
Consultant Firm:	Shannon & Wilson, Inc.		
Laboratory Name:	Eurofins Air Toxics, Inc.	Laboratory Report Number:	1811545
ADEC File Number:	102.38.122	ADEC Haz ID:	4033

1. Laboratory

a. Did a NELAP certified laboratory receive and perform all of the submitted sample analyses?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses NELAP approved?

( ) Yes ( ) No (•) NA (Please explain.) Comments:

Samples were analyzed by Eurofins of Folsom, CA; a NELAP certified laboratory.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

(•) Yes ( ) No ( ) NA (Please explain.) Comments:

b. Correct analyses requested?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample condition documented -Samples collected in gas tight, opaque/dark Summa canisters or other ADEC approved container? Canister vacuum/pressure checked, recorded upon receipt and contained no open valves?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

Documentation of the sample condition was not provided in a sample receipt form. However, the case narrative noted that the samples were received in good condition and in the appropriate containers.

b. If there were any discrepancies, were they documented? For example, incorrect sample containers/ preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum etc.?

○ Yes ○ No ◉ NA (Please explain) Comments:

A sample receipt form was not provided but the laboratory noted that the samples were received in good condition and in the appropriate containers.

c. Data quality or usability affected? (Please explain.)

○ Yes ◉ No ○ NA (Please explain) Comments:

See above.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No ○ NA (Please explain) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

○ Yes ◉ No ○ NA (Please explain) Comments:

There were no analytical discrepancies, errors, or QC failures noted in the case narrative.

c. Were all corrective actions documented?

○ Yes ○ No ◉ NA (Please explain) Comments:

Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

None; see above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No ○ NA (Please explain) Comments:

b. Samples analyzed within 30 days of collection or within the time required by the method?

◉ Yes ○ No ○ NA (Please explain) Comments:

c. Are the reported PQLs less than the Target Screening Level or the minimum required detection level for the project?

◉ Yes ○ No ○ NA (Please explain) Comments:

d. Data quality or usability affected?

Comments:

No; see above.

6. QC Samples

a. Method Blank

i. One method blank reported per analysis and 20 samples?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

ii. All method blank results less than PQL?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. If above PQL, what samples are affected?

Comments:

None; project analytes were not detected in the method blank.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

( ) Yes ( ) No (•) NA (Please explain) Comments:

Project analytes were not detected in the method blank.

v. Data quality or usability affected? (Please explain.)

Comments:

No; see above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. One LCS/LCSD or one LCS and a sample/sample duplicate pair reported per analysis and 20 samples?

(•) Yes ( ) No ( ) NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

(•) Yes ( ) No ( ) NA (Please explain) Comments:

iii. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable.

(•) Yes ( ) No ( ) NA (Please explain) Comments:

The RPDs were calculated by Shannon & Wilson and were less than 20% as recommended for the method by the National Functional Guidelines.

iv. If %R or RPD is outside of acceptable limits, what samples are affected?

○ Yes ○ No ◉ NA (Please explain) Comments:

The analytical accuracy and precision were demonstrated to be within acceptance criteria.

v. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

Qualification was not required; see above.

vi. Data quality or usability affected? (Please explain.)

Comments:

No; see above.

c. Surrogates

i. Are surrogate recoveries reported for field, QC and laboratory samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable.

◉ Yes ○ No ○ NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

○ Yes ○ No ◉ NA (Please explain) Comments:

There were no surrogate recovery failures associated with this work order.

iv. Data quality or usability affected? (Please explain.)

Comments:

No; see above.

d. Field Duplicate

i. One field duplicate submitted per analysis and 10 type (soil gas, indoor air etc.) samples?

◉ Yes ○ No ○ NA (Please explain) Comments:

A field-duplicate pair was not submitted with this work order. However, field-duplicate samples are submitted at the required frequency for the overall project.

ii. Submitted blind to lab?

