

December 17, 2018

Mr. Solomon Kim
16708 Bothell-Everett Hwy, Suite 104
Mill Creek, Washington 98012

Attn: Mr. Kim

**RE: GROUNDWATER SAMPLING, 12751 OLD SEWARD HIGHWAY,
ANCHORAGE, ALASKA; ADEC FILE NO. 2100.26.109; HAZARD ID #24603**

This letter report presents the results of Shannon & Wilson's groundwater sampling conducted at 12751 Old Seward Highway, Anchorage, Alaska. A fueling station and an auto shop are located at the property. A vicinity map is included as Figure 1 and general site features are shown on Figure 2.

In a letter dated January 16, 2018, Ms. Chelsy Passmore of the Alaska Department of Environmental Conservation (ADEC) requested an additional groundwater monitoring event with the collection of groundwater samples from Monitoring Wells MW-2 and MW-4. The project was conducted in accordance with our July 10, 2018 work plan which was approved by Ms. Passmore via email.

BACKGROUND

Three underground storage tanks (USTs) and pump islands were removed and replaced at the site in August 1993. Contaminated soil was encountered within the tank excavation. In 2001, Shannon & Wilson conducted a release investigation to evaluate the extent of the contamination, which included the installation of five monitoring wells, designated Wells MW-1 through MW-5.

Groundwater sampling activities were conducted at the site between 2001 and 2009. During this time, groundwater samples collected from Wells MW-1, MW-2, and MW-4 contained concentrations of benzene exceeding the ADEC cleanup levels. Additional target analytes have been detected in Wells MW-2 and MW-4 exceeding ADEC cleanup levels. Target analytes have not been detected in Monitoring Wells MW-3 and MW-5.

One vapor extraction well, designated VEW1, was installed south of the former UST excavation in September 2002. The vapor extraction system (VES) was started in December 2002 and shut down in 2013.

In May 2016, Shannon & Wilson conducted a groundwater sampling event and evaluated the on-site VES. Groundwater samples were collected from Wells MW-2 and MW-4 which did not contain target analytes greater than the ADEC cleanup levels. The VES was observed to be inoperable.

FIELD ACTIVITIES

The project consisted of collecting analytical groundwater samples and managing investigation-derived waste (IDW). SGS North America Inc. (SGS) of Anchorage, Alaska provided the analysis of the groundwater samples. Field notes documenting the sampling activities are included in Attachment 1.

Groundwater Sampling

Prior to initiating groundwater sampling activities, the static water level was measured in Monitoring Wells MW-2 and MW-4 using an electric water level indicator. The water level indicator was decontaminated using an alconox/water mixture and a water rinse prior to insertion in each well. The depths to groundwater in the monitoring wells are listed on Table 1. Monitoring Well MW-2 contained 0.39 foot groundwater. Due to the low water volume in Well MW-2, attempts to purge and sample the well using a submersible pump and bailer were unsuccessful. As a result, the well was not sampled.

Monitoring Well MW-4 was purged and sampled using a low-flow technique, using a submersible pump with disposable vinyl tubing. Sampling was initiated by purging the well to reduce the effect of stagnant well casing water on chemical concentrations and to obtain groundwater samples that are representative of the surrounding water-bearing formation. A submersible pump was placed within 1 foot below the groundwater interface to avoid sediment disturbance. The pump rate was set at approximately 0.1 liter per minute (L/min) with a goal of limiting the sustained water drawdown to a maximum of 4 inches. The drawdown was determined in Well MW-4 using an electronic water probe that was checked regularly throughout the purging/sampling process.

During the purging process, field personnel monitored water quality parameters (pH, conductivity, temperature, and turbidity) and purge volume. When water quality parameters stabilized over three successive readings (pH within 0.1 unit, conductivity within 3 percent,

temperature within 3 percent [minimum 0.2 degree Celsius], and turbidity within 10 percent) groundwater samples were collected. Analytical samples were collected in decreasing order of volatility by transferring water directly from the pump tubing into laboratory-supplied containers. Final water quality parameters are listed on Table 1.

Investigation-Derived Waste

IDW consisted of purge water and disposable sampling equipment. Following ADEC approval, the purge water was spilled on to an unpaved portion of the property. The disposable sampling equipment was placed in an on-site dumpster for disposal as general waste.

LABORATORY ANALYSES

The groundwater samples were submitted to SGS for analysis using chain-of-custody procedures. The groundwater sample collected from Well MW-4 was analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101 and volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260C. A water trip blank accompanied the samples and was analyzed for VOCs by EPA Method 8260C.

DISCUSSION OF ANALYTICAL RESULTS

The analytical groundwater results were compared to ADEC Table C cleanup levels listed in 18 Alaska Administrative Code (AAC) 75 regulations (September 2018). The cleanup levels and analytical results are provided in Table 2. The laboratory report and completed ADEC Laboratory Data Review Checklist (LDRC) are provided in Attachment 2. Historical groundwater data are shown on Table 3.

Groundwater Samples

Well MW-4 contained benzene at a concentration of 0.430 micrograms per liter ($\mu\text{g/L}$) which is less than the ADEC cleanup level of 4.6 $\mu\text{g/L}$. The remaining target analytes were not detected.

Quality Control

The project laboratory implements on-going quality assurance/quality control procedures to evaluate conformance to ADEC data quality objectives (DQOs). Internal laboratory controls for this project include surrogates, method blanks, matrix spike/matrix spike duplicates (MS/MSD), and laboratory control sample/laboratory control sample duplicates (LCS/LCSD) to assess precision, accuracy, and matrix bias. If a DQO is not met, the project laboratory provides a brief

narrative concerning the problem in the case narrative of their laboratory reports (See Attachment 2).

The field quality control sample included one laboratory prepared water trip blank. The trip blank sample accompanied the project sample jars from the laboratory to the site during sampling activities and back again to SGS. According to the SGS laboratory report, the trip blank did not contain detectable concentrations of target analytes.

Shannon & Wilson reviewed the SGS data deliverables and completed an ADEC Laboratory Data Review Checklist for the project work order. The laboratory report and data review checklist are included in Attachment 2. In our opinion, no non-conformances that would adversely impact data usability for the objectives of this project were noted.

CONCLUSIONS

Groundwater samples from Well MW-4 did not contain concentrations of target analytes above ADEC cleanup levels during the September 2018 sampling event. Well MW-2 could not be sampled due to insufficient water column volume; however, target analytes were either non-detect or detected below ADEC cleanup levels during the previous sampling event in May 2016. Based on the current and historical sampling events, contaminant concentrations no longer exceed ADEC cleanup levels in the on-site wells and impacted groundwater does not extend off site. Therefore, Shannon & Wilson recommends requesting conditional closure for the site from the ADEC.

CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives. The findings we have presented within this report are based on the limited research, sampling, and analyses that we conducted. They should not be construed as definite conclusions regarding the project site's groundwater quality. It is possible that our tests missed higher levels of contaminants, although our intention was to sample areas likely to be impacted and in accordance with our ADEC-approved work plans. As a result, the sampling and analyses performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantees that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes in site conditions can occur over time, due to natural forces or human activity. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised. Shannon & Wilson has prepared the

Mr. Soloman Kim
December 17, 2018
Page 5

SHANNON & WILSON, INC.

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

You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. 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 authorized by you or required by law.

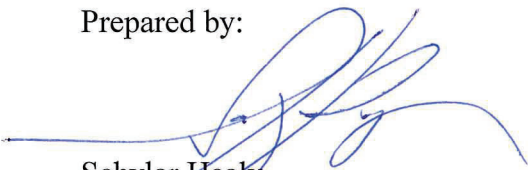
We appreciate the opportunity to be of service. If you have questions or comments concerning this report, please call the undersigned at (907) 561-2120.

Sincerely,

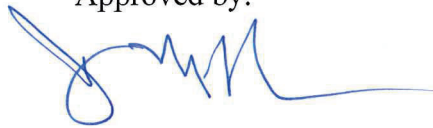
SHANNON & WILSON, INC.

Prepared by:

Approved by:



Schylar Healy
Environmental Scientist



Dan McMahon
Associate

Enc: Tables 1 through 3, Figures 1 and 2, and Attachments 1 through 3

**TABLE 1
WELL SAMPLING LOG**

	Monitoring Well Number	
	MW-2	MW-4
Water Level Measurement Data		
Date Water Level Measured	9/7/2018	9/7/2018
Time Water Level Measured	11:00	9:45
Measured Depth to Water (ft below TOC)	25.00	23.35
Sampling Data		
Date Sampled	Not Sampled	9/7/2018
Time Sampled	Not Sampled	10:43
Measured Depth to Water (ft below TOC)	25.00	23.35
Total Depth of Well (ft below TOC)	25.39	29.14
Water Column in Well (ft)	0.39	5.79
Gallons per Foot	0.16	0.16
Water Column Volume (gallons)	0.062	0.93
Total Volume Pumped (gallons)	-	1.0
Sampling Method	Not Sampled	Submersible pump
Diameter of Well Casing	2-inch	2-inch
Water Quality Data		
Temperature (°C)	-	9.20
pH (Standard Units)	-	5.81
Specific Conductivity (µS/cm)	-	730
Turbidity (NTU)	-	96.31
Remarks	Could not sample due to low water volume	

Notes:

Water quality parameters were measured with a YSI 556 and a MicroTPW turbidimeter

TOC = top of casing

ft = feet

°C = Degrees Celsius

µS/cm = Microsiemens per Centimeter

NTU = Nephelometric Turbidity Unit

- = not measured or not applicable

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level (µg/L)**	Sample ID Number [^] and Water Depth in Feet BTOC (See Table 1 and Figure 2)	
			Monitoring Well	Trip Blank
			MW-4 23.35	WTB -
Gasoline Range Organics (GRO) - µg/L	AK 101	2,200	<50.0	-
Volatile Organic Compounds (VOCs)				
Benzene - µg/L	EPA 8260C	4.6	0.430	<0.200
Toluene - µg/L	EPA 8260C	1,100	<0.500	<0.500
Ethylbenzene - µg/L	EPA 8260C	15	<0.500	<0.500
Xylenes (total) - µg/L	EPA 8260C	190	<1.50	<1.50
Other VOCs - µg/L	EPA 8260C	Varies	ND	ND

Notes:

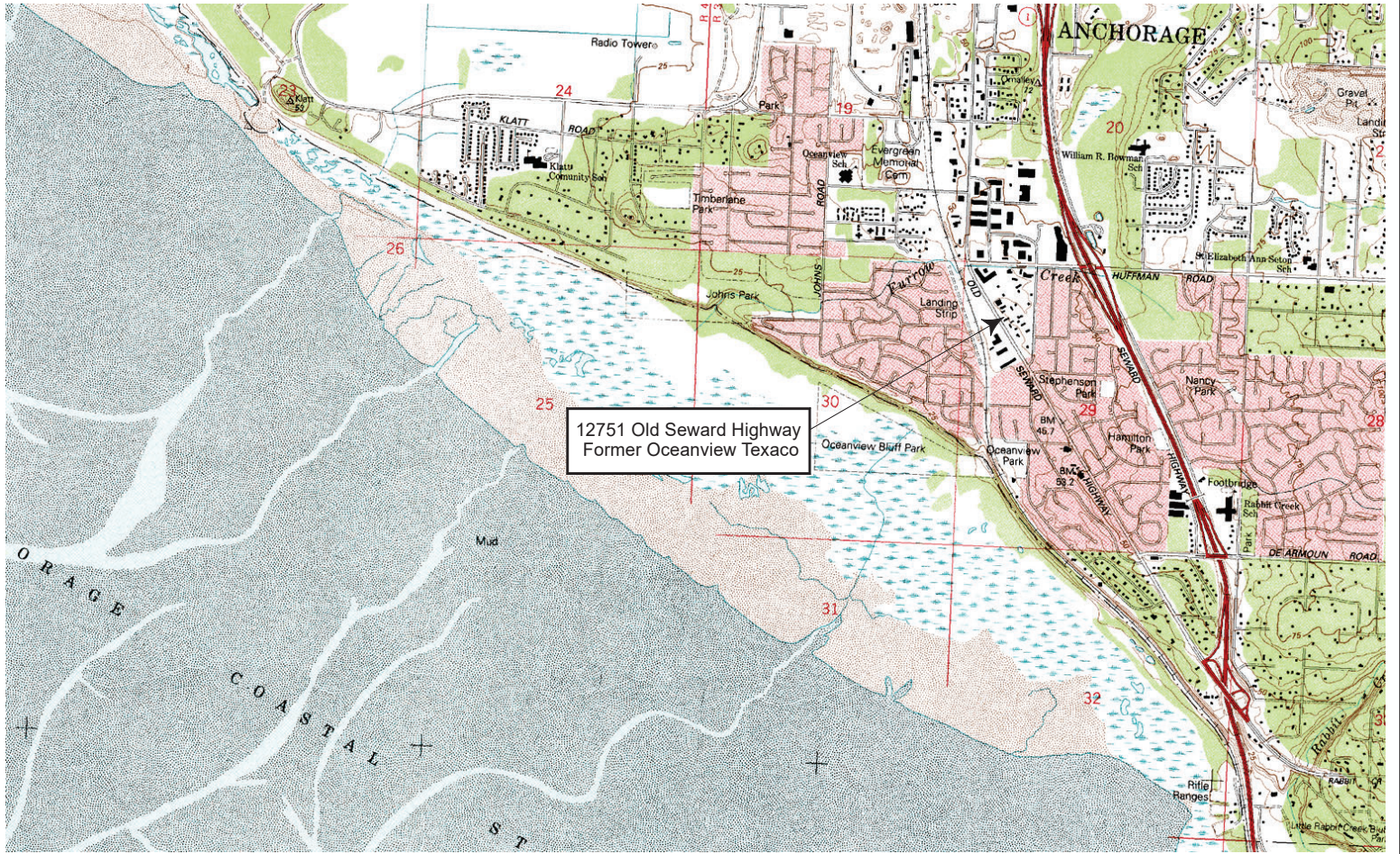
- * = See Attachment 2 for compounds tested, methods, and laboratory reporting limits
- ** = Groundwater cleanup levels are listed in Table C, 18 AAC 75.345 (September 2018)
- ^ = Sample ID number preceded by "101071-" on the chain of custody form
- µg/L = Micrograms per liter
- <50.0 = Analyte not detected; laboratory limit of detection of 50.0 µg/L
- 0.430** = Analyte detected
- BTOC = Below Top of Casing

**TABLE 3
HISTORICAL GROUNDWATER DATA**

Well No.	Date	Groundwater Depth [^] (ft)	Target Analyte Concentrations and Associated ADEC Cleanup Level* (µg/L)				
			GRO 2,200 µg/L	Benzene 4.6 µg/L	Toluene 1,100 µg/L	Ethylbenzene 15 µg/L	Xylenes 190 µg/L
MW-1	5/15/2003	22.86	-	209	3.94	<2.00	<2.00
	8/7/2003	23.20	-	52.7	37.6	<2.00	11.7
	11/5/2003	22.70	-	112	141	4.44	30.8
	5/16/2004	22.43	143	23.3	15.1	<2.00	2.09
	4/24/2008	21.84	<100	<0.500	<2.00	<2.00	<2.00
	11/24/2009	23.34	<100	<0.500	<2.00	<2.00	<2.00
	5/19/2016	24.01	Could not sample due to low water volume				
MW-2	5/15/2003~	22.64	-	4,860	4,580	499	3,290
	8/7/2003~	22.92	-	206	4.84	11.7	37.3
	11/4/2003~	22.41	-	71.0	<2.00	5.06	11.5
	5/16/2004~	22.11	386	163	<2.00	<2.00	2.03
	4/24/2008	21.60	40,600	4,020	9,960	2,060	4,710
	11/24/2009~	23.08	186,000	6,930	57,300	8,050	35,000
	5/20/2016~	23.77	<100 B	0.550	0.610 J	<0.500	<1.50
	9/7/2018	25.00	Could not sample due to low water volume				
MW-3	5/15/2003	22.65	-	<0.500	<2.00	<2.00	<2.00
	8/7/2003	23.01	-	<0.500	<2.00	<2.00	<2.00
	11/4/2003	22.72	-	<0.500	<2.00	<2.00	<2.00
	5/16/2004	21.79	<90.0	<0.500	<2.00	<2.00	<2.00
	4/24/2008	21.22	<100	<0.500	<2.00	<2.00	<2.00
	11/24/2009	-	-	-	-	-	-
	5/19/2016	23.93	<50.0	<0.250	0.350 J	<0.500	<1.50
	MW-4	5/15/2003	21.89	-	3,060	17.8	3.30
8/7/2003		22.15	-	3,770	<200	<200	<200
11/4/2003		21.48	-	7,160	<200	<200	<200
5/16/2004		21.00	20,900	9,160	2.29	42.5	39.8
4/24/2008~		20.52	350	177	<2.00	<2.00	<2.00
11/24/2009		22.29	1,140	429	39.8	29.6	80.4
5/19/2016		22.95	<100 B	<0.250	<0.500	<0.500	<1.50
9/7/2018		23.35	<50.0	0.430	<0.500	<0.500	<1.50
MW-5		5/15/2003	20.87	-	<0.500	<2.00	<2.00
	8/7/2003	21.15	-	<0.500	<2.00	<2.00	<2.00
	11/4/2003	20.18	-	<0.500	<2.00	<2.00	<2.00
	5/16/2004	19.71	<90.0	<0.500	<2.00	<2.00	<2.00
	4/24/2008	19.20	<100	<0.500	<2.00	<2.00	<2.00
	11/24/2009	Could not locate					
	5/19/2016	Could not locate.	Assumed destroyed during paving activities.				

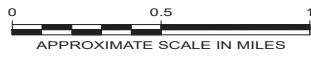
Notes:

- * See Attachment 2 for compounds tested, methods, and laboratory reporting limits
- Not applicable or sample not tested for this analyte
- ^ Depth of static groundwater level below the measuring point or top of casing
- <100 Analyte not detected; laboratory limit of detection of 0.000250 mg/L
- 350 Analyte detected
- 429 Analyte concentration exceeds ADEC cleanup level
- J Estimated concentration detected below the reporting limit
- B Compound detected in trip blank or method blank at an estimated concentration.
- ~ Listed value based on highest concentration in duplicate set
- µg/L micrograms per liter
- ft feet

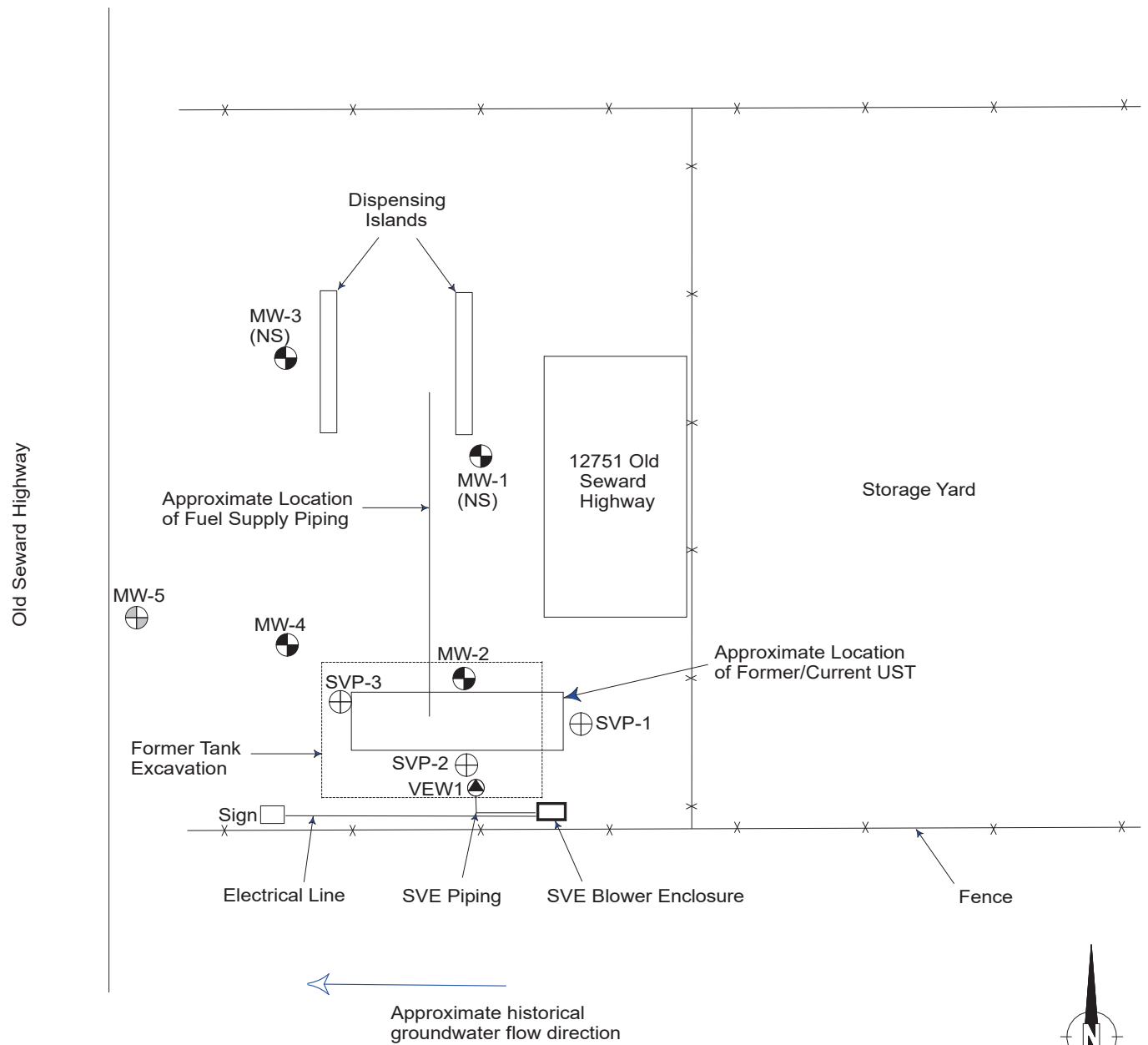


12751 Old Seward Highway
Former Oceanview Texaco





Source:
Anchorage A-8 SW, Alaska
U.S. Geological Survey Quadrangle

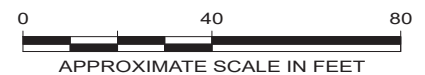


12751 Old Seward Highway Anchorage, Alaska	
VICINITY MAP	
December 2018	101071-001
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	Fig. 1



LEGEND

- MW-2  Approximate Location of Monitoring Well MW-2
- MW-5  Approximate Location of former Monitoring Well MW-5. Assumed destroyed during 2008 paving activities.
- SVP-1  Approximate Location of Soil Vapor Monitoring Point SVP-1
- VEW1  Approximate Location of Vapor Extraction Well VEW1
- NS Not Sampled



12751 Old Seward Highway Anchorage, Alaska	
SITE PLAN	
December 2018	101071-001
 SHANNON & WILSON, INC. Geotechnical & Environmental Consultants	Fig. 2

ATTACHMENT 1
FIELD NOTES

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 101071 Location: Reed's Auto Weather: 50°F partly cloudy
 Well No.: MW-2
 Date: 9/7/18 Time Started: 11:00 Time Completed: _____
 Develop Date: - Develop End Time: - (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 11:00 Date of Depth Measurement: 9/7/18
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2" Well Screen Interval: _____
 Total Depth of Well Below MP: 35.39 25.39 Product Thickness, if noted: _____
 Depth-to-Water (DTW) Below MP: 33.99 35 25.00
 Water Column in Well: 1.4 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 0.224 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/7/18 Time Started: _____ Time Completed: _____
 Three Well Volumes: 0.592 (Gallons in Well x 3)
 Gallons Purged: _____ Depth of Pump (generally 2 ft from bottom): _____
 Max. Drawdown (generally 0.3 ft): _____ Pump Rate: _____
 Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
*										

SAMPLING DATA

Odor: _____ Color: _____
 Sample Designation: 101071-MW2 Time / Date: 9/7/18
 QC Sample Designation: 101071-MW102 Time / Date: 9/7/18
 QA Sample Designation: _____ Time / Date: _____

Evacuation Method: Submersible Pump / Other: _____
 Sampling Method: Submersible Pump / Other: mini-eureka
 Water Quality Instruments Used/Manufacturer/Model Number YSI 556, turb.
 Calibration Info (Time, Ranges, etc) calibrated 08:30

* Remarks: not enough water column to sample - used pump + bailer.

Sampling Personnel: JJK

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

LOW-FLOW WATER SAMPLING LOG

Shannon & Wilson, Inc.

Job No: 101071 Location: Road's Antz Weather: 50°F partly cloudy
 Well No.: MW-4
 Date: 9/7/18 Time Started: 09:45 Time Completed: 11:00
 Develop Date: - Develop End Time: - (24 hour break)

INITIAL GROUNDWATER LEVEL DATA

Time of Depth Measurement: 09:45 Date of Depth Measurement: 9/7/18
 Measuring Point (MP): Top of PVC Casing / Top of Steel Protective Casing / Other: _____
 Diameter of Casing: 2" Well Screen Interval: -
 Total Depth of Well Below MP: 39.19 29.14 Product Thickness, if noted: -
 Depth-to-Water (DTW) Below MP: 33.35 23.35
 Water Column in Well: 5.79 (Total Depth of Well Below MP - DTW Below MP)
 Gallons per foot: 0.16
 Gallons in Well: 0.93 (Water Column in Well x Gallons per foot)

PURGING DATA

Date Purged: 9/7/18 Time Started: 10:20 Time Completed: 10:50
 Three Well Volumes: 2.79 (Gallons in Well x 3)
 Gallons Purged: 1.0 Depth of Pump (generally 2 ft from bottom): 24.00
 Max. Drawdown (generally 0.3 ft): 0.24 Pump Rate: _____
 Well Purged Dry: Yes No (If yes, use Well Purged Dry Log)

Time:	Gallons:	Pump Rate (L/min):	DTW (ft BMP):	Drawdown (ft):	Temp: (°C)	Sp. Cond.: (uS/cm)	DO: (mg/L)	pH: (S.U.)	ORP: (mV)	Turb: (NTU)
* 10:24	0.1	0.1	33.35	0.0	9.19	790	-	5.58	194.4	189.8
10:27	0.3	0.1	33.52	0.17	9.20	746	-	5.72	195.4	119.0
10:30	0.4	0.1	33.55	0.20	9.20	736	-	5.76	192.8	113.4
10:33	0.5	0.1	33.57	0.22	9.21	731	-	5.79	190.2	98.95
10:36	0.7	0.1	33.57	0.22	9.21	730	-	5.80	190.1	97.31
10:39	0.8	0.1	33.57	0.22	9.21	731	-	5.81	190.0	97.20
10:42	1.0	0.1	33.59	0.24	9.20	730	-	5.81	189.9	96.31

SAMPLING DATA

Odor: none Color: clear
 Sample Designation: 101071-MW4 Time / Date: 10:43 9/7/18
 QC Sample Designation: - Time / Date: -
 QA Sample Designation: - Time / Date: -

Evacuation Method: Submersible Pump / Other: _____
 Sampling Method: Submersible Pump / Other: mini-whale

Water Quality Instruments Used/Manufacturer/Model Number YSI 550, turbid

Calibration Info (Time, Ranges, etc) calibrated 08:30

* Remarks: pump malfunction, switched batteries + pumps

Sampling Personnel: JJK

WELL CASING VOLUMES (GAL/FT): 1" = 0.04 2" = 0.16 4" = 0.65
 ANNULAR SPACE VOLUME (GAL/FT): 4" casing and 2" well = 0.23

ATTACHMENT 2
RESULTS OF ANALYTICAL TESTING BY
SGS NORTH AMERICA INC. OF ANCHORAGE, ALASKA
AND
ADEC LABORATORY DATA REVIEW CHECKLIST

Laboratory Report of Analysis

To: Shannon & Wilson, Inc.
5430 Fairbanks St. Suite 3
Anchorage, AK 99518
(907)433-3226

Report Number: **1185086**

Client Project: **101071 Reed's Auto**

Dear Jake Kesler,

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 Jillian 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.

Jillian Vlahovich
Project Manager
Jillian.Vlahovich@sgs.com

Date

Case Narrative

SGS Client: **Shannon & Wilson, Inc.**
SGS Project: **1185086**
Project Name/Site: **101071 Reed's Auto**
Project Contact: **Jake Kesler**

Refer to sample receipt form for information on sample condition.

LCSD for HBN 1785845 [VXX/3309 (1474436) LCSD

8260C - LCSD RPD for bromomethane does not meet QC criteria. This analyte was not detected in associated samples.

*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: 09/12/2018 10:36:44AM

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, indemnification 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.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
101071-MW4	1185086001	09/07/2018	09/07/2018	Water (Surface, Eff., Ground)
101071-WTB	1185086002	09/07/2018	09/07/2018	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
AK101	Gasoline Range Organics (W)
SW8260C	Volatile Organic Compounds (W) FULL

Print Date: 09/12/2018 10:36:46AM

Detectable Results Summary

Client Sample ID: **101071-MW4**

Lab Sample ID: 1185086001

Volatile GC/MS

Parameter

Benzene

Result

0.430

Units

ug/L

Print Date: 09/12/2018 10:36:47AM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518
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Member of SGS Group

Results of 101071-MW4

Client Sample ID: **101071-MW4**
 Client Project ID: **101071 Reed's Auto**
 Lab Sample ID: 1185086001
 Lab Project ID: 1185086

Collection Date: 09/07/18 10:43
 Received Date: 09/07/18 16:17
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0310	mg/L	1		09/11/18 05:15
Surrogates							
4-Bromofluorobenzene (surr)	73.2	50-150		%	1		09/11/18 05:15

Batch Information

Analytical Batch: VFC14413
 Analytical Method: AK101
 Analyst: ACL
 Analytical Date/Time: 09/11/18 05:15
 Container ID: 1185086001-A

Prep Batch: VXX33081
 Prep Method: SW5030B
 Prep Date/Time: 09/10/18 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of 101071-MW4

Client Sample ID: 101071-MW4
Client Project ID: 101071 Reed's Auto
Lab Sample ID: 1185086001
Lab Project ID: 1185086

Collection Date: 09/07/18 10:43
Received Date: 09/07/18 16:17
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 101071-MW4

Client Sample ID: 101071-MW4
Client Project ID: 101071 Reed's Auto
Lab Sample ID: 1185086001
Lab Project ID: 1185086

Collection Date: 09/07/18 10:43
Received Date: 09/07/18 16:17
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 101071-MW4

Client Sample ID: **101071-MW4**
Client Project ID: **101071 Reed's Auto**
Lab Sample ID: 1185086001
Lab Project ID: 1185086

Collection Date: 09/07/18 10:43
Received Date: 09/07/18 16:17
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18293
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 09/11/18 15:49
Container ID: 1185086001-D

Prep Batch: VXX33092
Prep Method: SW5030B
Prep Date/Time: 09/11/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of 101071-WTB

Client Sample ID: 101071-WTB
Client Project ID: 101071 Reed's Auto
Lab Sample ID: 1185086002
Lab Project ID: 1185086

Collection Date: 09/07/18 09:00
Received Date: 09/07/18 16:17
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 101071-WTB

Client Sample ID: 101071-WTB
Client Project ID: 101071 Reed's Auto
Lab Sample ID: 1185086002
Lab Project ID: 1185086

Collection Date: 09/07/18 09:00
Received Date: 09/07/18 16:17
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

Results of 101071-WTB

Client Sample ID: **101071-WTB**
Client Project ID: **101071 Reed's Auto**
Lab Sample ID: 1185086002
Lab Project ID: 1185086

Collection Date: 09/07/18 09:00
Received Date: 09/07/18 16:17
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS18287
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 09/10/18 17:34
Container ID: 1185086002-A

Prep Batch: VXX33077
Prep Method: SW5030B
Prep Date/Time: 09/10/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1785760 [VXX/33077]

Blank Lab ID: 1474056

QC for Samples:

1185086002

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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

Print Date: 09/12/2018 10:36:49AM

Method Blank

Blank ID: MB for HBN 1785760 [VXX/33077]

Blank Lab ID: 1474056

QC for Samples:
1185086002

Matrix: Water (Surface, Eff., Ground)

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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)	103	81-118		%
4-Bromofluorobenzene (surr)	99.2	85-114		%
Toluene-d8 (surr)	104	89-112		%

Print Date: 09/12/2018 10:36:49AM

Method Blank

Blank ID: MB for HBN 1785760 [VXX/33077]
Blank Lab ID: 1474056

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185086002

Results by SW8260C

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS18287
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: FDR
Analytical Date/Time: 9/10/2018 12:16:00PM

Prep Batch: VXX33077
Prep Method: SW5030B
Prep Date/Time: 9/10/2018 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/12/2018 10:36:49AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185086 [VXX33077]
 Blank Spike Lab ID: 1474057
 Date Analyzed: 09/10/2018 12:33

Spike Duplicate ID: LCSD for HBN 1185086 [VXX33077]
 Spike Duplicate Lab ID: 1474058
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185086002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	29.0	97	30	29.0	97	(78-124)	0.00	(< 20)
1,1,1-Trichloroethane	30	28.8	96	30	29.8	99	(74-131)	3.30	(< 20)
1,1,2,2-Tetrachloroethane	30	30.5	102	30	30.7	102	(71-121)	0.59	(< 20)
1,1,2-Trichloroethane	30	30.5	102	30	30.5	102	(80-119)	0.20	(< 20)
1,1-Dichloroethane	30	29.2	97	30	30.1	100	(77-125)	3.10	(< 20)
1,1-Dichloroethene	30	31.4	105	30	32.1	107	(71-131)	2.30	(< 20)
1,1-Dichloropropene	30	29.7	99	30	30.7	102	(79-125)	3.20	(< 20)
1,2,3-Trichlorobenzene	30	30.1	100	30	28.5	95	(69-129)	5.70	(< 20)
1,2,3-Trichloropropane	30	29.8	99	30	29.6	99	(73-122)	0.77	(< 20)
1,2,4-Trichlorobenzene	30	31.3	104	30	30.7	102	(69-130)	2.00	(< 20)
1,2,4-Trimethylbenzene	30	31.4	105	30	32.2	107	(79-124)	2.40	(< 20)
1,2-Dibromo-3-chloropropane	30	27.3	91	30	26.3	88	(62-128)	4.00	(< 20)
1,2-Dibromoethane	30	30.7	102	30	30.2	101	(77-121)	1.40	(< 20)
1,2-Dichlorobenzene	30	31.2	104	30	31.9	106	(80-119)	2.40	(< 20)
1,2-Dichloroethane	30	27.5	92	30	28.3	94	(73-128)	2.80	(< 20)
1,2-Dichloropropane	30	29.1	97	30	29.8	99	(78-122)	2.30	(< 20)
1,3,5-Trimethylbenzene	30	31.0	103	30	31.5	105	(75-124)	1.60	(< 20)
1,3-Dichlorobenzene	30	31.8	106	30	32.1	107	(80-119)	0.81	(< 20)
1,3-Dichloropropane	30	30.6	102	30	30.8	103	(80-119)	0.49	(< 20)
1,4-Dichlorobenzene	30	31.3	104	30	32.2	107	(79-118)	2.70	(< 20)
2,2-Dichloropropane	30	28.9	96	30	30.0	100	(60-139)	3.60	(< 20)
2-Butanone (MEK)	90	84.7	94	90	80.4	89	(56-143)	5.20	(< 20)
2-Chlorotoluene	30	31.5	105	30	32.6	109	(79-122)	3.20	(< 20)
2-Hexanone	90	91.9	102	90	88.1	98	(57-139)	4.20	(< 20)
4-Chlorotoluene	30	31.0	103	30	31.9	106	(78-122)	2.90	(< 20)
4-Isopropyltoluene	30	31.8	106	30	32.5	108	(77-127)	2.10	(< 20)
4-Methyl-2-pentanone (MIBK)	90	88.7	99	90	86.2	96	(67-130)	2.90	(< 20)
Benzene	30	29.7	99	30	30.5	102	(79-120)	2.60	(< 20)
Bromobenzene	30	30.0	100	30	30.8	103	(80-120)	2.70	(< 20)
Bromochloromethane	30	29.3	98	30	30.4	101	(78-123)	3.40	(< 20)
Bromodichloromethane	30	28.7	96	30	29.7	99	(79-125)	3.30	(< 20)
Bromoform	30	29.3	98	30	28.8	96	(66-130)	1.70	(< 20)
Bromomethane	30	28.5	95	30	31.0	103	(53-141)	8.10	(< 20)
Carbon disulfide	45	48.0	107	45	48.9	109	(64-133)	1.70	(< 20)

Print Date: 09/12/2018 10:36:50AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185086 [VXX33077]
 Blank Spike Lab ID: 1474057
 Date Analyzed: 09/10/2018 12:33

Spike Duplicate ID: LCSD for HBN 1185086 [VXX33077]
 Spike Duplicate Lab ID: 1474058
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185086002

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	27.8	93	30	29.0	97	(72-136)	4.40	(< 20)
Chlorobenzene	30	29.7	99	30	30.1	100	(82-118)	1.30	(< 20)
Chloroethane	30	34.4	115	30	34.7	116	(60-138)	0.81	(< 20)
Chloroform	30	29.0	97	30	29.9	100	(79-124)	3.20	(< 20)
Chloromethane	30	28.5	95	30	32.2	107	(50-139)	12.20	(< 20)
cis-1,2-Dichloroethene	30	29.3	98	30	30.4	101	(78-123)	3.60	(< 20)
cis-1,3-Dichloropropene	30	28.1	94	30	29.1	97	(75-124)	3.50	(< 20)
Dibromochloromethane	30	29.5	98	30	29.9	100	(74-126)	1.30	(< 20)
Dibromomethane	30	29.4	98	30	30.0	100	(79-123)	2.00	(< 20)
Dichlorodifluoromethane	30	31.2	104	30	32.4	108	(32-152)	3.80	(< 20)
Ethylbenzene	30	30.8	103	30	31.4	105	(79-121)	1.90	(< 20)
Freon-113	45	49.5	110	45	50.4	112	(70-136)	1.80	(< 20)
Hexachlorobutadiene	30	31.4	105	30	32.0	107	(66-134)	1.70	(< 20)
Isopropylbenzene (Cumene)	30	31.2	104	30	32.0	107	(72-131)	2.40	(< 20)
Methylene chloride	30	29.3	98	30	30.2	101	(74-124)	2.90	(< 20)
Methyl-t-butyl ether	45	42.5	94	45	43.5	97	(71-124)	2.30	(< 20)
Naphthalene	30	28.9	96	30	27.1	90	(61-128)	6.60	(< 20)
n-Butylbenzene	30	32.8	109	30	33.2	111	(75-128)	1.20	(< 20)
n-Propylbenzene	30	32.1	107	30	33.1	110	(76-126)	3.10	(< 20)
o-Xylene	30	30.2	101	30	31.0	103	(78-122)	2.70	(< 20)
P & M -Xylene	60	61.9	103	60	62.8	105	(80-121)	1.40	(< 20)
sec-Butylbenzene	30	32.2	107	30	33.2	111	(77-126)	2.90	(< 20)
Styrene	30	30.9	103	30	31.5	105	(78-123)	1.90	(< 20)
tert-Butylbenzene	30	31.1	104	30	32.0	107	(78-124)	2.90	(< 20)
Tetrachloroethene	30	31.1	104	30	31.1	104	(74-129)	0.23	(< 20)
Toluene	30	29.5	98	30	30.0	100	(80-121)	1.50	(< 20)
trans-1,2-Dichloroethene	30	29.3	98	30	30.2	101	(75-124)	3.30	(< 20)
trans-1,3-Dichloropropene	30	29.3	98	30	29.6	99	(73-127)	1.20	(< 20)
Trichloroethene	30	29.6	99	30	30.3	101	(79-123)	2.50	(< 20)
Trichlorofluoromethane	30	30.5	102	30	31.3	104	(65-141)	2.40	(< 20)
Vinyl acetate	30	27.5	92	30	28.1	94	(54-146)	2.00	(< 20)
Vinyl chloride	30	30.2	101	30	31.8	106	(58-137)	5.20	(< 20)
Xylenes (total)	90	92.1	102	90	93.7	104	(79-121)	1.80	(< 20)

Print Date: 09/12/2018 10:36:50AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185086 [VXX33077]
 Blank Spike Lab ID: 1474057
 Date Analyzed: 09/10/2018 12:33

Spike Duplicate ID: LCSD for HBN 1185086 [VXX33077]
 Spike Duplicate Lab ID: 1474058
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185086002

Results by SW8260C

Parameter	Spike	Blank Spike (%)		Spike	Spike Duplicate (%)		CL	RPD (%)	RPD CL
		Result	Rec (%)		Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	98.7	99	30	99.9	100	(81-118)	1.10	
4-Bromofluorobenzene (surr)	30	96.9	97	30	99	99	(85-114)	2.10	
Toluene-d8 (surr)	30	102	102	30	102	102	(89-112)	0.16	

Batch Information

Analytical Batch: **VMS18287**
 Analytical Method: **SW8260C**
 Instrument: **VPA 780/5975 GC/MS**
 Analyst: **FDR**

Prep Batch: **VXX33077**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/10/2018 00:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/12/2018 10:36:50AM



Method Blank

Blank ID: MB for HBN 1785779 [VXX/33081]
Blank Lab ID: 1474167

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185086001

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	73.8	50-150		%

Batch Information

Analytical Batch: VFC14413
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ACL
Analytical Date/Time: 9/10/2018 10:05:00AM

Prep Batch: VXX33081
Prep Method: SW5030B
Prep Date/Time: 9/10/2018 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 09/12/2018 10:36:51AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185086 [VXX33081]
 Blank Spike Lab ID: 1474170
 Date Analyzed: 09/10/2018 10:59

Spike Duplicate ID: LCSD for HBN 1185086 [VXX33081]
 Spike Duplicate Lab ID: 1474171
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185086001

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.957	96	1.00	0.931	93	(60-120)	2.70	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	83.3	83	0.0500	81.2	81	(50-150)	2.60	
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Batch Information

Analytical Batch: **VFC14413**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ACL**

Prep Batch: **VXX33081**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/10/2018 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 09/12/2018 10:36:52AM

Method Blank

Blank ID: MB for HBN 1785865 [VVX / 3] Lb
 Blank 4aQID: 16766/ 6

MairW (aizr umcrfa, sE. ffEd rocn) R

CS for map els2:
 118538t 331

y s2cli2 QJ SW8260C

<u>- arap sistr</u>	<u>y s2cli2</u>	<u>4PCX64</u>	<u>D4</u>	<u>Onx2</u>
1E E Thsira, glorosigans	3E530	3E33	3E53	czX
1E E Thrx, glorosigans	3E330	1E3	3E13	czX
1E E Thsira, glorosigans	3E530	3E33	3E53	czX
1E E Thrx, glorosigans	3E330	3E33	3E13	czX
1E D x glorosigans	3E330	1E3	3E13	czX
1E D x glorosigans	3E330	1E3	3E13	czX
1E D x gloroeroesns	3E330	1E3	3E13	czX
1E E Thrx, gloroCsnKsns	3E330	1E3	3E13	czX
1E E Thrx, gloroeroeans	3E330	1E3	3E13	czX
1E E Thrx, gloroCsnKsns	3E330	1E3	3E13	czX
1E E Thrxp sigUCsnKsns	3E330	1E3	3E13	czX
1E D xrop o T, gloroeroeans	5E30	1E3	/ E3	czX
1E D xrop osigans	3E / 750	3E753	3E183	czX
1E D x gloroCsnKsns	3E330	1E3	3E13	czX
1E D x glorosigans	3E530	3E33	3E53	czX
1E D x gloroeroeans	3E330	1E3	3E13	czX
1E E Thrxp sigUCsnKsns	3E330	1E3	3E13	czX
1E D x gloroCsnKsns	3E330	1E3	3E13	czX
1E D x gloroeroeans	3E530	3E33	3E53	czX
1E D x gloroCsnKsns	3E530	3E33	3E53	czX
1E D x gloroeroeans	3E330	1E3	3E13	czX
LTBcianons uM. 9R	5E30	1E3	/ E3	czX
LTSgloroiolcsns	3E330	1E3	3E13	czX
LTHsVnons	5E30	1E3	/ E3	czX
6Tsgloroiolcsns	3E330	1E3	3E13	czX
6T2oeroeUiolcsns	3E330	1E3	3E13	czX
6TmsigULTesnianons uMIB9R	5E30	1E3	/ E3	czX
BsnKsns	3E330	3E33	3E13	czX
Brop oCsnKsns	3E330	1E3	3E13	czX
Brop o, glorop sigans	3E330	1E3	3E13	czX
Brop o) x glorop sigans	3E530	3E33	3E53	czX
Brop oforp	3E330	1E3	3E13	czX
Brop op sigans	LE30	5E3	1E3	czX
SarQn) xclfx) s	5E30	1E3	/ E3	czX
SarQn isira, glorx) s	3E330	1E3	3E13	czX
SgloroCsnKsns	3E530	3E33	3E53	czX
Sglorosigans	3E330	1E3	3E13	czX
Sgloroforp	3E330	1E3	3E13	czX

- rni Dais: 3] XLX318 13:/ t :5/ AM

Method Blank

Blank ID: MB for HBN 1785865 Q VVX / 3] Lb
 Blank 4aQID: 16766/ 6

MairW(aizr umcrfa, sE. ffEd rocn) R

CS for map els2:
 118538t 331

ys2cli2 QJ SW8260C

<u>- arap sizr</u>	<u>ys2cli2</u>	<u>4PCX64</u>	<u>D4</u>	<u>Onx2</u>
Sglorop sigans	3G330	1G3	3G13	czX
, XTE TDx glorosigsns	3G330	1G3	3G13	czX
, XTE TDx gloroeroesns	3G530	3G53	3G53	czX
DxQrop o, glorop sigans	3G530	3G53	3G53	czX
DxQrop op sigans	3G330	1G3	3G13	czX
Dx gloro) xilcorop sigans	3G330	1G3	3G13	czX
. igUCsnKns	3G330	1G3	3G13	czX
FrsonT11/	5G30	13G	/ G3	czX
HsVd, gloroQcia) xns	3G330	1G3	3G13	czX
I2oeroeUCsnKns uScp snsR	3G330	1G3	3G13	czX
MsigUsns , glor) s	LG30	5G3	1G3	czX
MsigUTTCiU sigsr	5G30	13G	/ G3	czX
Naegigalsns	3G330	1G3	3G13	czX
nTBciUCsnKns	3G330	1G3	3G13	czX
nT roeUCsnKns	3G330	1G3	3G13	czX
oTVUsns	3G330	1G3	3G13	czX
- & M TVUsns	1G30	LG3	3GL3	czX
2s, TBciUCsnKns	3G330	1G3	3G13	czX
miUsns	3G330	1G3	3G13	czX
isriTBciUCsnKns	3G330	1G3	3G13	czX
hsira, glorosigsns	3G330	1G3	3G13	czX
holcsns	3G330	1G3	3G13	czX
iran2TE TDx glorosigsns	3G330	1G3	3G13	czX
iran2TE TDx gloroeroesns	3G330	1G3	3G13	czX
hrx glorosigsns	3G330	1G3	3G13	czX
hrx gloroflcorop sigans	3G330	1G3	3G13	czX
[xIU a, siais	5G30	13G	/ G3	czX
[xIU , glor) s	3G7530	3G53	3G533	czX
VUsns2 uoialR	1G30	/ G3	1G3	czX
Surrogates				
1E TDx glorosigsns TD6 u2crrR]]	81T18		%
6TBrop oflcoroQsnKns u2crrR] / G	85T16		%
holcsnsT] 8 u2crrR	131	8] T1L		%

Method Blank

Blank ID: MB for HBN 1785865 [VVX / 3] Lb
Blank 4aQID: 16766 / 6

CS for map els2:
118538t 331

MairW (aizr umcra, sE. ffEd rocn) R

ys2cli2 QJ **SW8260C**

- arap sizr

ys2cli2

4PCX64

D4

Onx2

Batch Information

AnalUx al Bai, g: [Mm18L] /
AnalUx al Msigo): m(8Lt 3S
In2ircp sni: Azksni 78] 3T75Mm
AnalUzi: FDy
AnalUx al DaisXip s:] X1X318] :51:33AM

- rse Bai, g: [VV / / 3] L
- rse Msigo): m(53 / 3B
- rse DaisXip s:] X1X318 1L:33:33AM
- rse Inxal (iQ olG 5 p 4
- rse . Vira, i [ol: 5 p 4

- rni Dais: 3] X1X318 13 / t :5 / AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185086 [VXX33092]
 Blank Spike Lab ID: 1474435
 Date Analyzed: 09/11/2018 10:08

Spike Duplicate ID: LCSD for HBN 1185086 [VXX33092]
 Spike Duplicate Lab ID: 1474436
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185086001

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	30	32.3	108	30	32.2	107	(78-124)	0.43	(< 20)
1,1,1-Trichloroethane	30	30.5	102	30	31.4	105	(74-131)	3.10	(< 20)
1,1,2,2-Tetrachloroethane	30	26.4	88	30	25.9	86	(71-121)	2.10	(< 20)
1,1,2-Trichloroethane	30	29.2	97	30	28.8	96	(80-119)	1.40	(< 20)
1,1-Dichloroethane	30	27.8	93	30	28.8	96	(77-125)	3.30	(< 20)
1,1-Dichloroethene	30	30.7	102	30	33.1	110	(71-131)	7.50	(< 20)
1,1-Dichloropropene	30	29.6	99	30	30.9	103	(79-125)	4.20	(< 20)
1,2,3-Trichlorobenzene	30	33.2	111	30	30.1	100	(69-129)	9.80	(< 20)
1,2,3-Trichloropropane	30	27.8	93	30	27.3	91	(73-122)	1.80	(< 20)
1,2,4-Trichlorobenzene	30	32.2	107	30	30.9	103	(69-130)	4.10	(< 20)
1,2,4-Trimethylbenzene	30	29.4	98	30	29.9	100	(79-124)	2.00	(< 20)
1,2-Dibromo-3-chloropropane	30	27.0	90	30	25.0	83	(62-128)	7.60	(< 20)
1,2-Dibromoethane	30	31.3	104	30	31.0	103	(77-121)	1.10	(< 20)
1,2-Dichlorobenzene	30	29.1	97	30	29.2	97	(80-119)	0.41	(< 20)
1,2-Dichloroethane	30	28.0	93	30	28.5	95	(73-128)	1.70	(< 20)
1,2-Dichloropropane	30	28.9	97	30	29.6	99	(78-122)	2.20	(< 20)
1,3,5-Trimethylbenzene	30	29.1	97	30	29.9	100	(75-124)	2.60	(< 20)
1,3-Dichlorobenzene	30	29.5	98	30	30.2	101	(80-119)	2.40	(< 20)
1,3-Dichloropropane	30	29.2	97	30	28.0	93	(80-119)	4.20	(< 20)
1,4-Dichlorobenzene	30	29.8	99	30	30.0	100	(79-118)	0.70	(< 20)
2,2-Dichloropropane	30	33.5	112	30	34.9	116	(60-139)	4.10	(< 20)
2-Butanone (MEK)	90	80.9	90	90	75.0	83	(56-143)	7.60	(< 20)
2-Chlorotoluene	30	27.5	92	30	27.9	93	(79-122)	1.60	(< 20)
2-Hexanone	90	78.0	87	90	72.6	81	(57-139)	7.20	(< 20)
4-Chlorotoluene	30	27.6	92	30	28.1	94	(78-122)	1.70	(< 20)
4-Isopropyltoluene	30	29.7	99	30	30.2	101	(77-127)	1.60	(< 20)
4-Methyl-2-pentanone (MIBK)	90	88.9	99	90	83.9	93	(67-130)	5.70	(< 20)
Benzene	30	30.1	100	30	31.4	105	(79-120)	4.30	(< 20)
Bromobenzene	30	29.5	99	30	29.5	98	(80-120)	0.31	(< 20)
Bromochloromethane	30	34.2	114	30	35.8	119	(78-123)	4.60	(< 20)
Bromodichloromethane	30	30.0	100	30	30.7	102	(79-125)	2.30	(< 20)
Bromoform	30	33.8	113	30	33.4	111	(66-130)	1.30	(< 20)
Bromomethane	30	32.7	109	30	40.6	135	(53-141)	21.40	* (< 20)
Carbon disulfide	45	42.5	94	45	48.4	108	(64-133)	13.00	(< 20)

Print Date: 09/12/2018 10:36:55AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185086 [VXX33092]
 Blank Spike Lab ID: 1474435
 Date Analyzed: 09/11/2018 10:08

Spike Duplicate ID: LCSD for HBN 1185086 [VXX33092]
 Spike Duplicate Lab ID: 1474436
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185086001

Results by SW8260C

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Carbon tetrachloride	30	32.0	107	30	33.3	111	(72-136)	4.20	(< 20)
Chlorobenzene	30	29.9	100	30	29.4	98	(82-118)	1.50	(< 20)
Chloroethane	30	29.6	99	30	32.8	109	(60-138)	10.40	(< 20)
Chloroform	30	29.1	97	30	30.1	100	(79-124)	3.20	(< 20)
Chloromethane	30	25.3	84	30	29.8	99	(50-139)	16.20	(< 20)
cis-1,2-Dichloroethene	30	31.1	104	30	31.8	106	(78-123)	2.20	(< 20)
cis-1,3-Dichloropropene	30	31.8	106	30	32.3	108	(75-124)	1.50	(< 20)
Dibromochloromethane	30	32.1	107	30	31.5	105	(74-126)	1.90	(< 20)
Dibromomethane	30	30.1	100	30	30.7	102	(79-123)	1.80	(< 20)
Dichlorodifluoromethane	30	31.8	106	30	34.2	114	(32-152)	7.20	(< 20)
Ethylbenzene	30	31.4	105	30	31.4	105	(79-121)	0.13	(< 20)
Freon-113	45	48.3	107	45	51.7	115	(70-136)	6.70	(< 20)
Hexachlorobutadiene	30	32.3	108	30	34.2	114	(66-134)	5.70	(< 20)
Isopropylbenzene (Cumene)	30	30.9	103	30	31.4	105	(72-131)	1.50	(< 20)
Methylene chloride	30	29.8	99	30	30.5	102	(74-124)	2.20	(< 20)
Methyl-t-butyl ether	45	45.8	102	45	46.3	103	(71-124)	1.10	(< 20)
Naphthalene	30	31.2	104	30	28.8	96	(61-128)	8.30	(< 20)
n-Butylbenzene	30	28.1	94	30	29.4	98	(75-128)	4.60	(< 20)
n-Propylbenzene	30	27.5	92	30	28.1	94	(76-126)	2.30	(< 20)
o-Xylene	30	31.0	103	30	31.4	105	(78-122)	1.30	(< 20)
P & M -Xylene	60	63.1	105	60	63.1	105	(80-121)	0.03	(< 20)
sec-Butylbenzene	30	28.6	95	30	29.7	99	(77-126)	3.80	(< 20)
Styrene	30	31.3	104	30	31.0	103	(78-123)	1.00	(< 20)
tert-Butylbenzene	30	28.9	96	30	30.0	100	(78-124)	3.70	(< 20)
Tetrachloroethene	30	33.7	112	30	33.6	112	(74-129)	0.42	(< 20)
Toluene	30	29.2	97	30	29.1	97	(80-121)	0.48	(< 20)
trans-1,2-Dichloroethene	30	30.7	102	30	32.1	107	(75-124)	4.30	(< 20)
trans-1,3-Dichloropropene	30	31.7	106	30	31.4	105	(73-127)	0.70	(< 20)
Trichloroethene	30	30.9	103	30	31.5	105	(79-123)	2.10	(< 20)
Trichlorofluoromethane	30	31.4	105	30	33.7	112	(65-141)	7.20	(< 20)
Vinyl acetate	30	27.6	92	30	27.8	93	(54-146)	0.72	(< 20)
Vinyl chloride	30	27.7	92	30	30.3	101	(58-137)	9.20	(< 20)
Xylenes (total)	90	94.1	105	90	94.4	105	(79-121)	0.39	(< 20)

Print Date: 09/12/2018 10:36:55AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185086 [VXX33092]
 Blank Spike Lab ID: 1474435
 Date Analyzed: 09/11/2018 10:08

Spike Duplicate ID: LCSD for HBN 1185086 [VXX33092]
 Spike Duplicate Lab ID: 1474436
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185086001

Results by SW8260C

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	93.5	94	30	94	94	(81-118)	0.57	
4-Bromofluorobenzene (surr)	30	91.1	91	30	92.5	93	(85-114)	1.60	
Toluene-d8 (surr)	30	103	103	30	101	101	(89-112)	1.80	

Batch Information

Analytical Batch: **VMS18293**
 Analytical Method: **SW8260C**
 Instrument: **Agilent 7890-75MS**
 Analyst: **FDR**

Prep Batch: **VXX33092**
 Prep Method: **SW5030B**
 Prep Date/Time: **09/11/2018 00:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 09/12/2018 10:36:55AM

1185086



Laboratory SGS Page 1 of 1
 Attn: Shirley

CHAIN-OF-CUSTODY RECORD

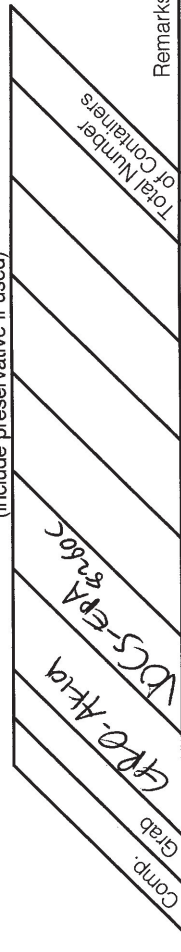
SHANNON & WILSON, INC.
 Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
 Seattle, WA 98103
 (206) 632-8020

2355 Hill Road
 Fairbanks, AK 99709
 (907) 479-0600

3990 Collins Way, Suite 100
 Lake Oswego, OR 97035
 (503) 223-6147

2705 Saint Andrews Loop, Suite A
 Pasco, WA 99301-3378
 (509) 946-6309



Analysis Parameters/Sample Container Description
 (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp. Grab	GPO-AK19	VCS-EPA-826C	Total Number of Containers	Remarks/Matrix
101071-MW4	DA-F	10:43	9/7/18	X	X	X	6	Groundwater
101071-WTB	@A-C	9:00	9/7/18	X	X	X	1	Water Top Block

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Project Number: <u>101071</u>	Total Number of Containers	Signature: <u>[Signature]</u>	Signature: _____	Signature: _____
Project Name: <u>PEED'S AUTO</u>	COC Seals/Intact? Y/N/NA	Time: <u>10:18</u>	Time: _____	Time: _____
Contact: <u>JCT</u>	Received Good Cond./Cold	Date: <u>9/7/18</u>	Date: _____	Date: _____
Ongoing Project? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Delivery Method:	Printed Name: <u>Jake Kestler</u>	Printed Name: _____	Printed Name: _____
Sampler: <u>SSK</u>	(attach shipping bill, if any)	Company: <u>STW</u>	Company: _____	Company: _____
Instructions		Received By: 1.	Received By: 2.	Received By: 3.
Requested Turnaround Time:		Signature: _____	Signature: _____	Signature: <u>[Signature]</u>
Special Instructions:		Time: _____	Time: _____	Time: <u>16:17</u>
Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - Job File		Date: _____	Date: _____	Date: <u>9/7/18</u>
		Printed Name: _____	Printed Name: _____	Printed Name: <u>Kyle Talkner</u>
		Company: _____	Company: _____	Company: <u>SGS</u>



e-Sample Receipt Form

SGS Workorder #:

1185086



1 1 8 5 0 8 6

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	<input checked="" type="checkbox"/>	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	<input type="text" value="n/a"/>	
COC accompanied samples?	<input checked="" type="checkbox"/>	
<input type="text" value="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)?	<input checked="" type="checkbox"/>	Cooler ID: 1 @ 4.1 °C Therm. ID: D35
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
	<input type="text" value="n/a"/>	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	<input type="text" value="n/a"/>	
If <0°C, were sample containers ice free?	<input type="text" value="n/a"/>	
If samples received <u>without</u> 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?	<input checked="" type="checkbox"/>	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/>	
**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)	<input checked="" type="checkbox"/>	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/>	<input type="text" value="n/a"/> ***Exemption permitted for metals (e.g.200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/>	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/>	
Were all soil VOAs field extracted with MeOH+BFB?	<input type="text" value="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

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1185086001-A	HCL to pH < 2	OK			
1185086001-B	HCL to pH < 2	OK			
1185086001-C	HCL to pH < 2	OK			
1185086001-D	HCL to pH < 2	OK			
1185086001-E	HCL to pH < 2	OK			
1185086001-F	HCL to pH < 2	OK			
1185086002-A	HCL to pH < 2	OK			
1185086002-B	HCL to pH < 2	OK			
1185086002-C	HCL to pH < 2	OK			

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.

LABORATORY DATA REVIEW CHECKLIST

Completed by: Schylar Healy

Title: Environmental Scientist

Date: November 2018

CS Report Name: 12751 Old Seward Highway, Anchorage, Alaska

Laboratory Report Date: September 12, 2018

Consultant Firm: Shannon & Wilson, Inc.

Laboratory Name: SGS North America, Inc.

Laboratory Report Number: 1185086

ADEC File Number: 2100.26.109

ADEC RecKey Number: *NA*

(NOTE: *NA* = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

- a. Did an ADEC CS approved 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 ADEC CS-approved? **Yes** / No / **NA** (please explain)

Comments: *Samples were not transferred.*

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: *The trip blank was not analyzed for GRO as outlined in our ADEC-approved work plan.*

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)? **Yes** / No / NA (please explain)

Comments: *The cooler temperature blank temperature was 4.1° Celsius.*

- b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)? **Yes** / No / NA (please explain)

Comments:

- c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)? **Yes** / No / NA (please explain)

Comments: *No discrepancies noted.*

- d. If there were any discrepancies, were they documented? – For example, incorrect sample containers/preservation, sample temperature outside acceptance range, insufficient or missing samples, etc.? Yes / No / **NA** (please explain)

Comments:

- e. Data quality or usability affected? Please explain. **NA**

Comments:

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: *The case narrative noted the following:*

- *LCSD RPD for bromomethane does not meet QC criteria. This analyte was not detected in associated samples.*

- c. Were corrective actions documented? Yes / **No** / NA (please explain)

Comments:

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

Comments: *The case narrative does not discuss the data quality/usability.*

5. Sample Results

- a. Correct analyses performed/reported as requested on COC? **Yes** / No / NA (please explain)

Comments:

- b. All applicable holding times met? **Yes** / No / NA (please explain)

Comments:

- c. All soils reported on a dry weight basis? Yes / No / **NA** (please explain)

Comments:

- d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes** **No** / NA (please explain)
Comments: *The LOQs for several VOCs are greater than their respective ADEC Method Two cleanup levels.*
- e. Data quality or usability affected? Please explain.
Comments: *The data cannot be used to determine whether or not concentrations of these VOCs are present at concentrations greater than their respective ADEC cleanup levels.*

6. QC Samples

a. Method Blank

- i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No / NA (please explain)
Comments:
- ii. All method blank results less than LOQ? **Yes** / No / NA (please explain)
Comments:
- iii. If above LOQ, what samples are affected? **NA**
Comments:
- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes / No / **NA** (please explain)
Comments:
- Data quality or usability affected? Please explain. **NA**
Comments:

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 / NA
(please explain)
Comments:
- ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? **Yes** / No / **NA** (please explain)
Comments: *Metals/inorganics were not analyzed.*
- 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 / NA (please explain)
Comments:

iv. Precision – All relative percent differences (RPDs) 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** NA (please explain)
Comments: *LCSD RPD for bromomethane does not meet QC criteria. This analyte was not detected in associated samples*

v. If %R or RPD is outside of acceptable limits, what samples are affected? *NA*
Comments: *Bromomethane was not detected in the associated samples.*

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined? **Yes / No / NA** (please explain)
Comments:

Data quality or usability affected? Please explain. **NA**
Comments: *Bromomethane was not detected in the associated samples, therefore, data quality/usability was not affected.*

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, 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. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages) **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:

Data quality or usability affected? **NA**
Comments:

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.)

i. One trip blank reported per matrix, analysis and cooler? (If not, enter explanation below.) **Yes** / No / NA (please explain)
Comments: *One water trip blank (WTB) was submitted to the lab with the project samples.*

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment stating why must be entered below.) Yes / **No** / NA (please explain)

Comments: *Only one cooler was submitted to the laboratory.*

- iii. All results less than LOQ? **Yes** / No / NA (please explain)

Comments:

- iv. If above LOQ, what samples are affected? **NA**

Comments:

- v. Data quality or usability affected? Please explain. **NA**

Comments:

e. Field Duplicate

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

Yes / **No** / NA (please explain)

Comments: *In accordance with our ADEC-approved work plan, a field duplicate was not submitted.*

- ii. Submitted blind to the lab? Yes / No / **NA** (please explain)

Comments:

- iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) Yes / No / **NA** (please explain)

Comments:

- iv. Data quality or usability affected? (Use the comment section to explain why or why not.)

Comments: **NA**

f. Decontamination or Equipment Blank (if applicable)

Yes / No / **NA** (please explain)

Comments: *Decontamination/equipment blanks were not included in the ADEC-approved work plan.*

- i. All results less than PQL? Yes / No / **NA** (please explain)

Comments:

- ii. If above PQL, what samples are affected? **NA**

Comments:

Work Order Number: 1185086

- iii. Data quality or usability affected? Please explain. **NA**
Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)

- a. Defined and appropriate? **Yes** / No / NA (please explain)
Comments: *Laboratory specific data flags/qualifiers are defined on Page 3 of the laboratory report.*

ATTACHMENT 3
IMPORTANT INFORMATION ABOUT YOUR
GEOTECHNICAL/ENVIRONMENTAL REPORT



Date: December 2018

To: Ms. Soloman Kim

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/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 which 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 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 prepared. 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.

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