○ Yes ○ No ◉ NA (Please explain) Comments:

N/A; see above.

iii. Precision - All relative percent differences (RPD) less than specified DQOs? (Recommended: 25 %)

$$RPD\ (\%) = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

○ Yes ○ No ◉ NA (Please explain) Comments:

N/A; see above.

iv. Data quality or usability affected? (Please explain.) Comments:

No; see above.

e. Field Blank (If not used explain why).

○ Yes ○ No ◉ NA (Please explain) Comments:

Samples for this project were not collected with reusable equipment, so there is no practical potential for equipment based cross-contamination.

i. All results less than PQL?

○ Yes ○ No ◉ NA (Please explain) Comments:

A field blank sample was not required for this project.

ii. If above PQL, what samples are affected? Comments:

N/A; a field blank sample was not required for this project.

iii. Data quality or usability affected? (Please explain.)

Comments:

No; see above.

7. Other Data Flags/Qualifiers

a. Defined and appropriate?

○ Yes ○ No ◉ NA (Please explain) Comments:

Additional data flags or qualifiers are not required.

Reset Form

APPENDIX G: QUALITY ASSURANCE AND QUALITY CONTROL SUMMARY

Appendix G

Quality Assurance and Quality Control Summary

APPENDIX G: QUALITY ASSURANCE AND QUALITY CONTROL SUMMARY

G.1 OVERVIEW

QC/QA procedures assist in producing data of acceptable quality and reliability. We reviewed the analytical results for laboratory QC samples and conducted our own QA assessment for this project. We reviewed the COC records and laboratory receipt forms to check that custody was not breached, sample-holding times were met, the groundwater samples were kept chilled (between 0 °C and 6 °C) during shipping, and the appropriate vacuum remained in the indoor-air sample canisters, where required.

Our QA-review procedures allowed us to document the accuracy and precision of the analytical data, as well as check that the analyses were sufficiently sensitive to meet project-specific DQOs.

Laboratory QC procedures included evaluating surrogate recovery, performing continuing calibration checks, and analyzing method blanks, laboratory control samples (LCS), and matrix spikes (MS) to assess accuracy and precision. LCS, LCS duplicate (LCSD), MS, MS duplicate (MSD), and surrogate recovery analyses were performed to evaluate the accuracy of the analytical process. Analytical precision was assessed by comparing the results of duplicate analyses performed on LCS/LCSD, MS/MSD, and duplicate-sample pairs.

QC procedures in the field included using single-use equipment to reduce the potential for sample cross-contamination. We used a new, clean pair of nitrile gloves when sampling at each monitoring well and indoor-air location. The laboratory report contains a case narrative and forms documenting sample-receipt conditions. Details regarding the results of our QA review are presented below.

Refer to the SGS laboratory report 1189931, Eurofins laboratory report 1811545, and corresponding ADEC LDRCs (Appendix E and F, respectively) for additional information.

G.2 SAMPLE HANDLING

Groundwater samples were hand delivered to SGS in Fairbanks, Alaska. We completed COC forms, which were signed upon delivery to the SGS Fairbanks office. The samples were then repackaged by SGS and shipped to the SGS laboratory in Anchorage, Alaska. The laboratory noted that the samples were received in good condition and within the acceptable temperature range of 0 °C to 6 °C. Indoor-air samples were shipped to Eurofins in California, via FedEx. We completed a COC form and placed it inside the box of the canisters for shipment. We maintained custody of the samples at all times until submitting them to Eurofins via FedEx.

The project samples were received in good condition and properly preserved: refer to the LDRCs for details.

G.3 ANALYTICAL SENSITIVITY

The laboratory's detection limit (DL) is the lowest analyte concentration that can be measured. The laboratory's limit of quantitation (LOQ) is the lowest analyte concentration that can be routinely measured in the sampled matrix with confidence, the point at which a concentration is considered quantitative. Sample matrix, instrument performance, sample dilutions, and other factors may affect the DL and LOQ. Analytes may be present in samples at concentrations below the DL. In cases where analytes were not detected at concentrations above their DL, the analytical results are presented in our data-summary table with reference to their LODs. If the analyte is detected between the DL and the LOQ, its concentration is considered an estimate; in our tables, this value is flagged with a 'J'. The flag is applied by the laboratory.

Laboratory results meet the sensitivity DQOs listed in the ADEC-approved Work Plan for the COCPs. However, the analyte 1,2,3-trichloropropane was not detected in the groundwater samples but had an LOD greater than the ADEC CUL for that analyte. We cannot assess if this analyte is present in the samples at a concentration greater than the ADEC CUL but less than the laboratory's ability to reliably detect an analyte for the given method.

To evaluate the potential for cross-contamination between samples or introduction of contamination from an outside source, laboratory-supplied trip blanks are carried with groundwater samples in their cooler during sampling and shipping. Trip blanks were analyzed as part of this sampling event for VOCs. The laboratory reported there were no detections in the trip blanks.

Laboratory method blanks were also analyzed in association with groundwater and indoor-air samples collected for this project to check for contributions to the analytical results possibly attributable to laboratory-based contamination. There were no detections in the method blank samples.

One groundwater equipment blank was collected to assess the possibility of sample contamination from sampling equipment. The equipment blank was collected post decontamination after collecting the project samples from monitoring well MW-11. The equipment blank was analyzed by the same test methods as the original sample. There were no detections in the equipment blank sample.

G.4 ACCURACY

Accuracy refers to determining the correct analyte concentration and is a comparison between the measured value and a known or expected value. Laboratory analytical accuracy may be assessed through the analyte recoveries from LCS/LCSD analyses and MS/MSD analyses, and the recovery of analyte surrogates (for organic analytes) added to project samples. The LCS/LCSDs are spikes of known analyte concentrations added to a clean matrix; the MS/MSDs are spikes of known analyte concentrations in a matrix similar to field samples.

The laboratories' LCS, LCSD, MS, MSD, and surrogate recoveries were within laboratory acceptance criteria.

The laboratory also assess analytical-batch accuracy using recovery information from continuing calibration verification (CCV) samples. Assessment of CCV recoveries is beyond the scope of a Level II data review. However, there were no CCV failures reported by the laboratory.

G.5 PRECISION

We collected field-duplicate samples at a frequency of ten percent of the total number of samples to evaluate the precision of analytical measurements and reproducibility of our sampling technique. Two duplicate samples were collected; one from monitoring well MW-1R and one from monitoring well MW-8. The field-duplicate samples were submitted "blind" (i.e., the laboratory could not identify it as a duplicate) with sample names of *MW-101R* and *MW-108,* respectively. The duplicate was analyzed by the same test methods as the original sample. To evaluate the precision of the data, we calculated the relative percent difference (RPD; difference between the sample and its duplicate divided by the mean of the two). RPDs can be evaluated only if the results of the analyses for both the sample and its duplicate are reported above the DL.

The data quality objective for water samples' RPD is 30 percent. Where concentrations were reported in both samples, we calculated the RPDs. The RPDs were within acceptance criteria.

Laboratory analytical precision can also be assessed by comparing the results of duplicate analyses performed on LCS/LCSD, MS/MSD, and laboratory-duplicate samples, and evaluating the associated RPDs. The data quality objective is 20 percent for the laboratory QC samples. The laboratory LCS/LSCD, MS/MSD, and laboratory-duplicate sample RPDs were within laboratory acceptance criteria.

G.6 DATA QUALITY SUMMARY

By conducting our field activities in general accordance with our standard QA/QC procedures, the samples we collected are considered representative of site conditions at the locations and times they were obtained. Based on our QA review, no datum was rejected as unusable due to QC failures, and our completeness goal of obtaining 90-percent useable data was met. In our opinion, the data produced by the SGS and Eurofins laboratories for this project are suitable for characterizing groundwater and indoor-air quality at the locations sampled.

IMPORTANT INFORMATION

Important Information

About Your Environmental Report

IMPORTANT INFORMATION

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied

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judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was pre

pared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

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READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland