2023 GROUNDWATER MONITORING PROGRAM REPORT

SWANSON RIVER FIELD
KENAI PENINSULA, ALASKA

May 2024

Prepared For:

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ACRONYMS AND ABBREVIATIONS

°	degrees
µg/L	micrograms per liter
%	percent
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
Aleut	Aleut Remediation, LLC
BENG	Brice Engineering, LLC
BES	Brice Environmental Services Corporation
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
btoc	below top of casing
C	Celsius
cy	cubic yards
DOT	Department of Transportation
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
GAC	granular activated carbon
Hilcorp	Hilcorp Alaska, LLC
LNAPL	light non-aqueous phase liquid
mL	milliliter
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
PAH	polycyclic aromatic hydrocarbon
PID	photoionization detector
POL	petroleum, oil, and lubricant
PVC	polyvinyl chloride
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RRO	residual range organics
SCU	Soldotna Creek Unit
SLR	SLR International Corporation
SRF	Swanson River Field
TS	tank setting

ACRONYMS AND ABBREVIATIONS (CONTINUED)

VOC	volatile organic compound

1. INTRODUCTION

This document prepared by Aleut Remediation, LLC (Aleut) for Hilcorp Alaska, LLC (Hilcorp) describes the sampling activities performed as part of long-term groundwater monitoring at Swanson River Field (SRF) in Sterling, Alaska (Figure 1). Aleut conducted groundwater monitoring activities at SRF Tank Settings (TS) 1-4, 1-9, 1-27, 1-33, 2-15, 3-4, and 3-9; Soldotna Creek Unit (SCU) 23B-03; and SCU 312-09 (Figure 2) under the Alaska Department of Environmental Conservation (ADEC) approved Work Plan Addendum, *Hilcorp Swanson River Field Groundwater Monitoring Program Final 2023 Work Plan Addendum*, prepared in June 2023 (Aleut 2023). This was an addendum to the *2021 Groundwater Monitoring Program Work Plan* (Brice Engineering, LLC [BENG] 2021). ADEC reference numbers for each site are listed in Table 1-1 below.

Table 1-1 ADEC Reference Summary

SITE NAME	ADEC FILE NUMBER	ADEC HAZARD ID
SRF TS 1-4	2334.38.018	441
SRF TS 1-9	2334.38.019	448
SRF TS 1-27	2334.38.020	442
SRF TS 1-33	2334.38.021	443
SRF TS 2-15	2334.38.022	444
SRF TS 3-4	2334.38.023	445
SRF TS 3-9	2334.38.024	446
SCU 23B-03	2334.38.058	26526
SCU 312-09	2334.38.062	27210

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

1.1 Purpose and Organization of Report

This Report describes the 2023 groundwater monitoring activities performed at SRF and is organized into the following sections:

- Section 1.0 Introduction - introduces the document purpose, organization, and project objectives.

- Section 2.0 Site Background - provides site background, such as site-specific geology, hydrogeology, previous investigations, and monitoring activities.
- Section 3.0 Regulatory Criteria - provides the project regulatory criteria.
- Section 4.0 Field Activities - describes field activities including mobilization, well inspections and maintenance, visual site assessment, groundwater gauging, product recovery, groundwater sampling, surface water sampling, decontamination, waste management, survey, demobilization, and Work Plan Addendum deviations.
- Section 5.0 2023 Monitoring Results - provides the site-specific 2023 results (monitoring well inspections and maintenance, visual site assessment, groundwater gauging results, product recovery, and groundwater sampling analytical results), quality assurance (QA)/quality control (QC), and analytical data quality.
- Section 6.0 Conclusions and Recommendations – provides the site-specific conclusions and recommendations.
- Section 7.0 References - lists the references cited in the document.

This report is supported by the following appendices:

- Appendix A includes figures presenting groundwater gauging results, estimated groundwater flow directions, well locations, and analytical results.
- Appendix B contains summary data tables, including groundwater elevation measurements, compiled historical and current groundwater analytical data, and compiled historical and current product recovery results.
- Appendix C contains digital project field forms, including well inspection and gauging forms, well purging and sampling forms, surface water sampling forms, field instrument calibration forms, well/site photos, visual site assessment logs, and a waste tracking log.
- Appendix D contains scanned copies of the project logbook and notes.
- Appendix E includes the data quality summary report, sample summary, complete 2023 analytical data tables, and a completed ADEC Laboratory Data Review Checklist for the laboratory data package.
- Appendix F includes the survey report.
- Appendix G includes the electronic laboratory analytical data package.

1.2 Project Objectives

The objective of the 2023 field effort was to conduct groundwater monitoring at SRF to evaluate current contaminant concentrations in groundwater. To accomplish this objective, the following tasks were completed:

- Mobilization

- Well inspections, maintenance, and visual site assessment
- Groundwater gauging
- Product recovery
- Groundwater sampling
- Decontamination
- Waste management
- Survey
- Demobilization

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2. SITE BACKGROUND

The SRF project area includes seven TS units: TS 1-4, TS 1-9, TS 1-27, TS 1-33, TS 2-15, TS 3-4, and TS 3-9; and two SCU units: SCU 23B-03 (located on Pad 23B-03) and SCU 312-09. SRF is located at Milepost 17.5 on Swanson River Road in Sterling, Alaska, on a 12-square-mile parcel of land leased from the U.S. Fish and Wildlife Service within the boundaries of the Kenai National Wildlife Refuge (Figure 1). SRF is an oil and gas unit managed by the U.S. Bureau of Land Management. Hilcorp took over SRF operations from Union Oil Company of California in 2012.

Monitoring well installation at the SRF TS units began in 1989, following investigations of contaminated soil at each site. By 1990, 53 monitoring wells were installed across the seven TS units, focusing on hydrocarbon-based contaminants. In 2002, an additional 23 monitoring wells were installed based on groundwater monitoring results. Monitoring wells were generally installed around each TS and within flare pits to monitor potential releases.

Contamination was identified during excavation activities at SCU 23B-03 and SCU 312-09 in 2014 and 2019, respectively. Starting in 2020, temporary monitoring wells were installed at both SCU sites to investigate hydrocarbon-based contaminants in groundwater. Based on the results of the groundwater investigations, permanent monitoring wells were installed in 2022 to support long-term groundwater monitoring. In 2023, the SCU sites were incorporated into the SRF long-term monitoring program.

Site-specific geology, hydrogeology, previous investigations, and monitoring activities are discussed in the following sub-sections.

2.1 SRF Geology and Hydrogeology

SRF is located on glaciolacustrine deposits from the Holocene and Upper Pleistocene. Geology beneath SRF is comprised of sandy silt deposits commonly forming an aquitard beneath ponds, wetlands, and shallow aquifers (SLR International Corporation [SLR] 2015). The depth to groundwater varies from approximately 2 to 24 feet below ground surface (bgs), and the groundwater flow direction varies for each TS or pad and is discussed in the site-specific hydrogeology sub-sections below.

2.2 SRF TS 1-4

SRF TS 1-4 is in Township 7 North, Range 9 West, Section 4, Seward Meridian (Figure 2). Figures 3 and 4 present 2023 groundwater contours and analytical results, respectively.

2.2.1 Hydrogeology

The groundwater elevation at SRF TS 1-4 varies from approximately 126.30 to 145.83 feet (North American Vertical Datum of 1988 [NAVD88]). Groundwater has been observed to generally flow north at this site. Groundwater flow direction was determined to be north-northeast in 2015, north in 2017, and northwest in 2019 and 2021 (Brice Environmental Services Corporation [BES] 2016a, BES 2019a, BES 2019b, BENG 2022).

2.2.2 Previous Investigations and Monitoring Activities

Five groundwater monitoring wells were installed by 1990 at SRF TS 1-4 and three additional monitoring wells were installed in 2002. From 2000 to 2010, the wells were sampled for benzene, toluene, ethylbenzene, and xylenes (BTEX) on an annual basis. Between 2011 and 2013, groundwater monitoring did not occur, but resumed in 2014. Benzene concentrations have been consistently detected above the ADEC Table C groundwater cleanup level in samples collected from wells TS1-4F, TS1-4G, TS1-4J, and FS1-4E. Light non-aqueous phase liquid (LNAPL) has been observed in monitoring wells TS1-4F, TS1-4G, and TS1-4J. During previous sampling events, groundwater results for BTEX in wells TS1-4CC and TS1-4DD have been either non-detect or less than the ADEC Table C groundwater cleanup levels (SLR 2015; BES 2016a).

In 2015, the site was moved to a biennial sampling basis, and ethylene glycol was added to the analytical suite following a release of approximately 1,600 gallons of a 50/50 mixture of ethylene glycol and water from a corroded pipeline under the oil line heater near well TS1-4G. Groundwater results from wells TS1-4F and FS1-4E exceeded the ADEC Table C groundwater cleanup level for benzene. Well TS1-4J contained measurable LNAPL during the 2015 event (BES 2016a).

In 2017, wells TS1-4EE, TS1-4GR, FS1-4E, and FS1-4H were sampled for petroleum-related volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Wells TS1-4EE and TS1-4GR were also sampled for ethylene glycol. Wells TS1-4F and TS1-4J were not sampled due to the presence of LNAPL. Sorbent socks were flipped, and product was bailed from TS1-4J. Groundwater collected from newly installed monitoring well TS1-4GR had persistent soapy bubbles that could not be excluded from all 40-milliliter (mL) vials for the VOC samples collected, which may have resulted from a reaction of the acid preservative in the sample container with ethylene glycol present in the monitoring well. In monitoring wells FS1-4E and FS1-4H, concentrations of benzene, ethylbenzene, and naphthalene were detected above the ADEC Table C groundwater cleanup levels. In monitoring well TS1-4GR, concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, ethylene glycol, 1-methylnaphthalene, and naphthalene were detected above the ADEC Table C groundwater cleanup levels. Contaminant concentrations were observed to be generally

consistent with historical observations, except for the detection of LNAPL in monitoring well TS1-4F. Monitoring well TS1-4G was replaced with TS1-4GR, approximately five feet from the original location. The water collected from new monitoring well TS1-4GR had a distinct odor (not a hydrocarbon odor) and was tinted yellow-brown, indicative of an ethylene glycol presence. Recharge was extremely slow during development of the monitoring well, possibly a result of very fine-grained soil in the vicinity of the well (BES 2019a).

In 2019, monitoring wells FS1-4E, FS1-4H, TS1-4EE, and TS1-4GR were sampled for petroleum-related VOCs (including BTEX) and PAHs. Monitoring wells TS1-4EE and TS1-4GR were also sampled for ethylene glycol. Monitoring wells TS1-4F and TS1-4J were not sampled due to the presence of LNAPL and sorbent socks were replaced. Groundwater monitoring results indicated concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, 1-methylnaphthalene, 2-methylnaphthalene, and ethylene glycol above ADEC Table C groundwater cleanup levels among monitoring wells FS1-4E, FS1-4H, and TS1-4GR. Results for all other analytes were either non-detect or were detected less than the ADEC Table C groundwater cleanup levels. Contaminant concentrations were observed to be generally consistent with historical observations. Monitoring well TS1-4GR exhibited a strong ethylene glycol odor and the purge water was a tinted pale-orange color. Utilizing a downhole camera, monitoring wells FS1-4E and FS1-4H were confirmed to have 10-foot screens, the TS1-4CC riser was confirmed to be sheared, and the TS1-4EE riser was confirmed to be in good condition (BES 2019b).

In 2021, monitoring wells FS1-4E, FS1-4H, FS1-4I, TS1-4EE, and TS1-4GR were sampled for a reduced list of analytes, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. Monitoring wells TS-4EE and TS1-4GR were also sampled for ethylene glycol. Monitoring wells TS1-4F and TS1-4J were sampled for petroleum-related VOCs (including BTEX) and PAHs, and sorbent socks were replaced. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, xylenes, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and/or ethylene glycol were above ADEC Table C groundwater cleanup levels among monitoring wells FS1-4E, TS1-4F, TS1-4GR, and TS1-4J. A groundwater trend analysis was conducted and indicated decreasing trends of benzene in several wells and decreasing trends of toluene and xylenes in monitoring wells TS1-4J and TS1-4GR, respectively. An increasing trend was observed for ethylbenzene in monitoring well FS1-4H and no trends were identified in some instances. Based on the increasing ethylbenzene trend observed at monitoring well FS1-4H, continuation of the biennial sampling frequency was recommended (BENG 2022).

2.3 SRF TS 1-9

SRF TS 1-9 is in Township 7 North, Range 9 West, Sections 4 and 9, Seward Meridian (Figure 2). Figures 5 and 6 present 2023 groundwater contours and analytical results, respectively.

2.3.1 Hydrogeology

The groundwater elevation at SRF TS 1-9 varies from approximately 114.07 to 115.24 feet (NAVD88), indicating a relatively flat potentiometric surface. Groundwater was observed to flow west-northwest in 2017 and 2019; however, groundwater was observed to flow southwest in 2015 and south-southwest in the site's southern portion and northeast in the site's northern portion in 2021 (Oil Risk Consultants [Oil Risk] 2011; SLR 2015; BES 2016b; BES 2019a; BES 2019b; BENG 2022).

2.3.2 Previous Investigations and Monitoring Activities

Ten monitoring wells were installed by 1990, and two additional monitoring wells (TS1-9HH and TS1-9II) were installed in 2002. The groundwater monitoring wells at SRF TS 1-9 were sampled for BTEX on an annual basis from 2000 to 2010. Between 2011 and 2013, groundwater monitoring did not occur, but monitoring resumed in 2014. The site was moved to a periodic sampling basis in 2015 with the monitoring wells split between two sampling frequencies, biennial and every 4 years (SLR 2015; BES 2016b).

Concentrations of BTEX analytes have been detected above the ADEC Table C groundwater cleanup levels in historical samples from monitoring wells TS1-9A, TS1-9B, TS1-9C, TS1-9D, FS1-9F, and FS1-9N. Monitoring well TS1-9U exhibited concentrations of BTEX analytes above the ADEC Table C groundwater cleanup levels from 2000 to 2005 and in 2009; however, all BTEX concentrations in this monitoring well have been non-detect or less than ADEC Table C groundwater cleanup levels since 2010. Monitoring well TS1-9U is sampled every four years (SLR 2015; BES 2016b).

Since 2013, results for all BTEX analytes in samples from monitoring wells TS1-9HH, TS1-9II, FS1-9D, FS1-9I, and FS1-9M have been non-detect or less than ADEC Table C groundwater cleanup levels. LNAPL has been detected in monitoring wells TS1-9B, TS1-9C, TS1-9D, and FS1-9F during previous sampling events (BES 2016b).

In 2017, monitoring wells TS1-9A, TS1-9C, and FS1-9N were sampled for petroleum-related VOCs (including BTEX) and PAHs. Concentrations of 1,2,4-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, and 1-methylnaphthalene were detected above ADEC Table C groundwater cleanup levels among all three wells. Some additional PAH analytes, though non-detect, had reporting limits exceeding ADEC Table C groundwater cleanup levels. Monitoring wells TS1-9B, TS1-9D, and FS1-9F contained product and were not sampled. No measurable

product was found in monitoring well TS1-9B, but globules of product were observed on the interface probe after gauging. Sorbent socks were installed or replaced, and approximately 200 mL of product was removed from FS1-9F (BES 2019a).

In 2019, monitoring wells TS1-9C, TS1-9D, TS1-9HH, TS1-9U, FS1-9D, FS1-9I, FS1-9M, and FS1-9N were sampled for petroleum-related VOCs (including BTEX) and PAHs. Monitoring wells TS1-9A, TS1-9B, and FS1-9F were not sampled due to LNAPL detection. LNAPL was not historically detected in monitoring well TS1-9A, but traces of product were observed on the interface probe after gauging activities. Monitoring well TS1-9B has historically contained LNAPL; however, no measurable product was detected and only traces of product were observed on the oil-water interface probe. Product was measured to be approximately 0.05 feet in monitoring well FS1-9F and only traces of product were removed during product recovery efforts. Sorbent socks were placed or replaced in all three monitoring wells. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, and 1-methylnaphthalene were detected above the ADEC Table C groundwater cleanup levels among monitoring wells TS1-9C, TS1-9D, TS1-9U, and FS1-9N. Results for all other analytes were either non-detect or were less than ADEC Table C groundwater cleanup levels. Contaminant concentrations were observed to be generally consistent with historical observations. Additionally, 10-foot screens were confirmed for monitoring wells TS1-9C, TS1-9D, TS1-9U, FS1-9D, FS1-9I, FS1-9M, and FS1-9N. All monitoring wells were in generally good condition and required little maintenance during inspection and maintenance activities (BES 2019b).

In 2021, monitoring wells FS1-9N, TS1-9C, and TS1-9D, were sampled for petroleum-related VOCs (including BTEX) and PAHs. Monitoring wells FS1-9F, TS1-9A, and TS1-9B were not sampled due to the presence of LNAPL. Sorbent socks were replaced in each of these wells and approximately 0.75 gallons of water/product mixture was recovered from monitoring well FS1-9F. Monitoring results indicated concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were above the ADEC Table C groundwater cleanup levels. A groundwater trend analysis was conducted and indicated decreasing trends of ethylbenzene and/or benzene concentrations in FS1-9N, TS1-9C, and TS1-9D. Additional groundwater data from the remaining wells was needed to obtain a statistically significant conclusion of the concentration trend. Based on the additional data needs, continuation of the biennial or once every four years sampling frequency, depending on the well, was recommended (BENG 2022).

2.4 SRF TS 1-27

SRF TS 1-27 is in Township 8 North, Range 9 West, Sections 22 and 27, Seward Meridian (Figure 2). Figures 7 and 8 present 2023 groundwater contours and analytical results, respectively.

2.4.1 Hydrogeology

The groundwater elevation at SRF TS 1-27 varies from approximately 243.44 feet and 254.99 feet (NAVD88). Groundwater has been observed to generally flow west-southwest (BES 2016c; BES 2019a; BES 2019b; BENG 2022).

2.4.2 Previous Investigations and Monitoring Activities

Four monitoring wells (TS1-27G, TS1-27J, TS1-27K, and FS1-27C) were installed by 1990 at SRF TS 1-27, and the remaining three monitoring wells, TS1-27L, TS1-27M, and TS1-27N, were installed in 2002.The groundwater monitoring wells were sampled for BTEX on an annual basis from 2000 to 2010. Between 2011 and 2013, groundwater monitoring did not occur, but monitoring resumed in 2014. The site was moved to a periodic sampling basis in 2015 with the monitoring wells split between two sampling frequencies, biennial and every four years (SLR 2015; BES 2016c). Concentrations of benzene, ethylbenzene, and xylenes have been detected above the ADEC Table C groundwater cleanup levels since 2000 in monitoring wells TS1-27G, TS1-27J, TS1-27K, TS1-27L, and TS1-27M. Analytical results in monitoring wells TS1-27N and FS1-27C have consistently been non-detect. LNAPL has not been measured in any of the monitoring wells at SRF TS 1-27 (SLR 2015; BES 2016c).

In 2017, monitoring wells TS1-27G, TS1-27K, TS1-27L, and TS1-27M were sampled for petroleum-related VOCs (including BTEX), and PAHs. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, and 1-methylnaphthalene were detected above the ADEC Table C groundwater cleanup levels in monitoring wells TS1-27G, TS1-27K, TS1-27L, and TS1-27M. Results for all other analytes were either non-detect or below the ADEC Table C groundwater cleanup levels. Some additional PAH analytes had non-detect results with reporting limits exceeding ADEC Table C groundwater cleanup levels. Contaminant concentrations were observed to be consistent with historical observations; however, concentrations of benzene, ethylbenzene, and xylenes were elevated in monitoring well TS1-27G in 2015 and 2017, which had previously exhibited concentrations of all analytes below the ADEC Table C groundwater cleanup levels between 2009 and 2014. Since 2010, concentrations of naphthalene in downgradient monitoring well TS1-27M have been observed below the ADEC Table C groundwater cleanup level; 2017 analysis of naphthalene shows an exceedance by method SW8260C (3.77 µg/L) but did not exceed when analyzed by method SW8270D selected ion monitoring (0.823 µg/L). Gauge data from monitoring well FS1-27C was not used in groundwater contour modeling due to observed heaving (BES 2019a).

In 2019, monitoring wells TS1-27G, TS1-27K, TS1-27L, TS1-27M, and FS1-27C were sampled for petroleum-related VOCs (including BTEX) and PAHs. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, 1-methylnaphthalene,

and 2-methylnaphthalene were detected above the ADEC Table C groundwater cleanup levels among monitoring wells TS1-27G, TS1-27K, TS1 27L, and TS1-27M. Results for all other analytes were either non-detect or were detected below ADEC Table C groundwater cleanup levels. Anomalous results were observed in monitoring well TS1-27L (contaminant concentrations appeared lower than historical results) and monitoring well TS1-27M (contaminant concentrations appeared higher than historical results). Evaluation of historical results from these wells indicates that collected samples may have accidentally been swapped in the lab or mislabeled in the field. Contaminant concentrations for all other results were observed to be generally consistent with historical observations. Additionally, 10-foot screens were confirmed for monitoring wells TS1-27G, TS1-27K, and TS1-27L during inspection and maintenance activities (BES 2019b).

In 2021, monitoring wells TS1-27G, TS1-27K, TS1-27L, and TS1-27M, were sampled for a reduced list of analytes, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. Monitoring results indicated concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were above the ADEC Table C groundwater cleanup levels among monitoring wells TS1-27G, TS1-27K, TS1-27L, and TS1-27M. A groundwater trend analysis was conducted and indicated that benzene concentrations showed a decreasing trend in most wells and ethylbenzene and xylenes showed a decreasing trend in monitoring well TS1-27M. No trends were identified in some instances; based on the need for more information, the continuation of the biennial or once every four years sampling frequency, depending on the well, was recommended (BENG 2022).

2.5 SRF TS 1-33

SRF TS 1-33 is in Township 8 North, Range 9 West, Section 33, Seward Meridian (Figure 2). Figures 9 and 10 present 2023 groundwater contours and analytical results, respectively.

2.5.1 Hydrogeology

The groundwater elevation at SRF TS 1-33 varies from approximately 131.33 feet and 156.71 feet (NAVD88). Groundwater has been observed to generally flow east-southeast (SLR 2015; BES 2016d; BES 2019a; BES 2019b; BENG 2022).

2.5.2 Previous Investigations and Monitoring Activities

Eight monitoring wells were installed by 1990, four monitoring wells (TS1-33JJ, TS1-33KK, TS1-33O2, and FS1-33T) were installed in 2002, and two monitoring wells (TS1-33N and FS1-33W) were installed in 2017. The groundwater monitoring wells at SRF TS 1-33 were sampled for BTEX

on an annual basis from 2000 to 2010. Between 2011 and 2013, groundwater monitoring did not occur, but monitoring resumed in 2014. The site was moved to a periodic sampling basis in 2015 with the site wells split between two sampling frequencies, biennial and every four years (SLR 2015; BES 2016d).

Concentrations of benzene, ethylbenzene, and xylenes detected in groundwater samples at SRF TS 1-33 have been detected above the ADEC Table C groundwater cleanup levels since 2000. Analytes consistently exhibiting concentrations above the ADEC Table C groundwater cleanup levels since 2000 include benzene in samples collected from monitoring wells TS1-33Q, TS1-33O2, FS1-33F, and FS1-33H; ethylbenzene in samples collected from monitoring wells TS1-33Q, TS1-33O2, and FS1-33H; and xylenes in samples collected from monitoring well TS1-33Q. Monitoring well TS1-33U has also had consistent benzene exceedances, although this well has not been sampled since 2009 due to an obstruction. Ethylbenzene exceedances have occurred periodically in monitoring well FS1-33R since 2000, but the well has not been sampled since 2014; monitoring well FS1-33R was not located in 2017 and is assumed to be either decommissioned or destroyed (SLR 2015; BES 2016d, 2019a).

Benzene concentrations have been detected above the ADEC Table C groundwater cleanup level occasionally in samples from five monitoring wells at SRF TS 1-33; three times in samples collected from monitoring well TS1-33KK (in 2002, 2003, and 2010), six times in samples collected from monitoring well FS1-33O (as recently as 2014), five times in samples collected from monitoring well FS1-33R (as recently as 2010), and five times in samples collected from monitoring well FS1-33S (as recently as 2010). Concentrations of BTEX in samples collected from monitoring wells TS1-33JJ, TS1-33P, and FS1-33T have been non-detect or less than the ADEC Table C groundwater cleanup levels since 2000. Measurable LNAPL has been observed in monitoring well TS1-33U (2000, 2001, 2003, and 2005) and FS1-33H (2000-2003, 2014) (BES 2019b).

In 2017, concentrations of 1,2,4-trimethylbenze, 1,3,5-trimethylbenzene benzene, ethylbenzene, naphthalene, xylenes, and 1-methylnaphthalene were detected above the ADEC Table C groundwater cleanup levels in monitoring wells FS1-33F, FS1-33H, TS1-33O2, and TS1-33Q. Monitoring well TS1-33U was replaced with monitoring well TS1-33UR, which was not sampled due LNAPL detection in the well and in soil cuttings during installation. Monitoring well FS1-33R was scheduled for decommission but was not located and was assumed either previously decommissioned or destroyed. Monitoring well TS1-33N was newly installed upgradient, across the road to the northwest of the site, which accessed an artesian aquifer confined to a two-foot-thick sandy interval approximately 24 to 26 feet bgs. Monitoring well FS1-33W was newly installed southeast of the flare pit and Pad SRU 41-33, downgradient from monitoring wells FS1-

33S and FS1-33H, which have historically had concentrations of VOCs above the ADEC Table C groundwater cleanup levels (BES 2019a).

In 2019, monitoring wells TS1-33JJ, TS1-33O2, TS1-33Q, TS1-33UR, FS1-33F, FS1-33H, FS1-33S, and FS1-33W were sampled for petroleum-related VOCs (including BTEX) and PAHs. Monitoring well FS1-33W was moved to sampling once every four years in 2017 due to non-detect results for VOCs and PAHs; however, with the reincorporation of VOCs and PAHs into the groundwater sampling program, samples were collected at monitoring well FS1-33W in 2019. Monitoring well TS1-33UR was sampled for the first time since it was installed in 2017. Monitoring wells FS1-33F and TS1-33UR were sampled and sorbent socks were replaced, although no measurable product was observed. The polyvinyl chloride (PVC) casing at monitoring well FS1-33H was observed to be coated in product; therefore, PAH samples were collected using a peristaltic pump, and VOC samples were collected using a HydraSleeve to minimize compromising impacts to the reusable sampling equipment. A peristaltic pump and HydraSleeve were also used at monitoring well FS1-33S to collect PAH and VOC samples, respectively, due to significant monument damage that prevented the use of a bladder pump. The PVC for monitoring well FS1-33S was confirmed to be in good condition. A weak, intermittent signal in monitoring well FS1-33O appeared to be a false signal in 2019, causing water level measurement discrepancies in 2017. The downhole camera visually verified a wet, white, viscous residue lining the PVC casing at the same depth (approximately 17 feet below top of casing [btoc]); the type and source of the residue could not be identified. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, and 1-methylnaphthalene were detected above the ADEC Table C groundwater cleanup levels among monitoring wells FS1-33F, FS1-33H, TS1-33O2, TS1-33Q, and TS1-33UR. Results for all other analytes were either non-detect or were detected at concentrations less than the ADEC Table C groundwater cleanup levels. Contaminant concentrations were observed to be generally consistent with historical observations. Additionally, 10-foot screens were confirmed for monitoring wells FS1-33S and TS1-33Q and a 5-foot screens was confirmed for monitoring well FS1-33F during inspection and maintenance activities (BES 2019b).

In 2021, monitoring wells FS1-33F, FS1-33H, FS1-33S, TS1-33O2, and TS1-33Q were sampled for a reduced list of analytes, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, tert-butylbenzene, xylenes, naphthalene, benzo(a)anthracene, 1-methylnaphthalene, and 2-methylnaphthalene. Additionally, monitoring well TS1-33UR was sampled for petroleum-related VOCs (including BTEX) and PAHs. Monitoring results indicated concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, and/or 1-methylnaphthalene were above the ADEC Table C groundwater cleanup levels among monitoring wells FS1-33F, FS1-33H, TS1-33O2, TS1-33Q, and TS1-33UR. A groundwater trend analysis was conducted and indicated that benzene, ethylbenzene, and

xylenes concentrations showed a decreasing trend in most wells and toluene showed a decreasing trend in monitoring well TS1-33UR. An increasing trend was identified for ethylbenzene in monitoring well TS1-33O2 and no trends were identified in some instances. Based on the increasing ethylbenzene trend observed at monitoring well TS1-33O2, the continuation of the biennial or once every four years sampling frequency, depending on the well, was recommended (BENG 2022).

2.6 SRF TS 2-15

SRF TS 2-15 is in Township 8 North, Range 9 West, Section 15, Seward Meridian (Figure 2). Figures 11 and 12 present 2023 groundwater contours and analytical results, respectively.

2.6.1 Hydrogeology

The groundwater elevation at SRF TS 2-15 varies from approximately 300.16 feet and 312.79 feet (NAVD88). Groundwater has been observed to generally flow west-northwest (SLR 2015; BES 2016e; BES 2019a; BES 2019b; BENG 2022).

2.6.2 Previous Investigations and Monitoring Activities

Monitoring wells TS2-15O and FS2-15B were installed at SRF TS 2-15 by 1990. Three additional monitoring wells (TS2-15P, TS2-15Q, and TS2-15R) were installed in 2002. The groundwater monitoring wells at SRF TS 2-15 were sampled for BTEX on an annual basis from 2000 to 2010. Between 2011 and 2013, groundwater monitoring did not occur, but resumed in 2014. The site was moved to a periodic sampling basis in 2015 with the site wells split between two sampling frequencies, biennial and once every four years. Concentrations of benzene, ethylbenzene, and xylenes have been detected above the ADEC Table C groundwater cleanup levels in samples from monitoring well TS2-15O since 2000. Concentrations of toluene in TS2-15O were detected above the ADEC Table C groundwater cleanup level in 2000 but have been below current cleanup levels since 2001. Since 2000, BTEX has not been detected or has been detected at low concentrations in samples collected from monitoring wells TS2-15P, TS2-15Q, TS2-15R, and FS2-15B. LNAPL has not been observed in any of the monitoring wells at TS 2-15 (SLR 2015; BES 2016e).

In 2017, monitoring well TS2-15O was sampled for petroleum-related VOCs (including BTEX) and PAHs. Ethylbenzene and naphthalene concentrations were detected above the ADEC Table C groundwater cleanup levels in monitoring well TS2-15O. Contaminant concentration trends were observed to be generally consistent with historical observations and, although consistent, concentrations of benzene and xylenes were below ADEC Table C groundwater cleanup levels (BES 2019a).

In 2019, monitoring wells TS2-15O, TS2-15P, TS2-15R, and FS2-15B were sampled for petroleum-related VOCs (including BTEX) and PAHs. Concentrations of 1,2,4-trimethylbenzene, benzene,

ethylbenzene, naphthalene, and xylenes in monitoring well TS2-15O were detected above the ADEC Table C groundwater cleanup levels. Results for all other analytes were either non-detect or were detected less than the ADEC Table C groundwater cleanup levels. Contaminant concentrations are observed to be generally consistent with historical observations. Additionally, 10-foot screen lengths were confirmed for monitoring wells FS2-15B and TS2-15O (BES 2019b).

In 2021, monitoring well TS2-15O was sampled for a reduced list of analytes, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. Monitoring results indicated concentrations of 1,2,4-trimethylbenzene, ethylbenzene, naphthalene, and xylenes were above the ADEC Table C groundwater cleanup levels. A groundwater trend analysis was conducted and indicated benzene and xylenes showed a decreasing trend in monitoring well TS2-15O. No trend was identified for ethylbenzene. Based on additional data needs, the continuation of the biennial or once every four years sampling frequency, depending on the well, was recommended (BENG 2022).

2.7 SRF TS 3-4

SRF TS 3-4 is in Township 7 North, Range 9 West, Sections 4 and 5, Seward Meridian (Figure 2). Figures 13 and 14 present 2023 groundwater elevations and contours and analytical results, respectively.

2.7.1 Hydrogeology

The groundwater elevation at SRF TS 3-4 varies from approximately 139.60 feet to 151.42 feet (NAVD88). Groundwater has been observed to generally flow southeast (Oil Risk 2011; SLR 2015; BES 2016f; BES 2019a; BES 2019b; BENG 2022).

2.7.2 Previous Investigations and Monitoring Activities

Seven monitoring wells were installed by 1990, and five additional monitoring wells were installed in 2002. The groundwater monitoring wells at SRF TS 3-4 were sampled for BTEX on an annual basis from 2000 to 2010. Between 2011 and 2013, groundwater monitoring did not occur, but resumed in 2014. The site was moved to a periodic sampling basis in 2015 with the monitoring wells split between two sampling frequencies, biennial and every four years (SLR 2015; BES 2016f).

BTEX analytes have been detected at concentrations above the ADEC Table C groundwater cleanup levels in monitoring wells TS3-4D, TS3 4P, FS3-4D, and FS3-4F since groundwater monitoring began in 2000, and in monitoring well TS3-4CC since it was installed in 2002. LNAPL was observed in monitoring wells TS3-4D and FS3-4D during previous sampling events. During previous sampling events, results for all BTEX analytes in monitoring wells TS3-4Z, TS3-4MM, TS3-4NN, TS3-4OO, TS3-4PP, FS3-4A, and FS3-4B were non-detect or less than the ADEC Table

C groundwater cleanup levels (SLR 2015; BES 2016f). No surface water was observed at or adjacent to the site, and it was determined that contaminated groundwater was adequately bound downgradient by uncontaminated monitoring wells TS3-4MM, FS3-4A, and FS3-4B (BES 2016f).

In 2017, concentrations of 1,2,4-trimethylbenzene, benzene, ethylbenzene, naphthalene, and 1-methylnaphthalene were detected above the ADEC Table C groundwater cleanup level among monitoring wells TS3-4CC, TS3-4P, and FS3-4F. Product was detected in monitoring wells FS3-4D and TS3-4D and these wells were not sampled. An obstruction prevented deployment of a HydraSleeve in monitoring well TS3-4CC at approximately 18 feet btoc and VOC samples were collected using a peristaltic pump (BES 2019a).

In 2019, monitoring wells TS3-4CC, TS3-4MM, TS3-4OO, TS3-4P, FS3-4A, FS3-4B, and FS3-4F were sampled for petroleum-related VOCs (including BTEX) and PAHs. LNAPL was detected in monitoring wells FS3-4D and TS3-4D and the wells were not sampled. Sorbent socks were placed in both wells. Trace amounts of product were detected in monitoring well TS3-4D and approximately 2.5 gallons of product was recovered from monitoring well FS3-4D. Concentrations of benzene, ethylbenzene, and naphthalene were detected above the ADEC Table C groundwater cleanup levels in monitoring well TS3-4P, as did concentrations of naphthalene in monitoring well TS3-4CC. Results for all other analytes were either non-detect or were detected below ADEC Table C groundwater cleanup levels. Contaminant concentrations were observed to be generally consistent with historical observations; however, all results in monitoring well FS3-4F were less than the ADEC Table C groundwater cleanup levels, compared to several exceedances that were observed during monitoring in 2017. Additionally, 10-foot screens were confirmed for monitoring wells FS3-4A, FS3-4B, FS3-4F, and TS3-4P during inspection and maintenance activities (BES 2019b).

In 2021, monitoring wells FS3-4A, FS3-4F, TS3-4CC, and TS3-4P were sampled for a reduced list of analytes, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. Monitoring well TS3-4D was sampled for the first time for petroleum-related VOCs (including BTEX) and PAHs. Monitoring well FS3-4D was not sampled due to more than 1 foot of LNAPL and the sorbent sock was replaced. Approximately 0.75 gallons of product was recovered from monitoring well FS3-4D after more than 30 minutes of bailing. Monitoring results indicated exceedances of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, and/or naphthalene among monitoring wells FS3-4F, TS3-4CC, TS3-4D, and TS3-4P. A groundwater trend analysis was conducted and indicated benzene in monitoring wells TS3-4CC and TS3-4D, and xylenes in monitoring wells TS3-4D and TS3-4P have a decreasing trend identified. No trends were identified in several instances; based

on the need for more information, the continuation of the same biennial or once every four years sampling frequency, depending on the well, was recommended (BENG 2022).

2.8 SRF TS 3-9

SRF TS 3-9 is in Township 7 North, Range 9 West, Section 9, Seward Meridian (Figure 2). Figures 15 and 16 present 2023 groundwater contours and analytical results, respectively.

2.8.1 Hydrogeology

The groundwater elevation at SRF TS 3-9 varies from approximately 145.91 feet and 150 feet (NAVD88). Groundwater has been observed to generally flow east-southeast, except for 2014 observations when groundwater flow was southeast and 2015 and 2017 observations where groundwater flowed generally northeast. Groundwater flow in 2021 across most of the site was east-southeast; however, a depression was observed around well TS3-9BB and mounding was observed around well TS3-9CC (Oil Risk 2011; BES 2019b, SLR 2015, BES 2016g, BES 2019a, BENG 2022).

2.8.2 Previous Investigations and Monitoring Activities

Ten monitoring wells were installed by 1990, and four additional monitoring wells (TS3-9AA, TS3-9BB, TS3-9CC, and TS3-9DD) were installed in 2002. The groundwater monitoring wells at SRF TS 3-9 were sampled for BTEX on an annual basis from 2000 to 2010. Between 2011 and 2013, groundwater monitoring did not occur, but monitoring resumed in 2014. The site was moved to a periodic sampling basis in 2015 and the monitoring wells were split between two sampling frequencies, biennial and every four years (SLR 2015; BES 2016g).

Benzene, ethylbenzene, and xylenes have been detected in groundwater samples collected at SRF TS 3-9 at concentrations above the ADEC Table C groundwater cleanup level since 2000. Analytes with concentrations consistently above the ADEC Table C groundwater cleanup levels since 2000 include benzene in samples collected from monitoring wells TS3-9C/9CR, TS3-9F, TS3-9V, and FS3-9E; ethylbenzene in samples collected from monitoring wells TS3-9C, TS3-9F, TS3-9T, and FS3-9E; and xylenes in samples collected from monitoring wells TS3-9C/CR and TS3-9F. The presence of LNAPL in well TS3-9C in 2014, and an obstruction in the monitoring well in 2015, resulted in no samples for those events and the well was decommissioned in 2017. It was replaced with monitoring well TS3-9CR and analytical results from this replacement well (TS3-9CR) were detected at concentrations above ADEC Table C groundwater cleanup levels for benzene and xylenes in the following years (SLR 2015; BES 2016g).

LNAPL has been observed in TS3-9A (most recently in 2021), TS3-9C (most recently in 2015, this monitoring well was decommissioned in 2017), TS3-9F (most recently in 2021), TS3-

9T (most recently in 2002), TS3-9U (most recently in 2005), and FS3-9E (most recently in 2019) (BES 2016g, BES 2019a, BES 2019b).

In 2017, monitoring wells TS3-9BB, TS3-9CR, TS3-9T, and TS3-9V were sampled for petroleum-related VOCs (including BTEX) and PAHs. Results indicated exceedances of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, and xylenes above ADEC Table C groundwater cleanup levels. Results for all other analytes were either non-detect or less than the ADEC Table C groundwater cleanup levels. Some additional PAH analytes had non-detect results with reporting limits above ADEC Table C groundwater cleanup levels. Monitoring wells TS3-9A, TS3-9F, TS3-9U, and FS3-9E contained LNAPL and were not sampled. The previous monitoring well TS3-9C contained LNAPL, but the replacement monitoring well TS3-9CR did not contain LNAPL and analyte concentrations were significantly less than that of monitoring well TS3-9C. Contaminant concentrations were observed to be consistent with historical observations, except for LNAPL detected in monitoring wells TS3-9F and FS3-9E (BES 2019a).

In 2019, monitoring wells TS3-9AA, TS3-9BB, TS3-9DD, TS3-9CR, TS3-9F, TS3-9T, TS3-9U, TS3-9V, FS3-9B, and FS3-9G were sampled for petroleum-related VOCs (including BTEX) and PAHs. LNAPL was detected in monitoring wells TS3-9A and FS3-9E and these wells were not sampled. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, and 1-methylnaphthalene were detected above the ADEC Table C groundwater cleanup levels among monitoring wells TS3-9BB, TS3-9CR, TS3-9F, TS3-9T, and TS3-9V. Results for all other analytes were either non-detect or were less than the ADEC Table C groundwater cleanup levels. Contaminant concentrations were generally consistent with historical observations. Additionally, 10-foot screens were confirmed for monitoring wells TS3-9U and TS3-9V, 5-foot screens were confirmed for monitoring wells TS3-9F and FS3-9G, and a 15-foot screen was confirmed for monitoring well TS3-9T (BES 2019b).

In 2021, monitoring wells FS3-9E, TS3-9BB, TS3-9CR, TS3-9T, TS3-9U, and TS3-9V were sampled for petroleum-related VOCs (including BTEX) and PAHs. Monitoring wells TS3-9F and TS3-9A were not sampled due to the presence of LNAPL, and sorbent socks were replaced in both wells. Monitoring results indicated concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, and/or naphthalene were above the ADEC Table C groundwater cleanup levels among monitoring wells FS3-9E, TS3-9BB, TS3-9CR, TS3-9T, TS3-9U, and TS3-9V. A groundwater trend analysis was conducted and indicated decreasing trends of benzene and xylenes in several wells and toluene in monitoring well FS3-9E. An increasing trend was observed for ethylbenzene in monitoring well TS3-9BB and no trends were identified in some instances. Based on the increasing ethylbenzene trend observed at monitoring well TS3-9BB, continuation of the biennial sampling frequency was recommended (BENG 2022).

2.9 SCU 23B-03

SCU 23B-03 is in Township 7 North, Range 9 West, Section 3 Seward Meridian (Figure 2). Figures 17 and 18 present 2023 groundwater contours and analytical results, respectively.

2.9.1 Hydrogeology

The groundwater elevation at SCU 23B-03 varies from approximately 139.60 feet to 151.42 feet (NAVD88). Groundwater has been observed to generally flow north-northwest (Susitna 2023a).

2.9.2 Previous Investigations and Monitoring Activities

In 2014, stained soil was encountered while excavating soil approximately 6 feet south of the SCU 23B-03 well cellar. Subsurface soil samples were collected, and exceedances of the most stringent of the ADEC Method Two Tables B1 and B2 Migration to Groundwater and Under 40-Inch Zone Human Health cleanup levels were identified from 6 to 6.5 feet bgs for diesel range organics (DRO) and from 8 to 8.5 feet bgs for DRO, gasoline range organics (GRO), methylene chloride, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene (Susitna 2020).

In 2019, during the plug and abandonment of well SCU 23B-03, 530 cubic yards (cy) of contaminated soil and 9,800 gallons of oil and water were removed from the site for treatment. Historical contaminants reported above ADEC Table C groundwater cleanup levels included DRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, xylenes, 1-methylnaphthalene, 2-methylnaphthalene, barium, and mercury (Susitna 2020).

In 2020, a subsurface investigation attempted to determine the nature and extent of soil and groundwater contamination. Analytical soil sample results indicated contamination exceeding ADEC Method Two Tables B1 and B2 Migration to Groundwater cleanup levels in two samples; SB04 collected from 13-14 ft bgs, and SB14 collected from 10-12 ft bgs. DRO, naphthalene, and 1,2,4-trimethylbenzene exceeded ADEC cleanup levels in sample SB04; and DRO, naphthalene, and 1-methylnapthalene exceeded ADEC cleanup levels in sample SB14. Arsenic exceeded cleanup levels in each soil boring, but concentrations were consistent with naturally occurring background levels (Susitna 2021a)

Analytical groundwater results indicated that monitoring well MW04 contained concentrations of DRO, residual range organics (RRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene at concentrations exceeding ADEC Table C cleanup levels. Well MW01, located in a presumed unimpacted downgradient location, contained naphthalene above the ADEC Table C cleanup level. Although arsenic levels exceeded the ADEC cleanup level in three of the four monitoring wells, concentrations remained consistent with naturally occurring levels (Susitna 2021b).

In 2022, three permanent monitoring wells were installed to monitor groundwater contaminant concentrations based on the 2019 excavation area results. Well MW01 was installed to 20 feet bgs at a previous excavation floor sample location, FL06, where the highest soil contaminant concentrations were observed at 17 feet bgs. Well MW02 was installed to 18.5 feet bgs at a former temporary well location (MW03) with soil contaminant concentrations below applicable cleanup levels. Well MW03 was installed to 18.5 feet bgs at a downgradient location to evaluate potential off-pad contaminant migration. Groundwater samples were collected and analyzed for DRO, RRO, VOCs, and PAHs. Exceedances of DRO, RRO, VOCs, and limits of detection for PAHs above applicable cleanup levels were observed in well MW01 in the June and September sampling events. It was recommended that all three wells continue to be monitored for DRO, RRO, VOCs, and PAHs as part of the existing biennial sampling program at SRF (Susitna 2023a).

2.10 SCU 312-09

SCU 312-09 is in Township 7 North, Range 9 West, Section 9 Seward Meridian (Figure 2). Figures 19 and 20 present 2023 groundwater contours and analytical results, respectively.

2.10.1 Hydrogeology

The groundwater elevation at SCU 312-09 varies from approximately 139.60 feet to 151.42 feet (NAVD88). Groundwater has been observed to generally flow west-northwest (Susitna 2023b).

2.10.2 Previous Investigations and Monitoring Activities

Hilcorp initiated well cell abandonment at Pad 312-09 in 2019 under the supervision of the Spill Response Program and historical contamination was discovered. During excavation around the wellhead, soil staining and a light hydrocarbon odor was observed at approximately 1.5 feet bgs of the well cellar where a 6-inch diameter horizontal culvert was encountered. Five cy of soil removed in the vicinity of the small diameter culvert were found to exceed Method 2 cleanup levels. The contaminated soil and approximately 55 to 65 gallons of sludge were removed and disposed of at an offsite facility. Additional excavation was performed to remove the 6-inch diameter horizontal culvert that entered the well cellar and terminated at the northern side of the pad about 50 feet from the well head. Only small areas of contamination existed near the well head and at the joints of the 6-inch diameter culvert, which was successfully removed. At the terminus of the culvert at the edge of the pad there was much more impacted soil. An estimated 257 cy of contaminated soil were excavated and disposed of from around the horizontal culvert. Analytical soil samples collected from the area contained DRO, barium, mercury, 1,2,4-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, ethylbenzene, and naphthalene at concentrations exceeding the most stringent of the ADEC Method Two Tables B1 Migration to Groundwater and Table B2 Under 40-inch Zone, Human Health cleanup levels

(Susitna 2021b). Analytical groundwater samples contained DRO at concentrations exceeding the ADEC Table C cleanup level. A work plan was submitted to install soil borings during the 2020 field effort to delineate the extent of the contamination around the terminus of the culvert.

In 2020, a subsurface investigation attempted to determine the nature and extent of soil and groundwater contamination. Nine soil borings were advanced and sampled and four temporary monitoring wells were installed and sampled. Analytical soil sample results indicated contamination exceeding the ADEC Method Two Tables B1 and B2 Migration to Groundwater cleanup levels in three samples; SB04 collected from 6-8 ft bgs (naphthalene), SB09 collected from 6-8 ft bgs (DRO and naphthalene), and SB11 collected from 8-10 ft bgs (naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene). Although arsenic levels exceeded the ADEC cleanup level in each soil boring, concentrations were consistent with naturally occurring background levels (Susitna 2021b). Analytical groundwater results from well MW04 contained DRO at concentrations exceeding the ADEC Table C cleanup level (Susitna 2021b). Although groundwater arsenic concentrations exceeded the ADEC Table C cleanup level in well MW01, concentrations remained consistent with naturally occurring levels (Susitna 2021b).

In 2021, groundwater samples were collected from the four temporary monitoring wells and results indicated the DRO concentration in MW04 increased; additionally, naphthalene exceeded ADEC Table C cleanup levels in well MW04. All temporary monitoring wells were decommissioned during this effort (Susitna 2023b).

In 2022, 13 soil borings were advanced to delineate the vertical and horizontal extent of contamination identified during the 2020 subsurface investigation and soil samples were collected for the analysis of GRO, DRO, RRO, VOCs, PAHs, and Resource Conservation and Recovery Act (RCRA) metals. Subsurface contamination was identified between 8 and 17 ft bgs with DRO, petroleum-related VOCs, and PAHs detected above applicable cleanup levels north of the well pad. Three permanent monitoring wells were installed to 20 feet bgs using direct push methodology. The RRO concentration in well MW01 (installed approximately 25 feet north of former temporary well MW04) was detected at the ADEC Table C groundwater cleanup level of 1,100 micrograms per liter (µg/L). It was recommended that the three permanent groundwater monitoring wells be monitored for DRO, RRO VOCs, and PAHs as part of the existing biennial groundwater program at SRF (Susitna 2023b).

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3. REGULATORY CRITERIA

Groundwater analytical results were evaluated against the ADEC Table C groundwater cleanup levels presented in Title 18 of the Alaska Administrative Code (AAC), Chapter 75, Section 345 (18 AAC 75.345), Table C (ADEC 2023). Sampling suites were evaluated to remove VOC and PAH analytes where monitoring well concentrations were either non-detect or less than 20 percent (%) of the current ADEC cleanup levels for two consecutive sampling events. For sample management purposes, analytes were not recommended for removal from a well unless either all analytes within an analytical method met the requirement for removal, or the analyte met the requirement for removal in all wells within a site.

Surface water samples were collected to assess whether a complete pathway to site surface exists; however, surface water criteria is not available for the analytes of interest; therefore, surface water analytical results for ethylene glycol and 1,4-dioxane were also evaluated against the ADEC Table C groundwater cleanup levels presented in 18 AAC 75.345.

The current ADEC Table C groundwater cleanup levels and SRF-specific 2023 sampling suite are presented in Table 3-1.

Table 3-1 Groundwater Cleanup Levels

HAZARDOUS SUBSTANCE CATEGORY	ANALYTE	CLEANUP LEVEL[1] (µg/L)
Petroleum-Related VOCs	Benzene	4.6
	Toluene	1,100
	Ethylbenzene	15
	Total Xylenes	190
	n-Butylbenzene	1,000
	sec-Butylbenzene	2,000
	tert-Butylbenzene	690
	Isopropylbenzene (cumene)	450
	Naphthalene	1.7
	1,2,4-Trimethylbenzene	56
	1,3,5-Trimethylbenzene	60

Table 3-1 Groundwater Cleanup Levels

HAZARDOUS SUBSTANCE CATEGORY	ANALYTE	CLEANUP LEVEL[1] (µg/L)
VOCs	1,4-Dioxane	4.6
PAHs	1-Methylnaphthalene	11
	2-Methylnaphthalene	36
	Acenaphthene	530
	Acenaphthylene	260
	Anthracene	43
	Benz[a]anthracene	0.30
	Benzo[a]pyrene	0.25
	Benzo[b]fluoranthene	2.5
	Benzo[g,h,i]perylene	0.26
	Benzo[k]fluoranthene	0.80
	Chrysene	2.0
	Dibenz[a,h]anthracene	0.25
	Fluoranthene	260
	Fluorene	290
	Indeno[1,2,3-cd]pyrene	0.19
	Phenanthrene	170
	Pyrene	120
Glycols	Ethylene Glycol	40,000

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
[1] Groundwater cleanup levels as listed in 18 AAC 75.345, Table C (ADEC 2023).

4. FIELD ACTIVITIES

This section describes the 2023 SRF field effort. Work performed included well inspections and maintenance, visual site assessments, well gauging, product recovery, groundwater sampling, and surface water sampling. All field and sampling procedures were performed in accordance with the Work Plan and ADEC's *Field Sampling Guidance* (ADEC 2022). Work Plan deviations are presented in Section 4.11.

4.1 Mobilization

Aleut field crew mobilized by vehicle from Anchorage to Kenai on 12 and 14 June 2023. SRF well condition observations, well maintenance, groundwater gauging, and visual site assessment activities were conducted between 14 and 20 June 2023. SRF groundwater sampling was conducted between 17 and 20 June 2023, and surface water sampling was conducted on 20 June 2023.

4.2 Well Inspections, Maintenance, and Visual Site Assessment

All 76 wells at each SRF TS and pad were inspected on 14, 18, and 19 June 2023. The inspections included examination of the protective monuments, inner casing, and locks. The condition of each well was documented on the well inspection, maintenance, and gauging forms, including any condition requiring maintenance (e.g., significant frost-heaving, observed damage, or missing collars). In addition, maintenance was performed as needed and recorded on the field form. Monitoring well inspection observations and any required maintenance are summarized in site-specific tables in Section 5.0. Field forms, including well condition photographs, are included in Appendix C, and logbook notes are included in Appendix D.

In addition to monitoring well inspection and maintenance activities, the vegetation at and surrounding each SRF TS and pad was visually assessed for signs of potential offsite contaminant migration. Photographs of site conditions and any noted observations are included in the appended Visual Site Inspection Form (Appendix C).

4.3 Groundwater Gauging

All 76 wells at each SRF TS and pad were located and gauged on 14, 18, and 19 June 2023 concurrent with well inspection and maintenance activities. Groundwater levels were measured to 0.01 feet relative to the mark on top of the well casing using an electronic water level meter. Water levels of all wells at each SRF TS and pad were gauged within 12 hours of each other and are provided in site-specific tables provided in Appendix B.

Well survey data from 2023 were used to calculate groundwater elevations in feet (referenced to the NAVD88 vertical datum). The groundwater elevations were used to generate groundwater contours and an estimated flow direction using Surfer 16 modeling software and kriging methodology; however, groundwater flow direction is considered estimated for several reasons. The glaciolacustrine stratigraphy underlying most of the wells sampled in 2023 is complex and heterogeneous. Interbedded silts and sands create aquitards, perched aquifers, artesian aquifers, and zones of high hydraulic conductivity. These geologic and hydrologic characteristics contribute to natural variability in potentiometric head that may be inconsistent with simple, planar surfaces representing groundwater elevation. Interpreted potentiometric surfaces for each site are presented in Appendix A on Figures 3, 5, 7, 9, 11, 13, 15, 17, and 19 and discussed by site in Section 5.0. Groundwater elevations are provided in site-specific tables provided in Appendix B.

4.4 Product Recovery

Product recovery was performed on 14 June 2023 concurrent with well inspection and maintenance activities and groundwater gauging. At wells with sorbent socks present within the well, any sorbent socks with greater than 50% saturation were removed and placed in a polyethylene “Oily Waste” bag. Sorbent socks with less than 50% saturation were flipped and placed back within the well. At wells where measurable LNAPL thicknesses were observed during gauging (FS1-9F, FS3-4D, and TS3-9A), a photoionization detector (PID) was used to measure the downhole conditions. A dedicated 2-inch by 3-foot polyethylene bailer or peristaltic pump (FS3-4D only) was used to remove all product from within these wells to the extent possible while minimizing the amount of groundwater recovered. All product was collected in U.S. Department of Transportation (DOT)-approved 5-gallon buckets with screw-top lids. Following product recovery, a new sorbent sock was placed into the wells where sorbent socks were removed. Product recovery details are summarized in Tables B1-3, B2-3, B-6-3, and B7-3 (Appendix B) and product recovery photographs are included in Appendix C.

4.5 Groundwater Sampling

Groundwater sampling was conducted between 17 and 20 June 2023. Across seven SRF TSs and two SCU pads; 56 of the 62 scheduled wells were sampled. Wells TS1-4J, TS1-9F, FS3-4D, TS3-4D, and TS3-9A were not sampled due to the presence of product and well TS1-33Q was destroyed and could not be sampled (Section 5.4.1). Groundwater samples were collected and analyzed for monitoring well-specific sampling suites consisting of select VOC and PAH analytes. Two groundwater samples at SRF TS1-4 were also submitted for ethylene glycol analysis. Groundwater analytical results are presented in site specific tables in Appendix B, and results for analytes detected above ADEC cleanup levels are shown on Figures 4, 6, 8, 10, 12, 14, 16, 18, and 20 (Appendix A).

Groundwater samples were collected in accordance with low-flow sampling procedures based on U.S. Environmental Protection Agency (EPA) and ADEC guidelines (EPA 2017; ADEC 2022) and the Work Plan. Monitoring wells were purged and sampled using a QED 1.75-inch-diameter pneumatic bladder pump and dedicated Teflon-lined tubing tied to monitoring well caps or plugs. A peristaltic pump with Teflon-lined tubing was used to purge and sample when a bladder pump could not be used due to observed or suspected product coating the well casing in wells FS3-9E, TS1-9B, and TS1-4F. These wells were sampled using a peristaltic pump to maintain the integrity of the bladder pump equipment and avoid cross contamination.

Groundwater quality parameters were monitored using a YSI Model 556 Multi-Parameter instrument with flow-through cell and turbidimeter. Samples were collected when three monitoring well volumes had been purged or when at least three (four when using temperature) water quality parameters reached stabilization. Groundwater sampling forms are included in Appendix C.

Groundwater was collected directly from the tubing into laboratory-supplied, preserved (when applicable) sample containers. For wells where a peristaltic pump was used, volatile samples were collected after purging using a HydraSleeve. The samples were sealed, labeled, and immediately placed in a cooler with gel ice to maintain a temperature of 0 to 6 degrees (°) Celsius (C). A temperature blank was stored with all samples and a trip blank was stored with all volatile samples. A chain-of-custody form was prepared and accompanied the samples during shipping to the ADEC-approved laboratory, SGS North America Inc. (SGS), in Anchorage, Alaska.

4.6 Surface Water Sampling

A surface water sample was collected at SRF TS 1-4 and analyzed for ethylene glycol and 1,4-dioxane. Field observations (e.g., color, odor, and presence or absence of sheen) were noted on the surface water sampling form (Appendix C). A single reading of water quality parameters was collected using a YSI Model 556 Multi-Parameter instrument and turbidimeter before sample collection. The sample was collected by filling a clean, unpreserved 250-mL amber glass bottle with surface water and decanting into hydrochloric acid-preserved 40-mL amber vials. Analytical results are presented in Section 5.1.5, and the surface water sample location is presented on Figure 4.

4.7 Decontamination

Reusable, non-dedicated sampling equipment, including the electronic water level meter and bladder pump, was decontaminated between uses at each well. At wells where dedicated tubing was not present, new tubing was used for purging and sampling and left in the well as dedicated tubing for future sampling events.

Decontamination procedures consisted of washing the equipment with a mixture of potable water and Alconox, followed by a deionized water rinse. The water generated during decontamination activities was collected in DOT-approved 5-gallon buckets with screw-top lids, treated through a granular activated carbon (GAC) filter, and if absent of sheen, discharged to a vegetated area onsite at least 100 feet from surface water in a manner that did not cause erosion.

4.8 Waste Management

Generated wastes included purge and decontamination water, recovered product, LNAPL-sorbent socks, and investigation-derived waste (IDW), such as personal protective equipment and spent tubing (Table 4-1). Waste streams were tracked in the appended Waste Tracking Logs (Appendix C).

Table 4-1 Waste Streams

WASTE STREAM	WASTE CLASSIFICATION	QUANTITY	CONTAINER	DISPOSAL	NOTES
Liquid IDW	Non-TSCA/RCRA regulated	73.5 gallons	DOT-approved 5-gallon buckets with screw-top lids	GAC	GAC-treated purge and decontamination water free of sheen was discharged to a vegetated, upland area of the site at least 100 feet from drinking water sources and surface water.
Liquid IDW – SRF TS 1-4	Non-exempt, ethylene glycol	8.75 gallons	55-gallon drum	Hilcorp	Hilcorp-facilitated disposal.
Solid Waste	Non-TSCA/RCRA regulated	5 bags	Heavy 42-gallon contractor garbage bags	SRF dumpster	General refuse including nitrile gloves and other expended personal protective equipment, paper towels, and disposable tubing.
LNAPL	Not applicable	6 gallons	DOT-approved 5-gallon buckets with screw-top lids	Recycle	Transferred to Hilcorp for recycling in the process stream.

Table 4-1 Waste Streams

WASTE STREAM	WASTE CLASSIFICATION	QUANTITY	CONTAINER	DISPOSAL	NOTES
LNAPL Sorbent Socks	Non-TSCA/RCRA regulated	6 bags	Polyethylene "Oily Waste" bags contained in 5-gallon buckets with screw-top lids	Hilcorp	Hilcorp-facilitated disposal.
Spent GAC	Non-TSCA/RCRA regulated	10 gallons	DOT-approved 5-gallon buckets with screw-top lids	Hilcorp	Hilcorp-facilitated disposal.

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

4.9 Survey

Aleut personnel surveyed the vertical position of all viable SRF wells on 23 and 24 June 2023 to ensure accurate top-of-casing/riser and ground surface elevations. The vertical positions were surveyed using previously established survey control and historical positional data. Elevations were determined using third order differential leveling, using an automatic level. The elevation measurement location was marked with a black marker on the edge of the PVC casing, on the north side, when possible. Northing and easting were surveyed at wells not previously surveyed and historical position locations were reused for any monitoring well previously surveyed. Horizontal positions were determined using real-time-kinematic Global Navigation Satellite System surveying techniques. The survey was performed with a horizontal accuracy of 1.0 foot and vertical accuracy of 0.01 feet. Geospatial data resulting from the surveys are provided in North American Datum of 1983 (NAD83) (2011) (more specifically, IGS08 [Epoch 20010.0000]) Northing and Easting, in U.S. survey feet. Elevations are provided in the NAVD88, in feet. Features created from the survey data are projected in the NAD83 (2011) Alaska State Plane, Zone 4. The appended survey report details the survey activities conducted at SRF (Appendix F).

4.10 Demobilization

After completing all field activities, field personnel and equipment demobilized from SRF by vehicle on 30 June 2023.

4.11 Work Plan Deviations

The following Work Plan deviations occurred while completing groundwater monitoring activities.

Top-of-monument elevations were not collected as stated in the Work Plan (Aleut 2023) as this information was not used in the analysis of groundwater sampling and/or gauging results. The ground surface elevation and top-of-casing/riser elevations were collected at all SRF wells.

5. 2023 MONITORING RESULTS

Well inspections and maintenance findings, visual site assessment findings, groundwater gauging results, product recovery results, groundwater analytical results, and surface water results are discussed in the following site-specific sub-sections. Figures 3 through 20 present 2023 groundwater contours and analytical results for each SRF TS or pad (Appendix A). Historical and 2023 sample results discussed in the following site-specific sections are summarized in Appendix B tables. A data quality report, analytical data tables, and completed ADEC Laboratory Data Review Checklists are included as Appendix E. Laboratory analytical data packages are provided in Appendix G.

5.1 SRF TS 1-4

The findings and results specific to SRF TS 1-4 are described below.

5.1.1 SRF TS 1-4 Well Inspections, Maintenance, and Visual Site Assessment

All monitoring wells were in generally good condition and required little maintenance. The monument lid for well FS1-4H did not close and was unable to be secured with a lock; however, a combination lock was present on the well plug. When the water level meter probe was retracted from the wells, rust flakes were present on the probe at well FS1-4E and mud was present on the probe at well TS1-4EE. Sorbent socks were flipped in well TS1-4F and replaced in well TS1-4J; however, no measurable product thicknesses were observed, and product was not recovered from any wells at TS 1-4.

Table 5-1 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-1 SRF TS 1-4 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
FS1-4E	Good	3.47	Y	Rust flakes on probe.
FS1-4H	Good	3.03	Y	Monument lid does not close. Lock on well plug.
FS1-4I	Good	2.90	Y	Lock broken and was replaced.
TS1-4DD	Good	2.95	Y	None
TS1-4EE	Good	2.72	Y	Mud on probe.

Table 5-1 SRF TS 1-4 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
TS1-4F	Good	2.23	Y	Strong gasoline odor. Flipped sorbent sock (less than 50% saturation). No measurable product present down well.
TS1-4GR	Good	2.26	Y	Mild POL/fuel odor.
TS1-4J	Good	1.07	Y	Moderate POL/fuel odor. Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Trace amount of product on probe. No measurable product present down well.

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SRF TS 1-4 with no signs of stress, trash, or debris. A drainage culvert and small pond was present northwest of the flare pit with healthy vegetative growth. The surface water adjacent to the culvert contained orange biological ferric precipitation, but no petrogenic sheen was observed. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.1.2 SRF TS 1-4 Groundwater Gauging

Groundwater elevations ranged from 127.29 to 147.06 feet (Figure 3). Depth-to-groundwater measurements ranged between 1.41 and 9.18 feet bgs. The groundwater elevations were generally consistent with historical events. Groundwater elevation data are provided in Table B1-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the northwest (Figure 3). This groundwater flow is consistent with 2019 and 2021 observations but varies slightly from historical north-northeast observations in 2015 and 2017.

5.1.3 SRF TS 1-4 Product Recovery

Product recovery activities have previously occurred at wells TS1-4F and TS1-4J. Only trace amounts of product were observed in these wells during the 2023 field effort and no product recovery occurred. The sorbent sock in well TS1-4F was less than 50% saturated and was flipped over. The sorbent sock in TS1-4J was greater than 50% saturated and was removed and replaced. These observations are consistent with historical product recovery completed at these wells. Table B1-3 (Appendix B) presents the 2023 and historical product recovery results at TS 1-4.

5.1.4 SRF TS 1-4 Groundwater Sampling

Six of the seven scheduled wells were sampled. Well TS1-4F was sampled for petroleum-related VOCs and PAHs. Wells FS1-4E, FS1-4H, FS1-4I, TS1-4EE, TS1-4GR were sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. Wells TS1-4EE and TS1-4GR were also sampled for ethylene glycol. Well TS1-4J was not sampled due to product presence; however, the well contained only a trace amount of LNAPL and no product could be recovered. A duplicate sample was collected at well TS1-4GR, and additional volume was collected from TS1-4EE for matrix spike and matrix spike duplicate analysis.

Wells FS1-4E, FS1-4H, TS1-4F, and TS1-4GR had at least one analyte with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-2). Contaminant concentrations were observed to be generally consistent with historical observations.

- At FS1-4E, concentrations of 1,2,4-trimethylbenzene (106 µg/L), benzene (30.8 µg/L), ethylbenzene (75.2 µg/L), naphthalene (116 µg/L), and 1-methylnaphthalene (12.6 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At FS1-4H, only benzene exceeded the ADEC Table C groundwater cleanup level at a concentration of 5.09 µg/L.
- At TS1-4H, concentrations of 1,2,4-trimethylbenzene (5,820 µg/L), 1,3,5-trimethylbenzene (4,100 µg/L), benzene (15.0 J µg/L), ethylbenzene (149 µg/L), total xylenes (1,070 µg/L), isopropylbenzene (1,300 µg/L), naphthalene (90.3 µg/L), and 1-methylnaphthalene (15.1 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-4GR, concentrations of 1,2,4-trimethylbenzene (711 µg/L), 1,3,5-trimethylbenzene (390 µg/L), benzene (19.0 µg/L), ethylbenzene (146 µg/L), total xylenes (380 µg/L), isopropylbenzene (109 µg/L), naphthalene (117 µg/L), 1-methylnaphthalene (44.2 µg/L), 2-methylnaphthalene (54.0 µg/L), and ethylene glycol (64,000 µg/L) exceeded the ADEC Table C groundwater cleanup levels.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

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Table 5-2 SRF TS 1-4 Groundwater Analytical Results Summary

WELL NAME	1,2,4-TRIMETHYLBENZENE (µg/L)	1,3,5-TRIMETHYLBENZENE (µg/L)	BENZENE (µg/L)	ETHYLBENZENE (µg/L)	TOTAL XYLENES (µg/L)	ISOPROPYLBENZENE (µg/L)	NAPHTHALENE (µg/L)	1-METHYLNAPHTHALENE (µg/L)	2-METHYLNAPHTHALENE (µg/L)	ETHYLENE GLYCOL (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**56**	**60**	**4.6**	**15**	**190**	**450**	**1.7**	**11**	**36**	**40,000**
FS1-4E	**106**	36.3	**30.8**	**75.2**	176	17.0	**116**	**12.6**	8.87	--
FS1-4H	1.02	1.82	**5.09**	0.972 J	ND [1.50]	1.40	0.460 J	0.200 J-	0.0628 J-	--
FS1-4I	ND [0.500]	ND [0.500]	ND [0.200]	ND [0.500]	ND [1.50]	ND [0.500]	0.0347 J	0.0185 J,B	0.0234 J,B	--
TS1-4EE	ND [0.500] J-	ND [0.500] J-	ND [0.200] J-	ND [0.500] J-	ND [1.50] J-	ND [0.500] J-	ND [0.0510]	ND [0.0255]	ND [0.0255]	ND [10,000]
TS1-4F	**5,820**	**4,100**	**15.0 J**	**149**	**1,070**	**1,300**	**90.3**	**15.1**	16.6	--
TS1-4GR*	**711**	**390 J**	**19.0**	**146**	**380**	109	**117**	**44.2**	**54.0**	**65,000**

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
-- = not analyzed
* = The highest detected value is reported for samples with duplicates.
[ ] = limit of detection
B = result is estimated due to contamination in an associated blank
J(±) = estimated value, bias high/low/indeterminate
ND = not detected

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VOC and PAH analytical results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- Well TS1-4F was sampled in 2021 and 2023 for petroleum-related VOCs and PAHs. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were above the 20% threshold in 2021 and 2023. Benzo(a)anthracene was not detected in 2021, but 2023 results were above the 20% threshold.
- Wells FS1-4E, FS1-4H, FS1-4I, TS1-4EE, and TS1-4GR were sampled in 2021 and 2023 for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene (by PAH analysis in 2021 and VOC analysis in 2023), 1-methylnaphthalene, and 2-methylnaphthalene.
    - At FS1-4E, isopropylbenzene results were below the 20% threshold in 2021 and 2023. All other analytes were detected above the 20% threshold in 2021 and 2023.
    - At FS1-4H, benzene results were above the 20% threshold in 2021 and 2023. Naphthalene results by PAH analysis were below the 20% threshold in 2021 and above the 20% threshold in 2023 by VOC analysis. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
    - At FS1-4I, all results were either non-detect or detected below the 20% threshold in 2021 and 2023.
    - At TS1-4EE, all results for VOC and PAH analytes were non-detect in 2021 and 2023.
    - At TS 1-4GR, all results for VOC and PAH analytes were above the 20% threshold in 2021 and 2023.

Based on the results, the analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in at least one monitoring well at the site and should be retained for sampling in all wells during the next monitoring event. Well TS1-4F has historically contained trace amounts of product and should continue to be monitored for all petroleum-related VOCs and PAHs if no product is observed during future events. The 2023 results exceeding 20% of current ADEC Table C groundwater cleanup levels are included in Appendix E.

5.1.5 SRF TS 1-4 Surface Water Sampling

Primary and duplicate surface water samples were collected from the drainage path/culvert north of well TS1-4EE and west of well FS1-4I to assess the ethylene glycol exposure pathway to the site surface. Additional volume was also collected from the location for matrix spike and matrix spike duplicate analysis. Collected surface water samples were analyzed for ethylene glycol and 1,4-dioxane. All results were non-detect or detected below the ADEC Table C groundwater cleanup levels; however, 1,4-dioxane was detected at 3.13 µg/L and 3.61 µg/L in the primary and duplicate samples, respectively.

The surface water contained orange biological ferric precipitation, and no odor was observed. Vegetation around the surface water was healthy and there were no signs of impacts or stress. Water quality parameters were generally within typical ranges for surface water.

The surface water sampling location is shown on Figure 4, and the surface water sampling form is included in Appendix C.

5.2 SRF TS 1-9

The findings and results specific to SRF TS 1-9 are described below.

5.2.1 SRF TS 1-9 Well Inspections, Maintenance, and Visual Site Assessment

All monitoring wells were in generally good condition and required little maintenance. At wells FS1-9I and FS1-9N, dedicated tubing that was not secured to the well was retrieved from within the well using a steel fish tape and secured. Heavy vegetative growth around well FS1-9D was trimmed. Well FS1-9F was heaved to the monument lid and missing a well plug. The well PVC casing will need to be cut down and a well plug added during the next monitoring event. Rust flakes were present on the water level meter probe at FS1-9N, and orange staining possibly due to biological infiltration was observed on the dedicated tubing at TS1-9II. The concrete base was heaved just above the ground surface and cracked at well TS1-9A and heaved 4 inches from the ground surface at well TS1-9HH. Sorbent socks were flipped in well TS1-9C and replaced in wells FS1-9F, TS1-9A, and TS1-9B. A measurable product thickness was only observed at well FS1-9F (Section 5.2.3).

Table 5-3 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-3 SRF TS 1-9 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
FS1-9D	Good	2.09	Y	Trimmed vegetation around well.
FS1-9F	Decent	2.47	Y	Strong POL/fuel odor. Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Measurable product thickness down well; recovered product with bailer (Section 5.2.3). PVC casing was heaved to flush with the top of the monument and missing a well plug.
FS1-9I	Good	2.00	Y	Retrieved tubing from down well with fish tape.
FS1-9M	Decent	2.16	Y	PVC heaved against monument.
FS1-9N	Good	2.16	Y	Rust flakes on probe. Retrieved tubing from down well with fish tape.
TS1-9A	Decent	2.34	Y	Concrete base heaved just above ground surface and cracked. Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Trace amount of product on probe. No measurable product down well.
TS1-9B	Good	2.43	Y	Mild POL/fuel odor. Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Trace amount of product on probe. No measurable product down well.
TS1-9C	Good	1.40	Y	Mild POL/fuel odor. Flipped sorbent sock (less than 50% saturation). No product on sorbent sock or on probe.
TS1-9D	Good	2.52	Y	Mild POL/fuel odor.
TS1-9HH	Decent	2.12	Y	Concrete base heaved 4 inches from ground surface.
TS1-9II	Good	2.33	Y	Orange staining on tubing
TS1-9U	Good	1.77	Y	Slight POL/fuel odor.

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SRF TS 1-9 with no signs of stress, trash, or debris. No surface water bodies are present at or near the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.2.2 SRF TS 1-9 Groundwater Gauging

Groundwater elevations ranged from 115.93 to 116.25 feet with a relatively flat potentiometric surface (Figure 5). Depth-to-groundwater measurements ranged between 9.40 and 20.95 feet bgs. The groundwater elevations were generally consistent with historical events. Groundwater elevation data are provided in Table B2-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the southwest in the southern portion of the site and to the northeast in the northern portion of the site (Figure 5). This groundwater flow is generally consistent with 2015 and 2021 observations but varies from a northwestern groundwater flow observed in 2017 and 2019.

5.2.3 SRF TS 1-9 Product Recovery

In well FS1-9F, 0.34 feet of LNAPL was observed. Approximately 0.15 gallons of product was removed from the well, and the sorbent sock was replaced. The amount of product recovered is consistent with historical product recovery completed at this well, where recovery efforts consisted of mostly product globules within the groundwater. Table B2-3 (Appendix B) presents the 2023 and historical product recovery results at TS 1-9.

5.2.4 SRF TS 1-9 Groundwater Sampling

Ten of the eleven scheduled wells were sampled. Wells FS1-9D, FS1-9I, FS1-9M, TS1-9A, TS1-9B, TS1-9HH, and TS1-9U were sampled for petroleum-related VOCs and PAHs. Wells FS1-9N, TS1-9C, and TS1-9D were sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. Well FS1-9F was not sampled due to the presence of product. Wells TS1-9A and TS1-9B were sampled for the first time since 2017 and 2015, respectively, due to historically measurable product or traces of product down well that were not observed in 2023. A duplicate sample was collected at wells FS1-9N and TS1-9U, and additional volume was collected from FS1-9I for matrix spike and matrix spike duplicate analysis.

Wells TS1-9A, TS1-9B, TS1-9C, TS1-9D, and TS1-9U had at least one analyte with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-4). Contaminant concentrations were observed to be generally consistent with historical observations, except at well TS1-9D where concentrations were significantly lower than historical observations.

- At TS1-9A, concentrations of 1,2,4-trimethylbenzene (168 µg/L), 1,3,5-trimethylbenzene (85.8 µg/L), benzene (4.78 µg/L), ethylbenzene (93.3 µg/L), total xylenes (681 µg/L), naphthalene (38.9 µg/L), and 1-methylnaphthalene (12.1 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-9B, concentrations of 1,2,4-trimethylbenzene (804 µg/L), 1,3,5-trimethylbenzene (721 µg/L), benzene (104 µg/L), ethylbenzene (217 µg/L), total xylenes (1,560 µg/L), and naphthalene (74.3 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-9C, concentrations of 1,2,4-trimethylbenzene (543 µg/L), 1,3,5-trimethylbenzene (458 µg/L), ethylbenzene (34.5 µg/L), total xylenes (3,750 µg/L), naphthalene (42.9 µg/L), and 1-methylnaphthalene (17.8 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-9D, concentrations of 1,2,4-trimethylbenzene (60.3 µg/L) and naphthalene (3.95 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-9U, only naphthalene exceeded the ADEC Table C groundwater cleanup level at a concentration of 4.30 µg/L.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

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Table 5-4 SRF TS 1-9 Groundwater Analytical Results Summary

WELL NAME	1,2,4-TRIMETHYLBENZENE (µg/L)	1,3,5-TRIMETHYLBENZENE (µg/L)	BENZENE (µg/L)	ETHYLBENZENE (µg/L)	TOTAL XYLENES (µg/L)	NAPHTHALENE (µg/L)	1-METHYLNAPHTHALENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**56**	**60**	**4.6**	**15**	**190**	**1.7**	**11**
FS1-9D	2.91	1.16	0.688	1.15	4.53	1.05	0.376
FS1-9I	ND [0.500] J-	ND [0.500] J-	ND [0.200] J-	ND [0.500] J-	ND [1.50] J-	ND [0.0471]	0.0170 J,B
FS1-9M	ND [0.500]	ND [0.500]	ND [0.200]	ND [0.500]	ND [1.50]	0.0371 J	0.0251 J,B
FS1-9N*	2.31	ND [0.500]	0.684	ND [0.500]	1.38 J	1.27	0.258
TS1-9A	**168**	**85.8**	**4.78**	**93.3**	**681**	**38.9**	**12.1**
TS1-9B	**804**	**721**	**104**	**217**	**1,560**	**74.3**	9.61
TS1-9C	**543**	**458**	0.596	**34.5**	**3,750**	**42.9**	**17.8 J-**
TS1-9D	**60.3**	39.6	0.599	12.7	57.3	**3.95**	0.0865 J-
TS1-9HH	0.509 J	2.80	0.227 J	ND [0.500]	ND [1.50]	0.0970 J	0.153
TS1-9U*	16.9	11.5	0.458	4.59	8.16	**4.30**	1.82

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
* = The highest detected value is reported for samples with duplicates.
[ ] = limit of detection
B = estimated due to contamination in an associated blank
J(±) = estimated value, bias high/low/indeterminate
ND = not detected

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VOC and PAH analytical results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- Wells FS1-9N, TS1-9C, and TS1-9D were sampled in 2021 for petroleum-related VOCs and PAHs and again in 2023 with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
    - At FS1-9N, naphthalene was detected above the 20% threshold in 2021 and 2023. Benzene was detected above the 20% threshold in 2021 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
    - At TS1-9C, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, total xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
    - At TS1-9D, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, total xylenes, and naphthalene results were above the 20% threshold in 2021 and 2023. Benzene, 1-methylnaphthalene, and 2-methylnaphthalene results were above the 20% threshold in 2021 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
- Wells FS1-9D, FS1-9I, FS1-9M, TS1-9HH, and TS1-9U were sampled in 2019 and 2023 for petroleum-related VOCs and PAHs.
    - At FS1-9D, naphthalene was detected above the 20% threshold in 2023 but below the 20% threshold in 2019. All other analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.
    - At FS1-9I, all analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.
    - At FS1-9M, all analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.
    - At TS1-9HH, naphthalene was detected above the 20% threshold in 2019 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.
    - At TS1-9U, 1,2,4-trimethylbenzene, ethylbenzene, and naphthalene results were above the 20% threshold in 2019 and 2023. Benzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, and 2-methylnaphthalene results were above the 20%

threshold in 2019 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.

- Well TS1-9A was sampled in 2017 and 2023 for petroleum-related VOCs and PAHs. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in 2017 and 2023. All other analytes were either non-detect or detected below the 20% threshold in 2017 and 2023.
- Well TS1-9B was sampled in 2015 for BTEX and again in 2023 for petroleum-related VOCs and PAHs. Benzene was detected above the 20% threshold in 2015 and 2023. Ethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, total xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in 2023 but were either below the 20% threshold or not analyzed for in 2015.

Based on the results, the analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in at least one monitoring well at the site and should be retained for sampling in all wells during the next monitoring event; however, isopropylbenzene was either non-detect or detected below the 20% threshold in all wells at the site and may be removed from the sampling suite. Additionally, wells sampled every 4 years (FS1-9D, FS1-9I, FS1-9M, TS1-9HH, and TS1-9U) now have results for petroleum-related VOCs and PAHs from two consecutive events, and based on the results, these wells should also be sampled in the next event with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. The LNAPL wells TS1-9A and TS1-9B require at least one more sampling event before analytes may be removed from their sampling suite and should continue to be monitored for petroleum-related VOCs and PAHs, if sampled. The LNAPL well FS1-9F has not been sampled since 2010 and will require two consecutive sampling events to determine if any analytes may be reduced from the sampling suite. The 2023 results exceeding 20% of current ADEC Table C groundwater cleanup levels are included in Appendix E.

5.3 SRF TS 1-27

The findings and results specific to SRF TS 1-27 are described below.

5.3.1 SRF TS 1-27 Well Inspections, Maintenance, and Visual Site Assessment

All monitoring wells were in generally good condition and required little to no maintenance. At well FS1-27C, dedicated tubing that was not secured to the well was retrieved from within the well using a steel fish tape and secured. At well TS1-27L, the monument was missing its collar and lid, and orange sediment possibly due to biological infiltration was observed on the water level meter probe.

Table 5-5 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-5 SRF TS 1-27 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
FS1-27C	Good	3.02	Y	Retrieved tubing from down well with fish tape.
TS1-27G	Good	1.70	Y	None
TS1-27J	Good	1.89	Y	None
TS1-27K	Good	1.95	Y	None
TS1-27L	Decent	2.35	Y	Monument is missing collar and lid, but well plug is present to prevent infiltration. Orange sediment observed on water level meter probe.
TS1-27M	Good	1.82	Y	None
TS1-27N	Good	2.55	Y	None

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SRF TS 1-27 with no signs of stress, trash, or debris. No surface water bodies are present at or near the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.3.2 SRF TS 1-27 Groundwater Gauging

Groundwater elevations ranged from 244.41 to 255.63 feet (Figure 7). Depth-to-groundwater measurements ranged between 5.86 and 11.73 feet bgs. The groundwater elevations were consistent with historical events. Groundwater elevation data are provided in Table B3-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the west-southwest (Figure 7). This groundwater flow is generally consistent with historical observations.

5.3.3 SRF TS 1-27 Groundwater Sampling

All five scheduled wells were sampled. Well FS1-27C was sampled for petroleum-related VOCs and PAHs, and wells TS1-27G, TS1-27K, TS1-27L, and TS1-27M were sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

Wells TS1-27G, TS1-27K, and TS1-27L had at least one analyte with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-6). Contaminant concentrations were observed to be generally consistent with historical observations, except at well TS1-27G where concentrations were slightly lower than historical observations.

- At TS1-27G, only naphthalene exceeded the ADEC Table C groundwater cleanup level at a concentration of 7.51 µg/L.
- At TS1-27K, concentrations of 1,2,4-trimethylbenzene (1,130 µg/L), 1,3,5-trimethylbenzene (295 µg/L), benzene (25.3 µg/L), ethylbenzene (481 µg/L), total xylenes (2,080 µg/L), naphthalene (296 µg/L), 1-methylnaphthalene (34.9 µg/L), and 2-methylnaphthalene (38.1 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-27L, concentrations of 1,2,4-trimethylbenzene (281 µg/L), 1,3,5-trimethylbenzene (98.8 µg/L), benzene (4.70 µg/L), ethylbenzene (61.6 µg/L), total xylenes (246 µg/L), naphthalene (63.1 µg/L), and 1-methylnaphthalene (21.5 µg/L) exceeded the ADEC Table C groundwater cleanup levels.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

Table 5-6 SRF TS 1-27 Groundwater Analytical Results Summary

WELL NAME	1,2,4-TRIMETHYLBENZENE (µg/L)	1,3,5-TRIMETHYLBENZENE (µg/L)	BENZENE (µg/L)	ETHYLBENZENE (µg/L)	TOTAL XYLENES (µg/L)	NAPHTHALENE (µg/L)	1-METHYLNAPHTHALENE (µg/L)	2-METHYLNAPHTHALENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**56**	**60**	**4.6**	**15**	**190**	**1.7**	**11**	**36**
FS1-27C	ND [0.500]	ND [0.500]	ND [0.200]	ND [0.500]	ND [1.50]	ND [0.0500]	ND [0.0250]	ND [0.0250]
TS1-27G	38.5	12.4	3.66	3.08	123	**7.51**	0.240	0.112
TS1-27K	**1,130 J-**	**295 J-**	**25.3 J-**	**481 J-**	**2,080 J-**	**296 J-**	**34.9**	**38.1**
TS1-27L	**281**	**98.8**	**4.70**	**61.6**	**246**	**63.1**	**21.5**	22.5
TS1-27M	ND [0.500]	ND [0.500]	ND [0.200]	ND [0.500]	ND [1.50]	ND [0.0510]	ND [0.0255]	ND [0.0255]

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
[ ] = limit of detection
J- = estimated result, biased low
ND = not detected

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VOC and PAH analytical results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- Wells FS1-27G, TS1-27K, TS1-27L, and TS1-27M were sampled in 2021 and 2023 for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene (by PAH analysis in 2021 and VOC analysis in 2023), 1-methylnaphthalene, and 2-methylnaphthalene.
    - At FS1-27G, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, and naphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were detected below the 20% threshold in 2021 and 2023.
    - At TS1-27K, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene results were above the 20% threshold in 2021 and 2023.
    - At TS1-27L, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were detected below the 20% threshold in 2021 and 2023.
    - At TS1-27M, naphthalene and ethylbenzene results were above the 20% threshold in 2021 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
- Well FS1-27C was sampled in 2019 and 2023 for petroleum-related VOCs and PAHs. All analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.

Based on the results, the analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in at least one monitoring well at the site and should be retained for sampling in all wells during the next monitoring event. Well FS1-27C, scheduled for sampling once every 4 years, now has results for petroleum-related VOCs and PAHs from two consecutive events. Based on these results, well FS1-27C should be sampled during the next event with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. The 2023 results exceeding 20% of current ADEC Table C groundwater cleanup levels are included in Appendix E.

5.4 SRF TS 1-33

The findings and results specific to SRF TS 1-33 are described below.

5.4.1 SRF TS 1-33 Well Inspections, Maintenance, and Visual Site Assessment

A sorbent sock in well FS1-33H did not contain any product and was flipped. Orange sediment was observed on the probe at well FS1-33O indicative of biological infiltration previously noted at the well. Well FS1-33S had a slightly bent monument with a smashed lid that was unable to be secured, and the top section of PVC casing was loose and could be removed from the rest of the riser. Well TS1-33O2 had a heavily dented monument with no collar or lid but was in usable condition and accessible with a bladder pump. Well TS1-33Q appeared to have been run over and destroyed. The monument was knocked over with the PVC casing bent at a 90° angle, and the concrete base was broken into pieces. The protective bollard-barrier is not set into soil and can easily be moved. All other monitoring wells were in generally good condition and required little to no maintenance.

Table 5-7 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-7 SRF TS 1-33 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
FS1-33F	Good	2.59	Y	None
FS1-33H	Good	2.72	Y	Flipped sorbent sock (less than 50% saturation). No product observed on sorbent sock or probe or detected down well.
FS1-33O	Good	2.92	Y	Orange sediment on probe.
FS1-33S	Poor	1.45	Y	Monument is slightly bent with smashed lid that cannot be secured. Top section of PVC casing is easily removed from well. Well remains sampleable.
FS1-33T	Good	1.59	Y	None
FS1-33W	Good	2.06	Y	None
TS1-33JJ	Good	2.55	Y	None
TS1-33KK	Good	2.20	Y	None

Table 5-7 SRF TS 1-33 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
TS1-33O2	Decent	2.00	Y	Monument is missing collar and lid and is dented around the rim. PVC casing is intact and well plug is present to prevent infiltration.
TS1-33P	Good	1.72	Y	None
TS1-33Q	Destroyed	-	N	Well appears to have been run over and is destroyed. Monument is knocked over and PVC casing is bent at a 90° angle. Concrete base is broken into pieces. Protective bollard-barrier is not set into soil and can easily be moved.
TS1-33UR	Good	2.75	Y	None

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SRF TS 1-33 with no signs of stress, trash, or debris. Surface water was present onsite as pooling water in tilled areas near the flare pit, and Swanson River is approximately 1,500 feet east of the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.4.2 SRF TS 1-33 Groundwater Gauging

Groundwater elevations ranged from 132.88 to 159.01 feet (Figure 9). Depth-to-groundwater measurements ranged between 4.35 and 23.57 feet bgs. The groundwater elevations were consistent with historical events. Groundwater elevation data are provided in Table B4-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the southeast towards Swanson River with a depression around FS1-33O (Figure 9). This groundwater flow is generally consistent with historical observations.

5.4.3 SRF TS 1-33 Groundwater Sampling

Seven of the eight scheduled wells were sampled. Wells FS1-33W and TS1-33JJ were sampled for petroleum-related VOCs and PAHs. Wells FS1-33F, FS1-33H, FS1-33S, TS1-33O2, and TS1-33UR were sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. Well TS1-33Q was destroyed and could not sampled. A duplicate sample

was collected at wells FS1-33F and TS1-33JJ, and additional volume was collected from TS1-33JJ for matrix spike and matrix spike duplicate analysis.

Wells FS1-33F, FS1-33H, TS1-33O2, and TS1-33UR had at least one analyte with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-8). Contaminant concentrations were observed to be generally consistent with historical observations.

- At FS1-33F, only benzene exceeded the ADEC Table C groundwater cleanup level at a concentration of 322 µg/L.
- At FS1-33H, concentrations of benzene (16.9 µg/L), ethylbenzene (24.9 µg/L), and naphthalene (3.87 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-33O2, concentrations of benzene (143 µg/L), ethylbenzene (174 µg/L), and naphthalene (49.4 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At TS1-33UR, only benzene exceeded the ADEC Table C groundwater cleanup level at a concentration of 9.68 µg/L.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

Table 5-8 SRF TS 1-33 Groundwater Analytical Results Summary

WELL NAME	BENZENE (µg/L)	ETHYLBENZENE (µg/L)	NAPHTHALENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**4.6**	**15**	**1.7**
FS1-33F*	**322**	ND [1.00]	0.369
FS1-33H	**16.9**	**24.9**	**3.87**
FS1-33S	0.620	0.818 J	0.0900 J
FS1-33W	ND [0.200]	ND [0.500]	ND [0.0481]
TS1-33JJ*	0.836	ND [0.500] J-	0.0512 J
TS1-33O2	**143 J-**	**174**	**49.4**
TS1-33UR	**9.68**	4.15	1.46

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
* = The highest detected value is reported for samples with duplicates.
[ ] = limit of detection
J(±) = estimated value, bias high/low/indeterminate
ND = not detected

VOC and PAH analytical results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- Wells FS1-33F, FS1-33H, FS1-33S, TS1-33O2, and TS1-33UR were sampled in 2021 and 2023 for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene (by PAH analysis in 2021 and VOC analysis in 2023), 1-methylnaphthalene, and 2-methylnaphthalene. These wells were also sampled for benzo(a)anthracene in 2021 but this analyte was removed from the sampling suite in 2023.
    - At FS1-33F, benzene was detected above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
    - At FS1-33H, benzene, ethylbenzene, and naphthalene results were above the 20% threshold in 2021 and 2023. Results for 1,2,4-trimethylbenzene were above

the 20% threshold in 2021 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.

  - At FS1-33S, benzene was detected above the 20% threshold in 2021 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023
  - At TS1-33O2, benzene, ethylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
  - At TS1-33UR, benzene, ethylbenzene, and naphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.

- Wells FS1-33W and TS1-33JJ were sampled in 2019 and 2023 for petroleum-related VOCs and PAHs.
  - At FS1-33W, all analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.
  - At TS1-33JJ, benzene, ethylbenzene, and naphthalene results were above the 20% threshold in 2019 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.
- Well TS1-33Q was destroyed and could not be sampled in 2023; however, 2021 results for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, and 1-methylnaphthalene were above the 20% threshold. This well should be replaced and groundwater further evaluated for reduction of analytes.

Based on the results, the analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in at least one monitoring well at the site during either the 2023 or previous sampling event and should be retained for sampling in all wells during the next monitoring event. Additionally, wells sampled every 4 years (FS1-33W and TS1-33J) now have results for petroleum-related VOCs and PAHs from two consecutive events, and based on the results, these wells should also be sampled in the next event with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. The 2023 results exceeding 20% of current ADEC Table C groundwater cleanup levels are included in Appendix E.

5.5 SRF TS 2-15

The findings and results specific to SRF TS 2-15 are described below.

5.5.1 SRF TS 2-15 Well Inspections, Maintenance, and Visual Site Assessment

All monitoring wells were in generally good condition and required little to no maintenance. At wells FS2-15B, TS2-15O, and TS2-15P, the PVC casing was heaved against the side of the monument, but the wells were sampleable and no damage to the PVC casings was observed. The PVC casing at well FS2-15B was also heaved nearly flush with the top of the monument. Cutting down the PVC casing was not necessary for this event as the monument lid could be secured with the well plug installed.

Table 5-9 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-9 SRF TS 2-15 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
FS2-15B	Good	2.93	Y	PVC heaved against side of monument and nearly flush with top of monument, but monument can still close without cutting PVC down.
TS2-15O	Good	1.43	Y	PVC heaved against side of monument.
TS2-15P	Good	2.56	Y	PVC heaved against side of monument.
TS2-15Q	Good	2.37	Y	None
TS2-15R	Good	2.28	Y	None

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SRF TS 2-15 with no signs of stress, trash, or debris. No surface water bodies are present at or near the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.5.2 SRF TS 2-15 Groundwater Gauging

Groundwater elevations ranged from 305.15 to 317.44 feet (Figure 11). Depth-to-groundwater measurements ranged between 5.06 and 9.13 feet bgs. The groundwater elevations were

consistent with historical events. Groundwater elevation data are provided in Table B5-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the northwest (Figure 11). This groundwater flow is generally consistent with historical observations.

5.5.3 SRF TS 2-15 Groundwater Sampling

All four scheduled wells were sampled. Wells FS2-15B, TS2-15P, and TS2-15R were sampled for petroleum-related VOCs and PAHs. Well TS2-15O was sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene.

Well TS2-15O was the only well with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-10). At well TS2-15O, concentrations of 1,2,4-trimethylbenzene (211 µg/L), 1,3,5-trimethylbenzene (83.5 µg/L), ethylbenzene (31.1 µg/L), total xylenes (969 µg/L), and naphthalene (27.9 µg/L) exceeded the ADEC Table C groundwater cleanup levels. Contaminant concentrations were observed to be generally consistent with historical observations.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

Table 5-10 SRF TS 2-15 Groundwater Analytical Results Summary

WELL NAME	1,2,4-TRIMETHYLBENZENE (µg/L)	1,3,5-TRIMETHYLBENZENE (µg/L)	ETHYLBENZENE (µg/L)	TOTAL XYLENES (µg/L)	NAPHTHALENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**56**	**60**	**15**	**190**	**1.7**
FS2-15B	ND [0.500]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.0535]
TS2-15O	**211**	**83.5**	**31.1**	**969**	**27.9**
TS2-15P	ND [0.500]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.0471]
TS2-15R	ND [0.500]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.0490]

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
[ ] = limit of detection
ND = not detected

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VOC and PAH analytical results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- Well TS2-15O was sampled in 2021 and 2023 for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. All results were above the 20% threshold in 2021 and 2023.
- Wells FS2-15B, TS2-15P, and TS2-15R were sampled in 2019 and 2023 for petroleum-related VOCs and PAHs. All results from these wells were either non-detect or detected below the 20% threshold in 2019 and 2023.

Based on the results, the analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene were detected above the 20% threshold in at least one monitoring well at the site and should be retained for sampling in all wells during the next monitoring event. Additionally, wells sampled every 4 years (FS2-15B, TS2-15P, and TS2-15R) now have results for petroleum-related VOCs and PAHs from two consecutive events, and based on the results, these wells should also be sampled in the next event with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. The 2023 results exceeding 20% of current ADEC Table C groundwater cleanup levels are included in Appendix E.

5.6 SRF TS 3-4

The findings and results specific to SRF TS 3-4 are described below.

5.6.1 SRF TS 3-4 Well Inspections, Maintenance, and Visual Site Assessment

At wells FS3-4A, FS3-4B, and FS3-4F, the PVC casings were heaved against the side of the monument. Severe heaving was observed at wells TS3-4NN, TS3-4OO, and TS3-4PP where the wells' monuments and concrete bases were heaved above the ground surface. Well TS3-4OO was also bent to a 70° angle. Mud was observed on the water level meter probe at well TS3-4MM. Sorbent socks were replaced in wells FS3-4D and TS3-4D. A measurable product thickness was only observed at well FS3-4D (Section 5.6.3). Well FS3-4D contained a 1.5-inch PVC casing nested within the 2-inch PVC casing. After consulting with the Hilcorp Project Manager, the 1.5-inch PVC insert was removed from the well. All product was wiped and drained from the 1.5-inch PVC insert, and the insert was cut into smaller sections and disposed of (Section 4.8).

Table 5-11 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-11 SRF TS 3-4 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
FS3-4A	Good	2.65	Y	PVC heaved against monument. Gray staining on tubing.
FS3-4B	Good	1.16	Y	PVC heaved against monument.
FS3-4D	Good	3.22	N - LNAPL	Strong POL/fuel odor. Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Measurable product thickness down well; recovered product with peristaltic pump (Section 5.6.3). Removed 1.5-inch black PVC that was nested inside of 2-inch PVC casing and regauged well. Stickup height reflects measurement of new top of PVC.
FS3-4F	Good	1.49	Y	PVC heaved against monument.
TS3-4CC	Good	2.05	Y	None
TS3-4D	Good	2.22	Y	Moderate POL/fuel odor. Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Traces of product observed on probe, but no measurable product down well. Product recovery attempted with bailer; no product was recovered.
TS3-4MM	Good	2.95	Y	Mud observed on probe.
TS3-4NN	Poor	2.63	Y	Monument and concrete base heaved approximately 0.5 feet above ground surface. PVC casing was secure.
TS3-4OO	Poor	2.60	Y	Monument and concrete base heaved 1.0 foot above ground surface. Well bent at a 70° angle.
TS3-4P	Good	1.39	Y	Slight POL/fuel odor down well and moderate POL/fuel odor on tubing and probe.
TS3-4PP	Poor	2.57	Y	Monument and concrete base heaved approximately 0.3 feet above ground surface and into the PVC casing.
TS3-4Z	Good	1.56	Y	None

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SRF TS 3-4 with no signs of stress, trash, or debris. No surface water bodies are present at or near the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.6.2 SRF TS 3-4 Groundwater Gauging

Groundwater elevations ranged from 140.49 to 152.97 feet (Figure 13). Depth-to-groundwater measurements ranged between 1.65 and 11.22 feet bgs. Depth to LNAPL was recorded in FS3-4D with a thickness of greater than 3 feet (Section 5.6.3). The groundwater elevations were consistent with historical events. Groundwater elevation data are provided in Table B6-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the east-southeast (Figure 13). This groundwater flow is generally consistent with historical observations.

5.6.3 SRF TS 3-4 Product Recovery

In well FS3-4D, the oil water interface probe detected LNAPL at 8.09 feet btoc and the probe was lowered 3 feet below the top of product with no indication of groundwater before gauging was stopped. Approximately 5 gallons of product were removed from the well using a peristaltic pump, and the sorbent sock was replaced. The amount of product recovered is consistent with historical product recovery completed at this well. Table B6-3 (Appendix B) presents the 2023 and historical product recovery results at TS 3-4.

5.6.4 SRF TS 3-4 Groundwater Sampling

Seven of the nine scheduled wells were sampled. Wells FS3-4B, TS3-4MM, and TS3-4OO were sampled for petroleum-related VOCs and PAHs. Wells FS3-4A, FS3-4F, TS3-4CC, and TS3-4P were sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. Wells FS3-4D and TS3-4D were not sampled due to the presence of product. Although no measurable product thickness was observed at well TS3-4D, traces of product were observed on the probe and the well was not sampled to preserve the integrity of the sampling equipment. A duplicate sample was collected at well FS3-4B.

Wells FS3-4F, TS3-4CC, and TS3-4P were the only wells with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-12). Contaminant concentrations were observed to be generally consistent with historical observations.

- At well FS3-4F, concentrations of benzene (9.14 µg/L) and naphthalene (9.31 µg/L) exceeded the ADEC Table C groundwater cleanup levels.

- At well TS3-4CC, only naphthalene exceeded the ADEC Table C groundwater cleanup level at a concentration of 1.88 µg/L.
- At well TS3-4P, concentrations of benzene (475 µg/L), ethylbenzene (250 µg/L), and naphthalene (28.5 µg/L) exceeded the ADEC Table C groundwater cleanup levels.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

Table 5-12 SRF TS 3-4 Groundwater Analytical Results Summary

WELL NAME	BENZENE (µg/L)	ETHYLBENZENE (µg/L)	NAPHTHALENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**4.6**	**15**	**1.7**
FS3-4A	2.68	ND [0.500]	0.0384 J
FS3-4B*	0.424	ND [0.500]	0.0325 J
FS3-4F	**9.14**	3.20	**9.31**
TS3-4CC	0.169 J	7.51	**1.88**
TS3-4MM	ND [0.200]	ND [0.500]	ND [0.0520]
TS3-4OO	ND [0.200]	ND [0.500]	1.11
TS3-4P	**475**	**250**	**28.5**

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
* = The highest detected value is reported for samples with duplicates.
[ ] = limit of detection
J = estimated value
ND = not detected

VOC and PAH analytical results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- Wells FS3-4A, FS3-4F, TS3-4CC, and TS3-4P were sampled in 2021 and 2023 for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene (by PAH analysis in 2021 and VOC analysis in 2023), and 1-methylnaphthalene.

- At FS3-4A, benzene was detected above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
- At FS3-4F, benzene, naphthalene, and 1-methylnaphthalene results were above the 20% threshold in 2021. In 2023, benzene, ethylbenzene, and naphthalene results were above the 20% threshold, but 1-methylnaphthalene results were below the 20% threshold. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
- At TS3-4CC, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, total xylenes, and naphthalene results were above the 20% threshold in 2021. In 2023, 1,2,4-trimethylbenzene, ethylbenzene, and naphthalene results were above the 20% threshold but 1,3,5-trimethylbenzene and total xylenes results were below the 20% threshold. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
- At TS3-4P, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, and naphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.

- Wells FS3-4B, TS3-4MM, and TS3-4OO were sampled in 2019 and 2023 for petroleum-related VOCs and PAHs. At well TS3-4OO, naphthalene was detected above the 20% threshold in 2023 but below the 20% threshold in 2021. All other analytes at these wells were either non-detect or detected below the 20% threshold in 2019 and 2023.
- Well TS3-4D was not sampled in 2023 due to product presence but was sampled in 2021 for petroleum-related VOCs and PAHs. Results for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, naphthalene, and 1-methylnaphthalene were above the 20% threshold in 2021. All other analytes were either non-detect or detected below the 20% threshold.

Based on the results, the analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene were detected above the 20% threshold in at least one monitoring well at the site and should be retained for sampling in all wells during the next monitoring event. Additionally, wells sampled every 4 years (FS3-4B, TS3-4MM, and TS3-4OO) now have results for petroleum-related VOCs and PAHs from two consecutive events, and based on the results, these wells should also be sampled in the next event with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. Well TS3-4D requires at least one more sampling event before analytes may be removed from the sampling suite and

should continue to be monitored for petroleum-related VOCs and PAHs, if sampled. The 2023 results exceeding 20% of current ADEC Table C groundwater cleanup levels are included in Appendix E.

5.7 SRF TS 3-9

The findings and results specific to SRF TS 3-9 are described below.

5.7.1 SRF TS 3-9 Well Inspections, Maintenance, and Visual Site Assessment

All monitoring wells were in generally good condition and required little to no maintenance. At well FS3-9G, the monument and concrete base was heaved approximately 0.5 feet above the ground surface. Missing tubing was tied and left in well TS3-9AA, and a missing well cap was added to well TS3-9CC. Bentonite was observed on the water level meter probe at well TS3-9U and sandy clay was observed on the probe at well TS3-9V. Sorbent socks were flipped in well TS3-9F and replaced in wells FS3-9E and TS3-9A. A measurable product thickness was only observed at well TS3-9A (Section 5.7.3).

Table 5-13 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-13 SRF TS 3-9 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
FS3-9B	Good	2.81	Y	None
FS3-9E	Good	2.42	Y	Moderate POL/fuel odor. Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Traces of oily residue observed on probe, but no measurable product down well. Product recovery attempted with bailer; no product was recovered.
FS3-9G	Decent	2.42	Y	Monument and concrete base heaved approximately 0.5 feet above ground surface.
TS3-9A	Good	2.55	Y	Replaced sorbent sock (greater than 50% saturation). Sock saturated with product. Measurable product thickness down well; recovered product with bailer (Section 5.7.3).
TS3-9AA	Good	2.55	Y	No tubing was in well – dedicated tubing tied and left in well after sampling.
TS3-9BB	Good	2.47	Y	None

Table 5-13 SRF TS 3-9 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
TS3-9CC	Good	2.34	Y	Added missing well cap.
TS3-9CR	Good	2.46	Y	None
TS3-9DD	Good	2.89	Y	None
TS3-9F	Decent	2.39	Y	Flipped sorbent sock (less than 50% saturation). Orange staining on sorbent sock. No measurable product down well.
TS3-9S	Good	1.82	Y	None
TS3-9T	Good	1.92	Y	None
TS3-9U	Good	2.24	Y	Bentonite on water level meter probe.
TS3-9V	Good	1.95	Y	Sandy clay on water level meter probe.

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SRF TS 3-9 with no signs of stress, trash, or debris. No surface water bodies are present at or near the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.7.2 SRF TS 3-9 Groundwater Gauging

Groundwater elevations ranged from 150.35 to 153.45 feet (Figure 15). Depth-to-groundwater measurements ranged between 3.10 and 13.38 feet bgs. The groundwater elevations were consistent with historical events. Groundwater elevation data are provided in Table B7-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the east-southeast (Figure 15). This groundwater flow is generally consistent with historical observations, except for northeast groundwater flow observations from 2015 and 2017.

5.7.3 SRF TS 3-9 Product Recovery

In well TS3-9A, 0.35 feet of LNAPL was observed. Approximately 0.40 gallons of product was removed from the well, and the sorbent sock was replaced. The amount of product recovered is consistent with historical product recovery completed at this well, where recovery efforts

consisted of mostly product globules within the groundwater. Table B7-3 (Appendix B) presents the 2023 and historical product recovery results at TS 3-9.

5.7.4 SRF TS 3-9 Groundwater Sampling

Eleven of the twelve scheduled wells were sampled. Wells FS3-9B, FS3-9E, FS3-9G, TS3-9AA, TS3-9DD, and TS3-9F were sampled for petroleum-related VOCs and PAHs. Wells TS3-9BB, TS3-9CR, TS3-9T, TS3-9U, and TS3-9V were sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. Well TS3-9A was not sampled due to the presence of product.

Wells FS3-9E, TS3-9BB, TS3-9CR, TS3-9F, TS3-9T, TS3-9U, and TS3-9V had at least one analyte with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-14). Contaminant concentrations were observed to be generally consistent with historical observations.

- At well FS3-9E, concentrations of 1,2,4-trimethylbenzene (58.5 µg/L), benzene (142 µg/L), ethylbenzene (74.5 µg/L), and naphthalene (27.0 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At wells TS3-9BB and TS3-9T, concentrations of ethylbenzene (23.2 and 24.4 µg/L, respectively) and naphthalene (1.98 and 4.12 µg/L, respectively) exceeded the ADEC Table C groundwater cleanup levels.
- At well TS3-9CR, concentrations of 1,2,4-trimethylbenzene (83.1 µg/L), 1,3,5-trimethylbenzene (147 µg/L), benzene (9.17 µg/L), total xylenes (275 µg/L), and naphthalene (3.48 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At well TS3-9F, concentrations of 1,2,4-trimethylbenzene (609 µg/L), 1,3,5-trimethylbenzene (385 µg/L), benzene (13.4 µg/L), ethylbenzene (549 µg/L), total xylenes (1,870 µg/L), naphthalene (127 µg/L), and 1-methylnaphthalene (25.0 µg/L) exceeded the ADEC Table C groundwater cleanup levels.
- At wells TS3-9U and TS3-9V, only naphthalene exceeded the ADEC Table C groundwater cleanup level at concentrations of 4.07 and 17.5 µg/L, respectively.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

Table 5-14 SRF TS 3-9 Groundwater Analytical Results Summary

WELL NAME	1,2,4-TRIMETHYLBENZENE (µg/L)	1,3,5-TRIMETHYLBENZENE (µg/L)	BENZENE (µg/L)	ETHYLBENZENE (µg/L)	TOTAL XYLENES (µg/L)	NAPHTHALENE (µg/L)	1-METHYLNAPHTHALENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**56**	**60**	**4.6**	**15**	**190**	**1.7**	**11**
FS3-9B	ND [0.500]	ND [0.500]	ND [0.200]	ND [0.500]	ND [1.50]	ND [0.0500] J-	ND [0.0250] J-
FS3-9E	**58.5**	54.3	**142**	**74.5**	186	**27.0**	1.34 J-
FS3-9G	0.408 J	ND [0.500]	0.211 J	ND [0.500]	ND [1.50]	0.0323 J	ND [0.0261] J-
TS3-9AA	ND [0.500]	0.442 J	0.519	1.64	ND [1.50]	0.158 J-	0.0391 J,B
TS3-9BB	ND [0.500]	2.32	3.34	**23.2**	ND [1.50]	**1.98**	0.0531 J-,B
TS3-9CR	**83.1**	**147**	**9.17**	2.53	**275**	**3.48**	0.151
TS3-9DD	0.393 J	ND [0.500]	ND [0.200]	ND [0.500]	ND [1.50]	0.0395 J	0.0263 J,B
TS3-9F	**609**	**385**	**13.4**	**549**	**1,870**	**127**	**25.0**
TS3-9T	6.12	7.13	1.95	**24.4**	2.14 J	**4.12**	2.62
TS3-9U	10.5	3.76	3.50	6.31	12.3	**4.07**	0.489 J-
TS3-9V	16.6	ND [0.500]	18.2	7.22	17.5	**17.5**	2.75 J-

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
[ ] = limit of detection
B = result is estimated due to contamination in an associated blank
J(±) = estimated value, bias high/low/indeterminate
ND = not detected

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VOC and PAH analytical results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- Wells TS3-9BB, TS3-9CR, TS3-9T, TS3-9U, and TS3-9V were sampled in 2021 for petroleum-related VOCs and PAHs and again in 2023 with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene.
    - At TS3-9BB, benzene, ethylbenzene, and naphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold.
    - At TS3-9CR, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, total xylenes, and naphthalene results were above the 20% threshold in 2021 and 2023. Ethylbenzene results were above the 20% threshold in 2021 but below the 20% threshold in 2023.
    - At TS3-9T, benzene, ethylbenzene, naphthene, and 1-methylnaphthalene results were above the 20% threshold in 2021 and 2023. All other analytes were either non-detect or detected below the 20% threshold.
    - At TS3-9U, naphthalene results were above the 20% threshold in 2021 and 2023. Benzene and ethylbenzene results were below the 20% threshold in 2021 but above the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
    - At TS3-9V, 1,2,4-trimethylbenzene, benzene, ethylbenzene, naphthalene, and 1-methylnapthalene results were above the 20% threshold in 2021 and 2023. Total xylenes results were above the 20% threshold in 2021 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
- Well FS3-9E was sampled in 2021 and 2023 for petroleum-related VOCs. 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, and naphthalene results were above the 20% threshold in 2021 and 2023. Benzo(a)anthracene and benzo(b)pyrene were non-detect in 2021 but had detections above the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2021 and 2023.
- Wells FS3-9B, FS3-9G, TS3-9AA, TS3-9F, and TS3-9DD were sampled in 2019 and 2023 for petroleum-related VOCs and PAHs.
    - At FS3-9B, FS3-9G, and TS3-9DD, all results were either non-detect or detected below the 20% threshold in 2019 and 2023.

- At TS3-9AA, naphthalene results were above the 20% threshold in 2019 but below the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.
- At TS3-9F, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene results were above the 20% threshold in 2019 and 2023. Isopropylbenzene results were below the 20% threshold in 2019 but above the 20% threshold in 2023. All other analytes were either non-detect or detected below the 20% threshold in 2019 and 2023.

Based on the results, the analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene were detected above the 20% threshold in at least one monitoring well at the site and should be retained for sampling in all wells during the next monitoring event. Additionally, wells sampled every 4 years (FS3-9B, FS3-9G, TS3-9AA, and TS3-9DD) now have results for petroleum-related VOCs and PAHs from two consecutive events, and based on the results, these wells should also be sampled in the next event with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene. Although wells FS3-9E and TS3-9F where LNAPL has been observed were sampled for two consecutive events, many petroleum-related VOC and PAH analytes in addition to those of the reduced list mentioned above were detected above the 20% threshold. Therefore, the LNAPL wells FS3-9E, TS3-9F, and TS3-9A should continue to be monitored for petroleum-related VOCs and PAHs, if sampled. The 2023 results exceeding 20% of current ADEC Table C groundwater cleanup levels are included in Appendix E.

5.8 SCU 23B-03

The findings and results specific to SCU 23B-03 are described below.

5.8.1 SCU 23B-03 Well Inspections, Maintenance, and Visual Site Assessment

All monitoring wells were in good condition and required little to no maintenance. A combination lock, label, and flagging were added to all three wells. Unsecured submersible pump tubing likely used for well development was removed from within the wells and replaced with dedicated bladder pump tubing that was secured within the wells. Well MW-02 did not have gravel within the monument's annular space, whereas the gravel was present in the other two wells.

Table 5-15 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-15 SCU 23B-03 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
MW-01	Good	3.20	Y	Added lock, label, and flagging. Removed submersible pump tubing. Tied and left dedicated bladder pump tubing.
MW-02	Good	3.20	Y	Added lock, label, and flagging. No gravel in the monument's annular space. Removed submersible pump tubing. Tied and left dedicated bladder pump tubing.
MW-03	Good	3.20	Y	Added lock, label, and flagging. Removed submersible pump tubing. Tied and left dedicated bladder pump tubing.

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SCU 23B-03 with no signs of stress, trash, or debris. No surface water bodies are present at or near the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.8.2 SCU 23B-03 Groundwater Gauging

Groundwater elevations ranged from 117.68 to 117.81 feet with a relatively flat potentiometric surface (Figure 17). Depth-to-groundwater measurements ranged between 9.99 and 13.68 feet bgs. Groundwater elevation data are provided in Table B8-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the northwest (Figure 17).

5.8.3 SCU 23B-03 Groundwater Sampling

All three scheduled wells were sampled. Wells MW-01, MW-02, and MW-03 were sampled for DRO, RRO, and petroleum-related VOCs and PAHs. A duplicate sample was collected at well MW-01.

Wells MW-01 and MW-03 had at least one analyte with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-16). This was the first sampling event in the monitoring program for wells MW-01, MW-02, and MW-03.

- At well MW-01, concentrations of DRO (2,880 µg/L), 1,2,4-trimethylbenzene (106 µg/L), 1,3,5-trimethylbenzene (66.8 µg/L), and naphthalene (15.8 µg/L) exceeded the ADEC Table C groundwater cleanup levels.

- At well MW-03, concentrations of benzo(a)anthracene (0.576 µg/L), benzo(a)pyrene (1.50 µg/L), dibenz(a,h)anthracene (3.52 µg/L), and indeno(1,2,3-cd)pyrene (3.14 µg/L) exceeded the ADEC Table C groundwater cleanup levels.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

VOC and PAH analytical results were evaluated against 20% of the current ADEC Table C groundwater cleanup levels; however, at least one more monitoring event must be conducted at these wells to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- At MW-01, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, and naphthalene results were above the 20% threshold. All other analytes were either non-detect or detected below the 20% threshold.
- At MW-03, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene results were above the 20% threshold. All other analytes were either non-detect or detected below the 20% threshold.

Table 5-16 SCU 23B-03 Groundwater Analytical Results Summary

WELL NAME	DRO (µg/L)	1,2,4-TRIMETHYLBENZENE (µg/L)	1,3,5-TRIMETHYLBENZENE (µg/L)	NAPHTHALENE (µg/L)	BENZO(A)ANTHRACENE (µg/L)	BENZO(A)PYRENE (µg/L)	DIBENZ(A,H)ANTHRACENE (µg/L)	INDENO(1,2,3-CD)PYRENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**1,500**	**56**	**60**	**1.7**	**0.3**	**0.25**	**0.25**	**2.5**
MW-01*	**2,880 J-**	**106**	**66.8**	**15.8**	ND [0.0261]	ND [0.0104]	0.0399 J	0.0403 J
MW-02	286 J	ND [0.500]	ND [0.500]	ND [0.0500]	ND [0.0250]	ND [0.0100]	ND [0.0100]	ND [0.0250]
MW-03	309 J	ND [0.500]	ND [0.500]	0.0369 J	**0.576**	**1.50**	**3.52**	**3.14**

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
* = The highest detected value is reported for samples with duplicates.
[ ] = limit of detection
J = estimated value
ND = not detected

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5.9 SCU 312-09

The findings and results specific to SCU 312-09 are described below.

5.9.1 SCU 312-09 Well Inspections, Maintenance, and Visual Site Assessment

All monitoring wells were in good condition and required little to no maintenance. A combination lock, label, and flagging were added to all three wells. Unsecured submersible pump tubing likely used for well development was removed from within the wells and replaced with dedicated bladder pump tubing that was secured within the wells.

Table 5-17 summarizes the monitoring well inspection observations and maintenance actions performed during field activities.

Table 5-17 SCU 312-09 Well Inspection and Maintenance Summary

WELL NAME	CONDITION	STICKUP HEIGHT (FEET)	GAUGED	2023 MAINTENANCE AND OBSERVATIONS
MW-01	Good	2.91	Y	Added lock, label, and flagging. Removed submersible pump tubing. Tied and left dedicated bladder pump tubing.
MW-02	Good	2.82	Y	Added lock, label, and flagging. Removed submersible pump tubing. Tied and left dedicated bladder pump tubing.
MW-03	Good	3.20	Y	Added lock, label, and flagging. Removed submersible pump tubing. Tied and left dedicated bladder pump tubing.

Notes:
For definitions, refer to the Acronyms and Abbreviations section.

Healthy vegetation was observed around SCU 312-09 with no signs of stress, trash, or debris. No surface water bodies are present at or near the site. The visual assessment revealed no evidence (e.g., scarring, sheen, distressed vegetation) of surface or offsite migration.

5.9.2 SCU 312-09 Groundwater Gauging

Groundwater elevations ranged from 109.34 to 109.44 feet with a relatively flat potentiometric surface (Figure 19). Depth-to-groundwater measurements ranged between 13.14 and 16.50 feet bgs. Groundwater elevation data are provided in Table B9-1 (Appendix B).

The groundwater elevation data indicated a predominant groundwater flow direction to the west-southwest (Figure 19).

5.9.3 SCU 312-09 Groundwater Sampling

All three scheduled wells were sampled. Wells MW-01, MW-02, and MW-03 were sampled for DRO, RRO, and petroleum-related VOCs and PAHs. Additional volume was collected from well MW-03 for matrix spike and matrix spike duplicate analysis.

Well MW-03 was the only well with concentrations above the ADEC Table C groundwater cleanup levels (Table 5-18). Dibenz(a,h)anthracene was detected above the ADEC Table C groundwater cleanup level at a concentration of 2.10 µg/L. All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels. This was the first sampling event in the monitoring program for wells MW-01, MW-02, and MW-03.

All other results were either not detected or detected below the ADEC Table C groundwater cleanup levels.

VOC and PAH analytical results were evaluated against 20% of the current ADEC Table C groundwater cleanup levels; however, at least one more monitoring event must be conducted at these wells to determine which VOC and PAH analytes need to be monitored or removed for the next event(s).

- At MW-01, dibenz(a,h)anthracene results were above the 20% threshold. All other analytes were either non-detect or detected below the 20% threshold.
- At MW-03, benzo(a)pyrene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene results were above the 20% threshold. All other analytes were either non-detect or detected below the 20% threshold.

Table 5-18 SCU 312-09 Groundwater Analytical Results Summary

WELL NAME	DIBENZ(A,H)ANTHRACENE (µg/L)
ADEC TABLE C CLEANUP LEVEL[1]	**0.25**
MW-01	0.0570
MW-02	ND [0.0107]
MW-03	**2.10 J-**

Notes:
For definitions, refer to the Acronyms and Abbreviations section.
Bold red text indicates that the result exceeds the cleanup level.
[1] 18 AAC 75, Table C groundwater cleanup level (ADEC 2023).
[ ] = limit of detection
J- = estimated value, biased low
ND = not detected

5.10 Quality Assurance and Quality Control

QA/QC procedures conducted during field and sampling activities included collecting and submitting field QC samples (field duplicates, additional sample volume for matrix spike samples, trip blanks, and temperature blanks), and adherence to appropriate sample collection and documentation SOPs as defined in the Work Plan (BENG 2021b) and its Addendum (Aleut 2023). The project-required frequency of one field duplicate for every 10 or fewer samples, per analyte, per matrix, was met for all methods. In addition, one matrix spike/matrix spike duplicate set was collected and analyzed for every 20 or fewer samples for each method, matrix, and analyte which met the project required frequency of 5%. All samples were collected by ADEC Qualified Environmental Professionals and analyzed by SGS, which is an ADEC-approved laboratory, except for samples that were transferred to BIO-CHEM Laboratories for ethylene glycol analysis. BIO-CHEM is not an ADEC-approved laboratory.

5.11 Analytical Data Quality

Following sample analysis and laboratory reporting, a Stage 2A data validation was performed by an experienced chemist independent of the analytical laboratory. The data validation included a review of all project data on an analytical-batch basis by assessing QC samples and associated field sample results. The data validation findings, including data non-conformances that required results to be qualified, are summarized in the data quality report and the ADEC Laboratory Data Review Checklists that were prepared for each sample delivery group (Appendix E).

Data quality issues that required results to be qualified included field duplicate imprecision, laboratory QC sample and surrogate recoveries outside control limits, method blank contamination, and headspace in volatile sample containers. One cooler arrived at the laboratory at 6.3°C, which is outside the required temperature range of 0 to 6°C. Samples were chilled from the time of sample collection until shipment and placed in a refrigerator for storage upon receipt at the laboratory, and it is unlikely that the slight exceedance of the cooler temperature during shipment significantly affected the sample results. Detected results greater than or equal to the detection limit and below the limit of quantitation were qualified as estimated, “J”.

In general, the overall quality of the project data was acceptable. No data were rejected, and completeness met project objectives. All project data were considered acceptable for use with the limitations discussed in the data quality report and associated checklists, and as indicated by any validation qualifiers that were applied to the results.

Analytical results and validation qualifiers are included in the data summary tables for each site in Attachment E-2. A summary table of qualified results, validation qualifiers, and reasons for qualification is included in Attachment E-3. Additional details regarding validation findings are described in the ADEC Laboratory Data Checklists in Attachment E-4.

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6. CONCLUSIONS AND RECOMMENDATIONS

Annual, biennial, and quadrennial groundwater monitoring activities at SRF were completed in June 2023. Conclusions and recommendations for each site are summarized in the following sub-sections.

6.1 SRF TS 1-4

All monitoring wells were in generally good condition and required little maintenance. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. Groundwater gauging results indicated a predominant groundwater flow direction to the northwest, which is generally consistent with previous observations from more recent events. Groundwater sample results were generally consistent with historical analytical results. Exceedances of ADEC Table C groundwater cleanup levels were identified in samples collected from wells FS1-4E, FS1-4H, TS1-4H, and TS1-4GR. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene exceeded the ADEC Table C groundwater cleanup levels in one or more of the above wells. Additionally, ethylene glycol concentrations exceeded the ADEC Table C groundwater cleanup level in well TS1-4GR. Samples collected from well TS1-4GR had persistent soapy bubbles that could not be excluded from all 40-mL vials for the VOC samples collected, which may have resulted from a reaction of the acid preservative in the sample container with ethylene glycol present in the monitoring well.

At the drainage path/culvert north of well TS1-4EE and west of well FS1-4I where a surface water sample was collected, all analytical results were either non-detect or detected below the ADEC Table C groundwater cleanup levels; however, 1,4-dioxane was detected at 3.13 µg/L and 3.6 µg/L in the primary and duplicate samples, respectively, which is near the criteria of 4.6 µg/L. The surface water contained orange biological ferric precipitation, and no odor was observed. Vegetation around the surface water was healthy and there were no signs of impacts or stress. Water quality parameters were generally within typical ranges for surface water. The detections of 1,4-dioxane, though not exceedances, may indicate a potential exposure pathway to the site surface and may warrant additional sampling.

VOC and PAH results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which analytes can be removed from future monitoring events. The analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in one

or more wells and should be retained for the next sampling event in specific TS 1-4 wells (Table 6-1).

Based on these findings, the following actions are recommended:

- Continue to monitor for LNAPL in wells TS1-4F and TS1-4J and remove any measurable free product. If LNAPL is not observed and the wells can effectively be sampled, sample for petroleum-related VOCs and PAHs.
- Wells FS1-4E, FS1-4H, FS1-4I, TS1-4EE, and TS1-4GR should continue to be sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene on a biennial frequency. Wells TS1-4EE and TS1-4GR should also continue to be sampled for ethylene glycol.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-1 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-1 SRF TS 1-4 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS1-4E	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
FS1-4H	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	

Table 6-1 SRF TS 1-4 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS1-4I	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-4DD	Gauge Only			Y	Y	
TS1-4EE	Biennial	2025	Ethylene glycol, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-4F	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Was sampled in 2021 and 2023. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.
TS1-4GR	Biennial	2025	Ethylene glycol, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	

Table 6-1 SRF TS 1-4 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS1-4J	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Was sampled in 2021 but not in 2023 due to trace presence of LNAPL. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

6.2 SRF TS 1-9

All monitoring wells were in generally good condition and required little maintenance except for well FS1-9F which was heaved to the monument lid and missing a well plug. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. In well FS1-9F, 0.34 feet of LNAPL was observed and approximately 0.15 gallons of product was removed from the well, which is consistent with historical product recovery efforts at the well. The sorbent sock within the well was replaced. Groundwater gauging results indicated a predominant groundwater flow direction to the southwest in the southern portion of the site and to the northeast in the northern portion of the sites, which is generally consistent with observations from 2015 and 2021 but varies from the northwest flow direction observed in 2017 and 2019. Groundwater sample results were generally consistent with historical analytical results. Exceedances of ADEC Table C groundwater cleanup levels were identified in samples collected from wells TS1-9B, TS1-9C, TS1-9D, and TS1-9U. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, naphthalene, and 1-methylnaphthalene exceeded the ADEC Table C groundwater cleanup levels in one or more of the above wells.

VOC and PAH results from the most recent two monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which analytes can be removed from future monitoring events. The analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene,

and 2-methylnaphthalene were detected above the 20% threshold in one or more wells and should be retained for the next sampling event in specific TS 1-9 wells (Table 6-2). Isopropylbenzene was either non-detect or detected below the 20% threshold in all wells at the site and may be removed from the sites' sampling suite. Additionally, wells sampled every 4 years (FS1-9D, FS1-9I, FS1-9M, TS1 9HH, and TS1-9U) now have results for petroleum-related VOCs and PAHs from two consecutive events, and based on the results, these wells should also be sampled in the next event with VOC and PAH analytes reduced to 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. The LNAPL wells TS1-9A and TS1-9B require at least one more sampling event before analytes may be removed from their sampling suite and should continue to be monitored for petroleum-related VOCs and PAHs, if sampled. The LNAPL well FS1-9F has not been sampled since 2010 and will require two consecutive sampling events to determine if any analytes may be reduced from the sampling suite.

Based on these findings, the following actions are recommended:

- Perform maintenance at well FS1-9F to cut down the heaved PVC casing and install a well plug.
- Continue to monitor for LNAPL in wells TS1-9A, TS1-9B, and FS1-9F and remove any measurable free product. If LNAPL is not observed and the wells can effectively be sampled, sample for petroleum-related VOCs and PAHs.
- Wells FS1-9N, TS1-9C, and TS1-9D should continue to be sampled on a biennial frequency but with a reduced sampling suite of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Wells FS1-9D, FS1-9I, FS1-9M, TS1-9HH, and TS1-9U should continue to be sampled once every 4 years but with a reduced sampling suite of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-2 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-2 SRF TS 1-9 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS1-9D	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
FS1-9F	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Has not been sampled since 2010 due to LNAPL presence. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present. Cut down PVC riser and install well plug.
FS1-9I	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
FS1-9M	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.

Table 6-2 SRF TS 1-9 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS1-9N	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-9A	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Was sampled in 2017 and 2023. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.
TS1-9B	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Was sampled in 2015 and 2023. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.
TS1-9C	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-9D	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	

Table 6-2 SRF TS 1-9 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS1-9HH	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS1-9II	Gauge Only			Y	Y	
TS1-9U	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

6.3 SRF TS 1-27

All monitoring wells were in generally good condition and required little maintenance. At well TS1-27L, the monument was missing its collar and lid, and orange sediment possibly due to biological infiltration was observed on the water level meter probe. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. Groundwater gauging results indicated a predominant groundwater flow direction to the west-southwest, which is generally consistent with historical observations. Groundwater sample results were generally consistent with historical analytical results, except at well TS1-27G where concentrations were slightly lower than historical observations. Exceedances of ADEC Table C groundwater cleanup levels were identified in samples collected from wells TS1-27G, TS1-27K, and TS1-27L. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, naphthalene, and 1-methylnaphthalene exceeded the ADEC Table C groundwater cleanup levels in one or more of the above wells.

VOC and PAH results from the two most recent monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which analytes can be

removed from future monitoring events. The analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in one or more wells and should be retained for the next sampling event in all TS 1-27 wells, including well FS1-27C that is sampled once every 4 years and now has results below the 20% threshold for petroleum-related VOCs and PAHs from two consecutive events (Table 6-3).

Based on these findings, the following actions are recommended:

- Wells TS1-27G, TS1-27K, TS1-27L, and TS1-27M should continue to be sampled on a biennial frequency for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Wells FS1-27C should continue to be sampled once every 4 years but with a reduced sampling suite of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Replace monument collar and lid at well TS1-27L, if possible, and re-develop well due to slow flowrate and possible biological infiltration.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-3 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-3 SRF TS 1-27 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS1-27C	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.

Table 6-3 SRF TS 1-27 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS1-27G	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-27J	Gauge Only			Y	Y	
TS1-27K	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-27L	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	Replace monument collar and lid, if possible, and re-develop well due to slow flowrate and possible biological infiltration (orange sediment observed on probe).
TS1-27M	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-27N	Gauge Only			Y	Y	

Notes: For definitions, refer to the Acronyms and Abbreviations Section.

6.4 SRF TS 1-33

Most monitoring wells were in generally good condition and required little maintenance. Wells TS1-33O2 and FS1-33S were in decent to poor condition with damaged monuments, but these wells are still sampleable. Orange sediment possibly due to biological infiltration was observed at well FS1-33O; however, this well is not sampled and does not require re-development. Well TS1-33Q was observed to be destroyed and will need to be replaced. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. Groundwater gauging results indicated a predominant groundwater flow direction to the southeast towards Swanson River with a depression around FS1-33O, which is generally consistent with historical observations. Groundwater sample results were generally consistent with historical analytical results. Exceedances of ADEC Table C groundwater cleanup levels were identified in samples collected from wells FS1-33F, FS1-33H, TS1-33O2, and TS1-33UR. Concentrations of benzene, ethylbenzene, and naphthalene exceeded the ADEC Table C groundwater cleanup levels in one or more of the above wells.

VOC and PAH results from the most recent two monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which analytes can be removed from future monitoring events. The analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected above the 20% threshold in one or more wells during either the 2023 or previous sampling event and should be retained for the next sampling event in all TS 1-33 wells, including wells FS1-33W and TS1-33J that are sampled once every 4 years and now have results below the 20% threshold for petroleum-related VOCs and PAHs from two consecutive events (Table 6-4).

Based on these findings, the following actions are recommended:

- Wells FS1-33F, FS1-33H, FS1-33S, TS1-33O2, and TS1-33UR should continue to be sampled on a biennial frequency for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Install a replacement well for TS1-33Q and sample on a biennial frequency for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.
- Wells FS1-33W and TS1-33JJ should continue to be sampled once every 4 years but with a reduced sampling suite of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene.

- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-4 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-4 SRF TS 1-33 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS1-33F	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
FS1-33H	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
FS1-33O	Gauge Only			Y	Y	
FS1-33S	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
FS1-33T	Gauge Only			Y	Y	

Table 6-4 SRF TS 1-33 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS1-33W	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS1-33JJ	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS1-33KK	Gauge Only			Y	Y	
TS1-33O2	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	
TS1-33P	Gauge Only			Y	Y	

Table 6-4 SRF TS 1-33 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS1-33Q	Destroyed as of 2023.					Well was destroyed and could not be sampled. Install replacement well and continue sampling biennially for TS1-33Q reduced sampling suite.
TS1-33UR	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, isopropylbenzene, tert-butylbenzene, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene	Y	Y	

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

6.5 SRF TS 2-15

All monitoring wells were in generally good condition and required little maintenance; however, heaving was observed at wells FS2-15B, TS2-15O, and TS2-15P and the PVC casings may need to be cut down during the next event. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. Groundwater gauging results indicated a predominant groundwater flow direction to the northwest, which is generally consistent with historical observations. Groundwater sample results were generally consistent with historical analytical results. Exceedances of ADEC Table C groundwater cleanup levels were identified in the sample collected from well TS2-15O only; concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, total xylenes, and naphthalene exceeded the ADEC Table C groundwater cleanup levels in this well.

VOC and PAH results from the most recent two monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which analytes can be

removed from future monitoring events. The analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene were detected above the 20% threshold in one well and should be retained for the next sampling event in all TS 2-15 wells, including wells FS2-15B, TS2-15P, and TS2-15R that are sampled once every 4 years and now have results below the 20% threshold for petroleum-related VOCs and PAHs from two consecutive events (Table 6-5).

Based on these findings, the following actions are recommended:

- Well TS2-15O should continue to be sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene on a biennial frequency.
- Wells FS2-15B, TS2-15P, and TS2-15R should continue to be sampled once every 4 years but with a reduced sampling suite of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-5 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-5 SRF TS 2-15 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS2-15B	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS2-15O	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	

Table 6-5 SRF TS 2-15 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS2-15P	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS2-15Q	Gauge Only			Y	Y	
TS2-15R	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

6.6 SRF TS 3-4

Heaving was observed at wells FS3-4A, FS3-4B, FS3-4F, TS3-4NN, TS3-4OO, and TS3-4PP, and well TS3-4OO was bent at a 70° angle. Well FS3-4D contained a 1.5-inch PVC casing nested within the 2-inch PVC casing, and the 1.5-inch PVC insert was removed from the well and disposed of after consulting with the Hilcorp Project Manager. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. In well FS3-4D, greater than 3 feet of LNAPL was observed, and approximately 5 gallons of product was removed from the well, which is consistent with historical product recovery efforts at the well. Trace amounts of LNAPL was observed at well TS3-4D, but no product was recovered. The sorbent socks within the wells were replaced. Groundwater gauging results indicated a predominant groundwater flow direction to the east-southeast, which is generally consistent with historical observations. Groundwater sample results were generally consistent with historical analytical results. Exceedances of ADEC

Table C groundwater cleanup levels were identified in samples collected from wells FS3-4F, TS3-4CC, and TS3-4P. Concentrations of benzene, ethylbenzene, and naphthalene exceeded the ADEC Table C groundwater cleanup levels in one or more of the above wells.

VOC and PAH results from the most recent two monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which analytes can be removed from future monitoring events. The analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene were detected above the 20% threshold in one or more wells and should be retained for the next sampling event in specific TS 3-4 wells, including wells FS3-4B, TS3-4MM, and TS3-4OO that are sampled once every 4 years and now have results below the 20% threshold for petroleum-related VOCs and PAHs from two consecutive events (Table 6-6).

Based on these findings, the following actions are recommended:

- Continue to monitor for LNAPL in wells FS3-4D and TS3-4D and remove any measurable free product. If LNAPL is not observed and the wells can effectively be sampled, sample for petroleum-related VOCs and PAHs.
- Wells FS3-4A, FS3-4F, TS3-4CC, and TS3-4P should continue to be sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene on a biennial frequency.
- Wells FS3-4B, TS3-4MM and TS3-4OO should continue to be sampled once every 4 years but with a reduced sampling suite of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-6 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-6 SRF TS 3-4 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS3-4A	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	

Table 6-6 SRF TS 3-4 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS3-4B	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
FS3-4D	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Has not been sampled since 2010 due to LNAPL presence. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.
FS3-4F	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	
TS3-4CC	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	

Table 6-6 SRF TS 3-4 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS3-4D	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Was sampled in 2021 but not in 2023 due to LNAPL presence. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.
TS3-4MM	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS3-4NN	Gauge Only			Y	Y	
TS3-4OO	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.

Table 6-6 SRF TS 3-4 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS3-4P	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	
TS3-4PP	Gauge Only			Y	Y	
TS3-4Z	Gauge Only			Y	Y	

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

6.7 SRF TS 3-9

All monitoring wells were in generally good condition and required little maintenance. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. In well TS3-9A, 0.35 feet of LNAPL was observed, and approximately 0.40 gallons of product was removed from the well, which is consistent with historical product recovery efforts at the well. In well FS3-9E, the sorbent sock was saturated with product and an oily residue was observed on the water level meter probe, but no product was recovered. No traces of LNAPL were observed at well TS3-9F. The sorbent socks were replaced within wells FS3-9E and TS3-9A and flipped in well TS3-9F. Groundwater gauging results indicated a predominant groundwater flow direction to the east-southeast, which is generally consistent with historical observations, except for northeast groundwater flow observations from 2015 and 2017. Groundwater sample results were generally consistent with historical analytical results. Exceedances of ADEC Table C groundwater cleanup levels were identified in samples collected from wells FS3-9E, TS3-9BB, TS3-9CR, TS3-9F, TS3-9T, TS3-9U, and TS3-9V. Concentrations of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, total xylenes, naphthalene, and 1-methylnaphthlene exceeded the ADEC Table C groundwater cleanup levels in one or more of the above wells.

VOC and PAH results from the most recent two monitoring events were evaluated against 20% of the current ADEC Table C groundwater cleanup levels to determine which analytes can be removed from future monitoring events. The analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and

1-methylnaphthalene were detected above the 20% threshold in one or more wells and should be retained for the next sampling event in specific TS 3-9 wells, including wells FS3-9B, FS3-9G, TS3-9AA, and TS3-9DD that are sampled once every 4 years and now have results below the 20% threshold for petroleum-related VOCs and PAHs from two consecutive events (Table 6-7).

Based on these findings, the following actions are recommended:

- Continue to monitor for LNAPL in wells FS3-9E, TS3-9A, and TS3-9F and remove any measurable free product. If LNAPL is not observed and the wells can effectively be sampled, sample for petroleum-related VOCs and PAHs.
- Wells TS3-9BB, TS3-9CR, TS3-9T, TS3-9U, and TS3-9V should continue to be sampled for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene on a biennial frequency.
- Wells FS3-9B, FS3-9G, TS3-9AA, TS3-9DD should continue to be sampled once every 4 years but with a reduced sampling suite of 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-7 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-7 SRF TS 3-9 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS3-9B	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.

Table 6-7 SRF TS 3-9 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
FS3-9E	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Was sampled in 2021 and 2023. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.
FS3-9G	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS3-9A	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Has not been sampled since 2010 due to LNAPL presence. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.

Table 6-7 SRF TS 3-9 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS3-9AA	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.
TS3-9BB	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	
TS3-9CC	Gauge Only			Y	Y	
TS3-9CR	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	
TS3-9DD	Every 4 years	2027	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	The analytical suite has been reduced based on two consecutive sampling events with results below the 20% threshold.

Table 6-7 SRF TS 3-9 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
TS3-9F	Biennial	2025	Petroleum-related VOCs and PAHs	Y	Y	Was sampled in 2023 but not in 2021 due to LNAPL presence. Continue to gauge, monitor for LNAPL, and conduct product recovery if present. Collect sample if no LNAPL present.
TS3-9S	Gauge Only			Y	Y	
TS3-9T	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	
TS3-9U	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	
TS3-9V	Biennial	2025	1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, xylenes, naphthalene, and 1-methylnaphthalene	Y	Y	

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

6.8 SCU 23B-03

All monitoring wells were in generally good condition and required little maintenance. A combination lock, label, and flagging were added to all three wells. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. Groundwater gauging results indicated a predominant groundwater flow direction to the northwest. Exceedances of ADEC Table C groundwater cleanup levels were identified in samples collected from wells MW-01 and MW-03. Concentrations of DRO, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, benzo(a)anthracene, benzo(a)pyrene, and dibenz(a,h)anthracene exceeded the ADEC Table C groundwater cleanup levels in one or more of the above wells.

VOC and PAH analytical results were evaluated against 20% of the current ADEC Table C groundwater cleanup levels; however, at least one more monitoring event must be conducted at these wells to determine which VOC and PAH analytes need to be monitored or removed for the next event.

Based on these findings, the following actions are recommended:

- Wells MW-01, MW-02, and MW-03 should continue to be sampled for DRO, RRO, and petroleum-related VOCs and PAHs on a biennial frequency. Analytes observed below 20% of ADEC Table C groundwater cleanup levels at all wells in two consecutive events will be eliminated from the site's sampling suite.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-8 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-8 SCU 23B-03 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
MW-01	Biennial	2025	DRO, RRO, petroleum-related VOCs and PAHs	Y	Y	
MW-02	Biennial	2025	DRO, RRO, petroleum-related VOCs and PAHs	Y	Y	
MW-03	Biennial	2025	DRO, RRO, petroleum-related VOCs and PAHs	Y	Y	

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

6.9 SCU 312-09

All monitoring wells were in generally good condition and required little maintenance. A combination lock, label, and flagging were added to all three wells. Visual site inspection findings indicated no signs of stressed vegetation or offsite contaminant migration. Groundwater gauging results indicated a predominant groundwater flow direction to the west-southwest. Exceedances of ADEC Table C groundwater cleanup levels were identified in the sample collected from well MW-03 only. Dibenz(a,h)anthracene was the only analyte with concentrations exceeding the ADEC Table C groundwater cleanup levels.

VOC and PAH analytical results were evaluated against 20% of the current ADEC Table C groundwater cleanup levels; however, at least one more monitoring event must be conducted at these wells to determine which VOC and PAH analytes need to be monitored or removed for the next event.

Based on these findings, the following actions are recommended:

- Wells MW-01, MW-02, and MW-03 should continue to be sampled for DRO, RRO, and petroleum-related VOCs and PAHs on a biennial frequency. Analytes observed below 20% of ADEC Table C groundwater cleanup levels at all wells in two consecutive events will be eliminated from the site's sampling suite.
- Visual site assessments should be continued with a focus on signs of potential offsite contaminant migration, such as stressed vegetation.

Table 6-9 below summarizes the well-specific recommended actions for the next sampling event based on the 2023 groundwater monitoring results.

Table 6-9 SCU 312-09 Recommendations for the Next Sampling Event

WELL NAME	SAMPLING FREQUENCY	NEXT SAMPLING EVENT	ANALYTES TO BE SAMPLED NEXT	GAUGE	BIENNIAL RESURVEY	OTHER RECOMMENDED ACTIONS OR NOTES
MW-01	Biennial	2025	DRO, RRO, petroleum-related VOCs and PAHs	Y	Y	
MW-02	Biennial	2025	DRO, RRO, petroleum-related VOCs and PAHs	Y	Y	
MW-03	Biennial	2025	DRO, RRO, petroleum-related VOCs and PAHs	Y	Y	

Notes:
For definitions, refer to the Acronyms and Abbreviations Section.

7. REFERENCES

Alaska Department of Environmental Conservation (ADEC). 2022. *Field Sampling Guidance*. Division of Spill Prevention and Response. Contaminated Sites Program. January.

ADEC. 2023. *18 Alaska Administrative Code (AAC) 75, Oil and Other Hazardous Substances Pollution Control*, as amended through 5 February.

Aleut Remediation, LLC (Aleut). 2023. *Hilcorp Swanson River Field Groundwater Monitoring Program Final 2023 Work Plan Addendum*. Technical Memorandum. Prepared For Hilcorp Alaska, LLC. June.

Brice Engineering, LLC (BENG). 2021. *2021 Groundwater Monitoring Program Work Plan, Kenai Peninsula Sites, Alaska, Swanson River Field Tank Settings, Kenai, Alaska*. Prepared For Hilcorp Alaska, LLC. June.

BENG. 2022. *2021 Groundwater Monitoring Program Report, Kenai Peninsula Sites, Alaska, Swanson River Field Tank Settings, Kenai Peninsula, Alaska*. Prepared For Hilcorp Alaska, LLC. February.

Brice Environmental Services Corporation (BES). 2016a. *2015 Groundwater Monitoring Report – Tank Setting 1-4, Swanson River Field, Alaska*. March.

BES. 2016b. *2015 Groundwater Monitoring Report – Tank Setting 1-9, Swanson River Field, Alaska*. February.

BES. 2016c. *2015 Groundwater Monitoring Report – Tank Setting 1-27, Swanson River Field, Alaska*. March.

BES. 2016d. *2015 Groundwater Monitoring Report – Tank Setting 1-33, Swanson River Field, Alaska*. March.

BES. 2016e. *2015 Groundwater Monitoring Report – Tank Setting 2-15, Swanson River Field, Alaska*. March.

BES. 2016f. *2015 Groundwater Monitoring Report – Tank Setting 3-4, Swanson River Field, Alaska*. March.

BES. 2016g. *2015 Groundwater Monitoring Report – Tank Setting 3-9, Swanson River Field, Alaska*. March.

BES. 2019a. *2017 Groundwater Monitoring Program Report, Kenai Peninsula Sites, Alaska, Swanson River Field (SRF)*. April.

BES. 2019b. *Final 2019 Groundwater Monitoring Program Report, Kenai Peninsula Sites, Alaska, Swanson River Field, Kenai Peninsula, Alaska*. December.

BES. 2020. *Hilcorp Groundwater Monitoring Well Installation, Decommissioning, and Maintenance Plan*. February.

Oil Risk Consultants (Oil Risk). 2011. *2010 Groundwater Monitoring Report: SRF Tank Settings and Flare Pits, Swanson River Field, Alaska*. July.

SLR International Corporation (SLR). 2015. *2014 Groundwater Monitoring Report, Swanson River Tank Settings and Flare Pits, Kenai, Alaska*. May

Susitna Environmental, LLC (Susitna). 2020. *2019 Well Plug & Abandonment Project Swanson River Field - SCU 23B-03 Summary.* February.

Susitna. 2021a. *2020 Subsurface Investigation Report Well SCU 23B-03 P&A Site, Swanson River Field, Sterling, Alaska.* August.

Susitna. 2021b. *2020 Subsurface Investigation Report Well SCU 312-09 P&A Site, Swanson River Field, Sterling, Alaska.* August.

Susitna. 2023a. *Draft 2022 Groundwater Sampling Results, SCU 23B-03, Swanson River Field*. 23 May.

Susitna. 2023b. *2022 Subsurface Investigation Report, SCU 312-09, Swanson River Field, Sterling, Alaska.* June.

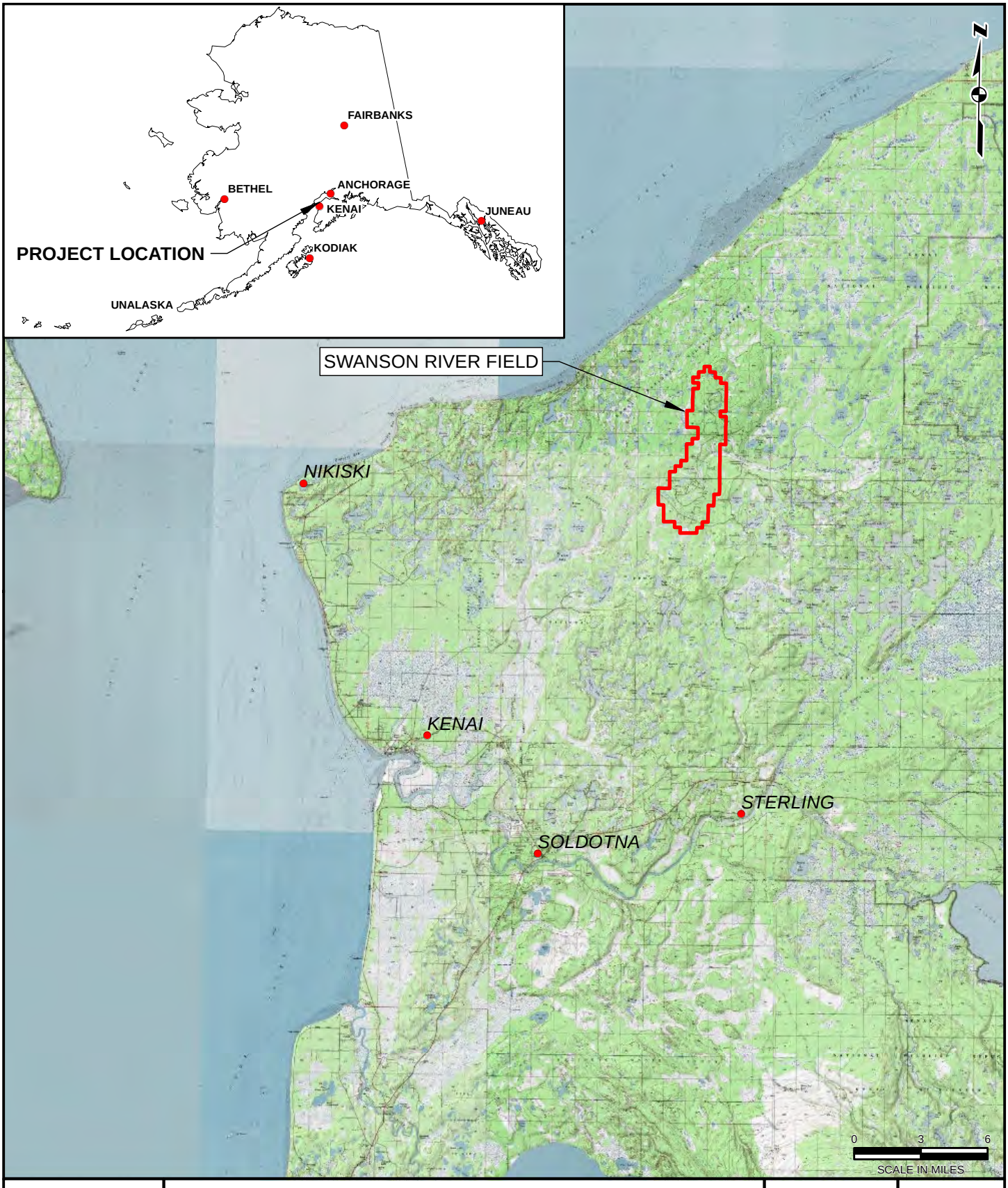
U.S. Environmental Protection Agency. 2017. *Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells*, as amended through 19 September. EQASOP-GW4.

APPENDIX A

FIGURES

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ALEUT

2023 GROUNDWATER MONITORING PROGRAM REPORT
SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

STATE AND SITE VICINITY

DATE: 10/4/2023

PROJECT No.: 311120

DRAWN: K.T.

FIGURE: 1

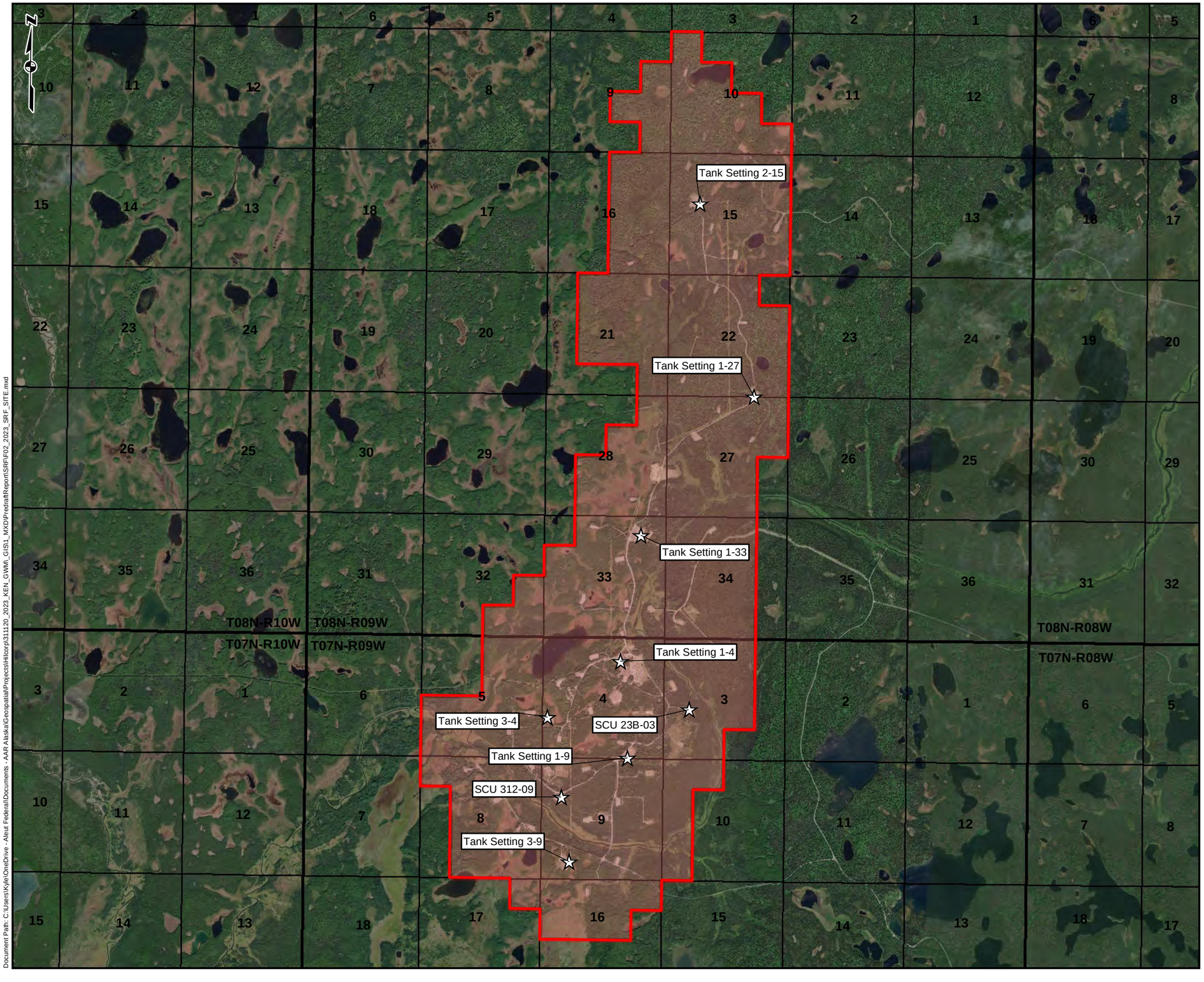
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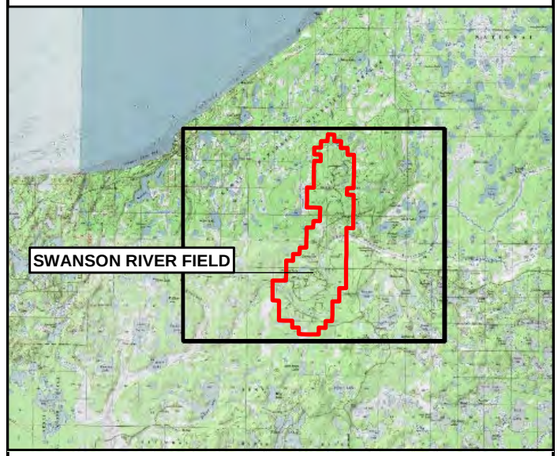
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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SITE MAP





Legend

- Project Locaiton
- Unit Boundary
- Public Land Survey System Section
- Public Land Survey System Township

Notes

1. For conceptual purposes only. All locations are approximate.
2. Map produced using ESRI ArcMap v. 10.8.

References

1. Imagery source: Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community.
2. Unit boundary layer was downloaded from the Alaska Division of Oil and Gas Open Data website. Last updated August 2022.
3. Public Land Survey System Section/Township shapefiles were downloaded from the Kenai Peninsula Borough, Alaska GeoHub. Last updated May 2023.

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

4,200 2,100 0 4,200 Feet

PROJECT No.:	DATE:	FIGURE:
311120	4/29/2024	2
P.M.: Q.M.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM
REPORT SWANSON RIVER FIELD
KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-4 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- 100.0 — Groundwater Contour with Elevation (feet)
- Approximate Groundwater Flow Direction
- Structure Location
- Former Structure Location

Monitoring Well Location

- Gauged 2023
- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance
- Gauged 2023; LNAPL detected in 2023

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and ADEC Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (NAVD88). Map in NAD83 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.

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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

80 40 0 80
SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	3
P.M.: S.H.	DRAWN: K.T.	

1 INCH

SW-1*	
1,4-Dioxane	3.61 J
Ethylene glycol	ND [10,000]

FS1-4I	
1,2,4-Trimethylbenzene	ND [0.5]
1,3,5-Trimethylbenzene	ND [0.5]
1-Methylnaphthalene	0.0185 J,B
2-Methylnaphthalene	0.0234 J,B
Benzene	ND [0.2]
Ethylbenzene	ND [0.5]
Isopropylbenzene	ND [0.5]
Naphthalene	0.0347 J
Xylenes	ND [1.5]

FS1-4H	
1,2,4-Trimethylbenzene	1.02
1,3,5-Trimethylbenzene	1.82
1-Methylnaphthalene	0.2 J-
2-Methylnaphthalene	0.0628 J-
Benzene	**5.09**
Ethylbenzene	0.972 J
Isopropylbenzene	1.4
Naphthalene	0.46 J
Xylenes	ND [1.5]

FS1-4E	
1,2,4-Trimethylbenzene	**106**
1,3,5-Trimethylbenzene	36.3
1-Methylnaphthalene	**12.6**
2-Methylnaphthalene	8.87
Benzene	**30.8**
Ethylbenzene	**75.2**
Isopropylbenzene	17
Naphthalene	**116**
Xylenes	176

TS1-4F	
1,2,4-Trimethylbenzene	**5,820**
1,3,5-Trimethylbenzene	**4,100**
1-Methylnaphthalene	**15.1**
2-Methylnaphthalene	16.6
Benzene	**15 J**
Ethylbenzene	**149**
Isopropylbenzene	**1,300**
Naphthalene	**90.3**
Xylenes	**1,070**

TS1-4EE	
1,2,4-Trimethylbenzene	ND [0.5] J-
1,3,5-Trimethylbenzene	ND [0.5] J-
1-Methylnaphthalene	ND [0.0255]
2-Methylnaphthalene	ND [0.0255]
Benzene	ND [0.2] J-
Ethylbenzene	ND [0.5] J-
Ethylene glycol	ND [10,000]
Isopropylbenzene	ND [0.5] J-
Naphthalene	ND [0.051]
Xylenes	ND [1.5] J-

TS1-4GR*	
1,2,4-Trimethylbenzene	**711**
1,3,5-Trimethylbenzene	**390 J**
1-Methylnaphthalene	**44.2**
2-Methylnaphthalene	**54**
Benzene	**19**
Ethylbenzene	**146**
Ethylene glycol	**64,000**
Isopropylbenzene	109
Naphthalene	**117**
Xylenes	**380**

TS1-4DD

TS1-4J

Building TS 1-4

Electric Shop Building

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
1,2,4-Trimethylbenzene	56
1,3,5-Trimethylbenzene	60
1-Methylnaphthalene	11
2-Methylnaphthalene	36
Benzene	4.6
Ethylbenzene	15
Ethylene Glycol	40000
Isopropylbenzene	450
Naphthalene	1.7
Xylenes	190
1,4-Dioxane	4.6

2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-4 WELL LOCATIONS, SURFACE WATER LOCATION, AND ANALYTICAL RESULTS

Legend

- Surface Water Sample Location with All Results Below CLs
- Structure Location
- Former Structure Location

Monitoring Well Location

- Gauge Only
- All Results Below CLs
- Result(s) Exceeding CLs
- Gauged 2023; LNAPL Present

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
B	analyte is detected in associated method blank
CL	cleanup level
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
   All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
4. Bold indicates result exceeding ADEC Table C groundwater CL or ADEC Surface Water Standard.
5. All results presented in µg/L.
6. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
7. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, naphthalene [TS1-4F and TS1-4J], and total xylenes), SW8270D SIM (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene), and SW8015B (ethylene glycol [TS1-4EE and TS1-4GR]).

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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

80 40 0 80
SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/23/2024	4
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-9 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- 100.0 — Groundwater Contour with Elevation (feet)
- Approximate Groundwater Flow Direction

Monitoring Well Location

- Gauged 2023
- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance
- Gauged 2023; LNAPL detected in 2023

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on 31 May 2017.
3. All presented groundwater results are based on findings from 2023 activities and compared to Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
4. Groundwater elevations are expressed in feet (North American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
5. Groundwater contours were generated with Surfer 16 software using kriging.
6. Water level at monitoring well FS1-9F was adjusted for the approximate specific gravity (0.84) of the 0.34 feet of light non-aqueous phase liquid measured during gauging activities.

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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET

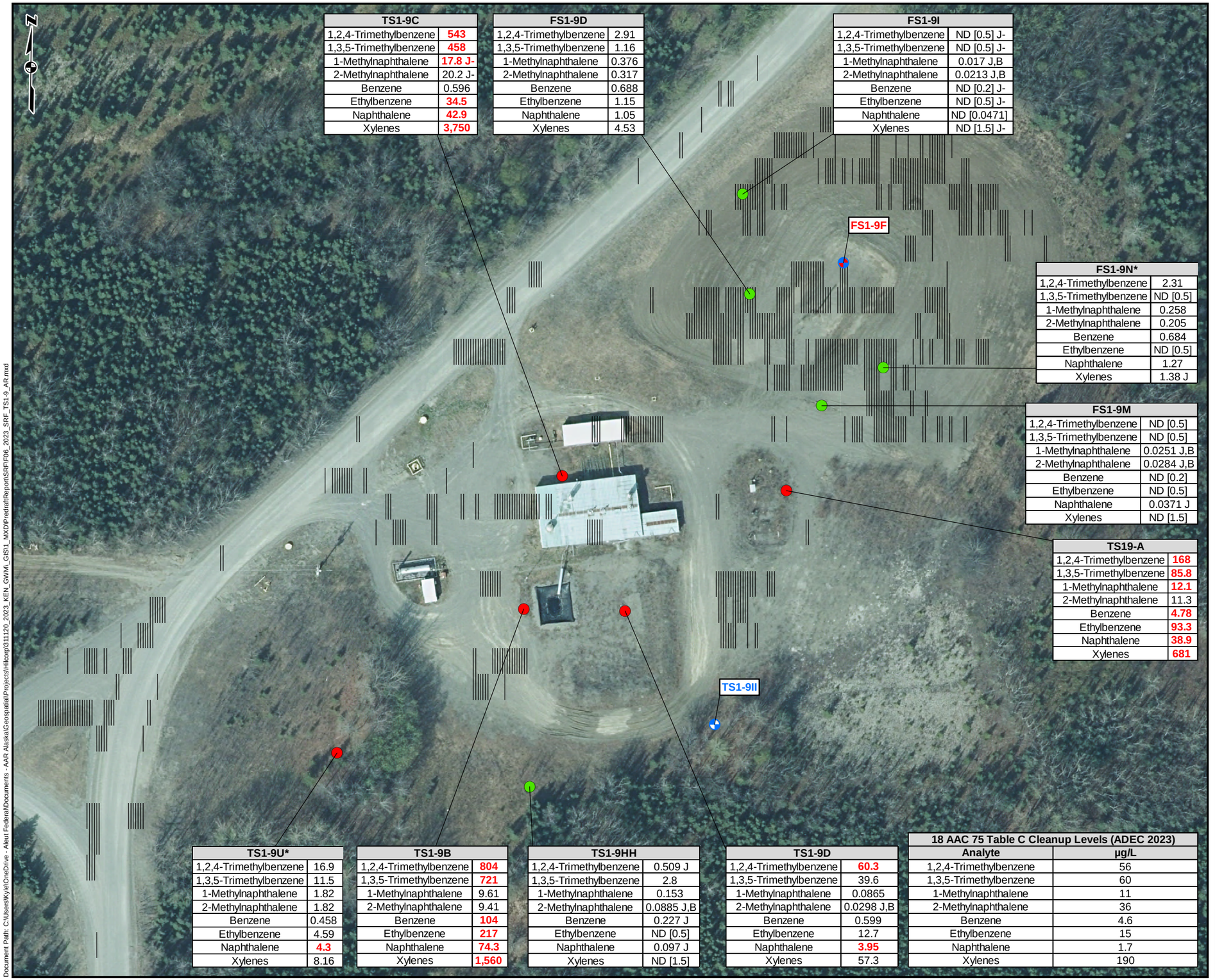
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80 40 0 80

SCALE IN FEET

PROJECT No.: 311120	DATE: 4/29/2024	FIGURE: 5
P.M.: S.H.	DRAWN: K.T.	

1 INCH



TS1-9C	
1,2,4-Trimethylbenzene	**543**
1,3,5-Trimethylbenzene	**458**
1-Methylnaphthalene	**17.8 J-**
2-Methylnaphthalene	20.2 J-
Benzene	0.596
Ethylbenzene	**34.5**
Naphthalene	**42.9**
Xylenes	**3,750**

FS1-9D	
1,2,4-Trimethylbenzene	2.91
1,3,5-Trimethylbenzene	1.16
1-Methylnaphthalene	0.376
2-Methylnaphthalene	0.317
Benzene	0.688
Ethylbenzene	1.15
Naphthalene	1.05
Xylenes	4.53

FS1-9I	
1,2,4-Trimethylbenzene	ND [0.5] J-
1,3,5-Trimethylbenzene	ND [0.5] J-
1-Methylnaphthalene	0.017 J,B
2-Methylnaphthalene	0.0213 J,B
Benzene	ND [0.2] J-
Ethylbenzene	ND [0.5] J-
Naphthalene	ND [0.0471]
Xylenes	ND [1.5] J-

FS1-9N*	
1,2,4-Trimethylbenzene	2.31
1,3,5-Trimethylbenzene	ND [0.5]
1-Methylnaphthalene	0.258
2-Methylnaphthalene	0.205
Benzene	0.684
Ethylbenzene	ND [0.5]
Naphthalene	1.27
Xylenes	1.38 J

FS1-9M	
1,2,4-Trimethylbenzene	ND [0.5]
1,3,5-Trimethylbenzene	ND [0.5]
1-Methylnaphthalene	0.0251 J,B
2-Methylnaphthalene	0.0284 J,B
Benzene	ND [0.2]
Ethylbenzene	ND [0.5]
Naphthalene	0.0371 J
Xylenes	ND [1.5]

TS19-A	
1,2,4-Trimethylbenzene	**168**
1,3,5-Trimethylbenzene	**85.8**
1-Methylnaphthalene	**12.1**
2-Methylnaphthalene	11.3
Benzene	**4.78**
Ethylbenzene	**93.3**
Naphthalene	**38.9**
Xylenes	**681**

TS1-9U*	
1,2,4-Trimethylbenzene	16.9
1,3,5-Trimethylbenzene	11.5
1-Methylnaphthalene	1.82
2-Methylnaphthalene	1.82
Benzene	0.458
Ethylbenzene	4.59
Naphthalene	**4.3**
Xylenes	8.16

TS1-9B	
1,2,4-Trimethylbenzene	**804**
1,3,5-Trimethylbenzene	**721**
1-Methylnaphthalene	9.61
2-Methylnaphthalene	9.41
Benzene	**104**
Ethylbenzene	**217**
Naphthalene	**74.3**
Xylenes	**1,560**

TS1-9HH	
1,2,4-Trimethylbenzene	0.509 J
1,3,5-Trimethylbenzene	2.8
1-Methylnaphthalene	0.153
2-Methylnaphthalene	0.0885 J,B
Benzene	0.227 J
Ethylbenzene	ND [0.5]
Naphthalene	0.097 J
Xylenes	ND [1.5]

TS1-9D	
1,2,4-Trimethylbenzene	**60.3**
1,3,5-Trimethylbenzene	39.6
1-Methylnaphthalene	0.0865
2-Methylnaphthalene	0.0298 J,B
Benzene	0.599
Ethylbenzene	12.7
Naphthalene	**3.95**
Xylenes	57.3

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
1,2,4-Trimethylbenzene	56
1,3,5-Trimethylbenzene	60
1-Methylnaphthalene	11
2-Methylnaphthalene	36
Benzene	4.6
Ethylbenzene	15
Naphthalene	1.7
Xylenes	190

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-9 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Monitoring Well Location

- Gauge Only
- All Results Below CLs
- Result(s) Exceeding CLs
- Gauged 2023; LNAPL

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
B	estimated; analyte was detected in an associated blank
CL	cleanup level
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
5. Bold indicates result exceeding ADEC Table C groundwater CL or ADEC Surface Water Standard.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, and total xylenes) and SW8270D SIM (1-methylnaphthalene and 2-methylnaphthalene).

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

80 40 0 80
SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	6
P.M.: S.H.	DRAWN: K.T.	

1 INCH



2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-27 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- Approximate Groundwater Flow Direction
- −100:0− — Groundwater Contour with Elevation (feet)

Monitoring Well Location

- Gauged 2023
- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and compared to the Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (North American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

60 30 0 60
SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	7
P.M.: S.H.	DRAWN: K.T.	

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1 INCH

FS1-27C	
1,2,4-Trimethylbenzene	ND [0.5]
1,3,5-Trimethylbenzene	ND [0.5]
1-Methylnaphthalene	ND [0.025]
2-Methylnaphthalene	ND [0.025]
Benzene	ND [0.2]
Ethylbenzene	ND [0.5]
Naphthalene	ND [0.05]
Xylenes	ND [1.5]

TS1-27K	
1,2,4-Trimethylbenzene	**1,130 J-**
1,3,5-Trimethylbenzene	**295 J-**
1-Methylnaphthalene	**34.9**
2-Methylnaphthalene	**38.1**
Benzene	**25.3 J-**
Ethylbenzene	**481 J-**
Naphthalene	**296 J-**
Xylenes	**2,080 J-**

TS1-27M	
1,2,4-Trimethylbenzene	ND [0.5]
1,3,5-Trimethylbenzene	ND [0.5]
1-Methylnaphthalene	ND [0.0255]
2-Methylnaphthalene	ND [0.0255]
Benzene	ND [0.2]
Ethylbenzene	ND [0.5]
Naphthalene	ND [0.051]
Xylenes	ND [1.5]

TS1-27G	
1,2,4-Trimethylbenzene	38.5
1,3,5-Trimethylbenzene	12.4
1-Methylnaphthalene	0.24
2-Methylnaphthalene	0.112
Benzene	3.66
Ethylbenzene	3.08
Naphthalene	**7.51**
Xylenes	123

TS1-27L	
1,2,4-Trimethylbenzene	**281**
1,3,5-Trimethylbenzene	**98.8**
1-Methylnaphthalene	**21.5**
2-Methylnaphthalene	22.5
Benzene	**4.7**
Ethylbenzene	**61.6**
Naphthalene	**63.1**
Xylenes	**246**

TS1-27J

TS1-27N

2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-27 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Monitoring Well Location

- Gauge Only
- All Results Below CLs
- Result(s) Exceeding CLs

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
5. Bold indicates result exceeding ADEC Table C groundwater CL.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, and total xylenes) and SW8270D SIM (naphthalene, 1-methylnaphthalene and 2-methylnaphthalene).

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
1,2,4-Trimethylbenzene	56
1,3,5-Trimethylbenzene	60
1-Methylnaphthalene	11
2-Methylnaphthalene	36
Benzene	4.6
Ethylbenzene	15
Naphthalene	1.7
Xylenes	190

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

60 30 0 60
SCALE IN FEET

PROJECT No.: 311120	DATE: 4/24/2024	FIGURE: 8
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM
REPORT SWANSON RIVER FIELD
KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-33 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- Approximate Groundwater Flow Direction
- 100.0 — Groundwater Contour with Elevation (feet)

Monitoring Well Location

- Scheduled for Sampling 2023, Destroyed
- Gauged 2023
- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and compared to the Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (North American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.

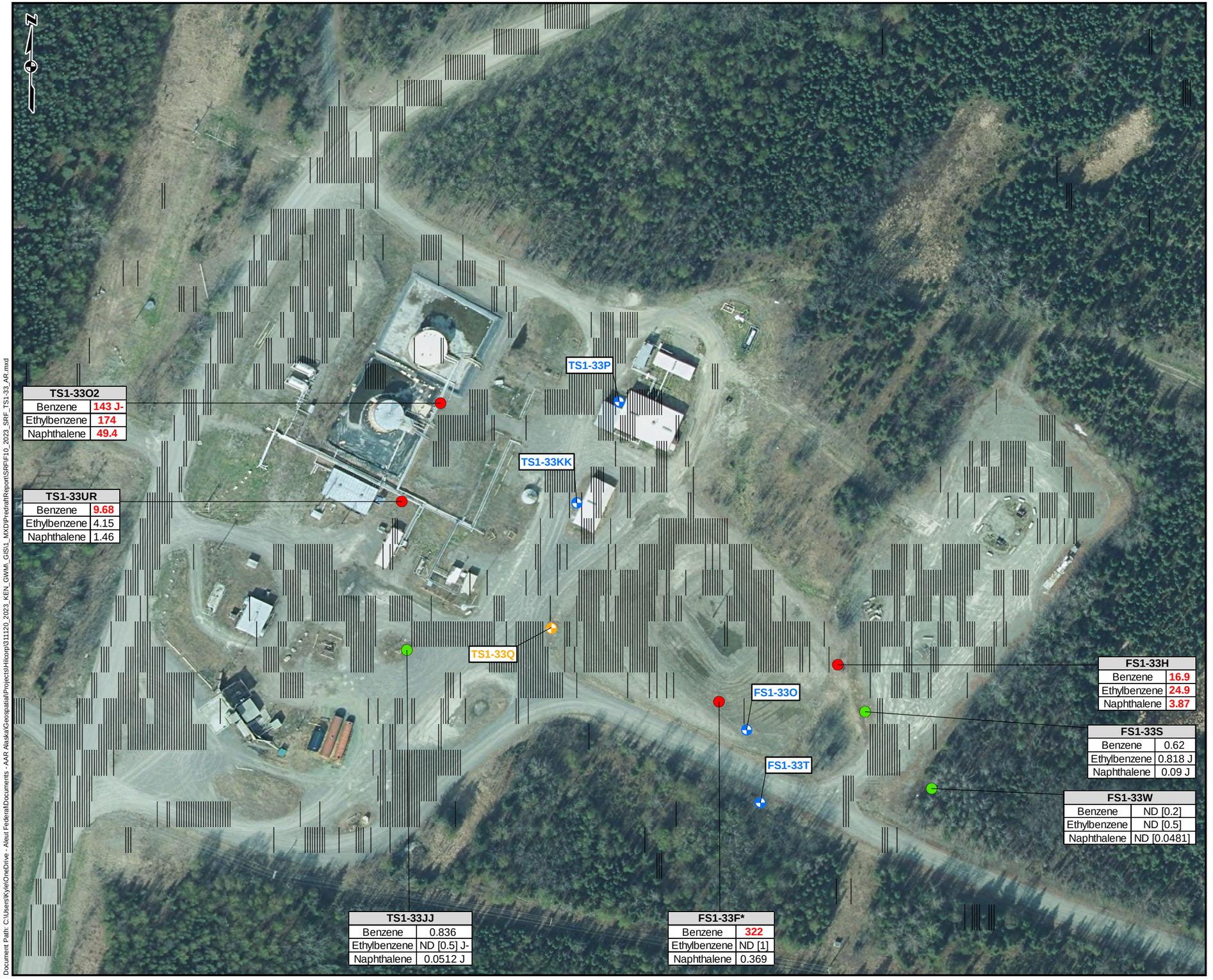
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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

100 50 0 100
SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	9
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 1-33 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Monitoring Well Location

- Scheduled for Sampling 2023, Destroyed
- Gauge Only
- All Results Below CLs
- Result(s) Exceeding CLs

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
5. Bold indicates result exceeding ADEC Table C groundwater CL.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene [TS1-33UR only] and total xylenes) and SW8270D SIM (naphthalene [FS1-33F, FS1-33H, FS1-33S, TS1-33O2, and TS1-33Q] and 1-methylnaphthalene).

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
Benzene	4.6
Ethylbenzene	15
Naphthalene	1.7

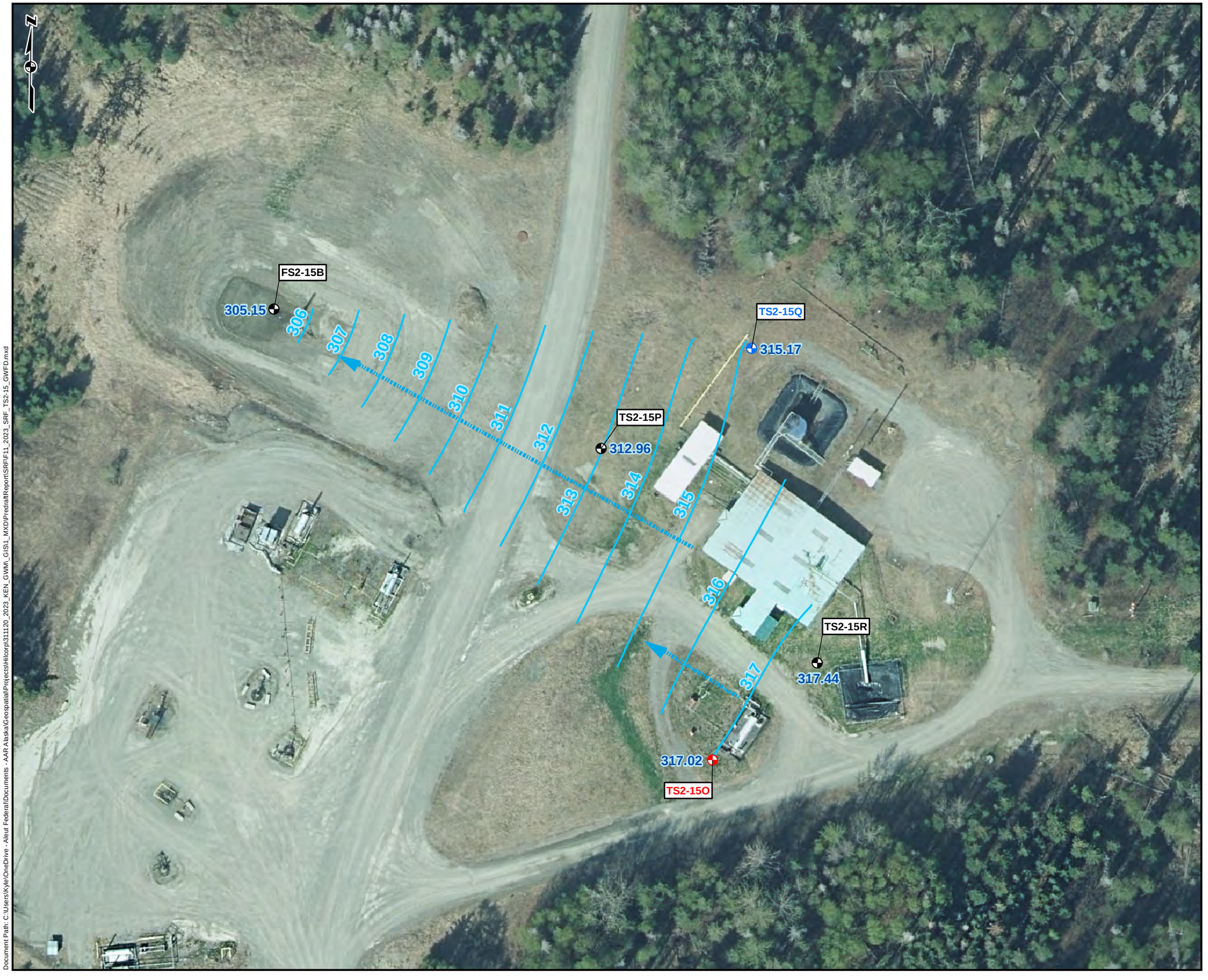
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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

100 50 0 100 SCALE IN FEET

PROJECT No.: 311120	DATE: 4/24/2024	FIGURE: 10
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 2-15 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- Approximate Groundwater Flow Direction
- 100:0 — Groundwater Contour with Elevation (feet)

Monitoring Well Location

- Gauged 2023
- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and compared to the Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (North American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.

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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET

HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

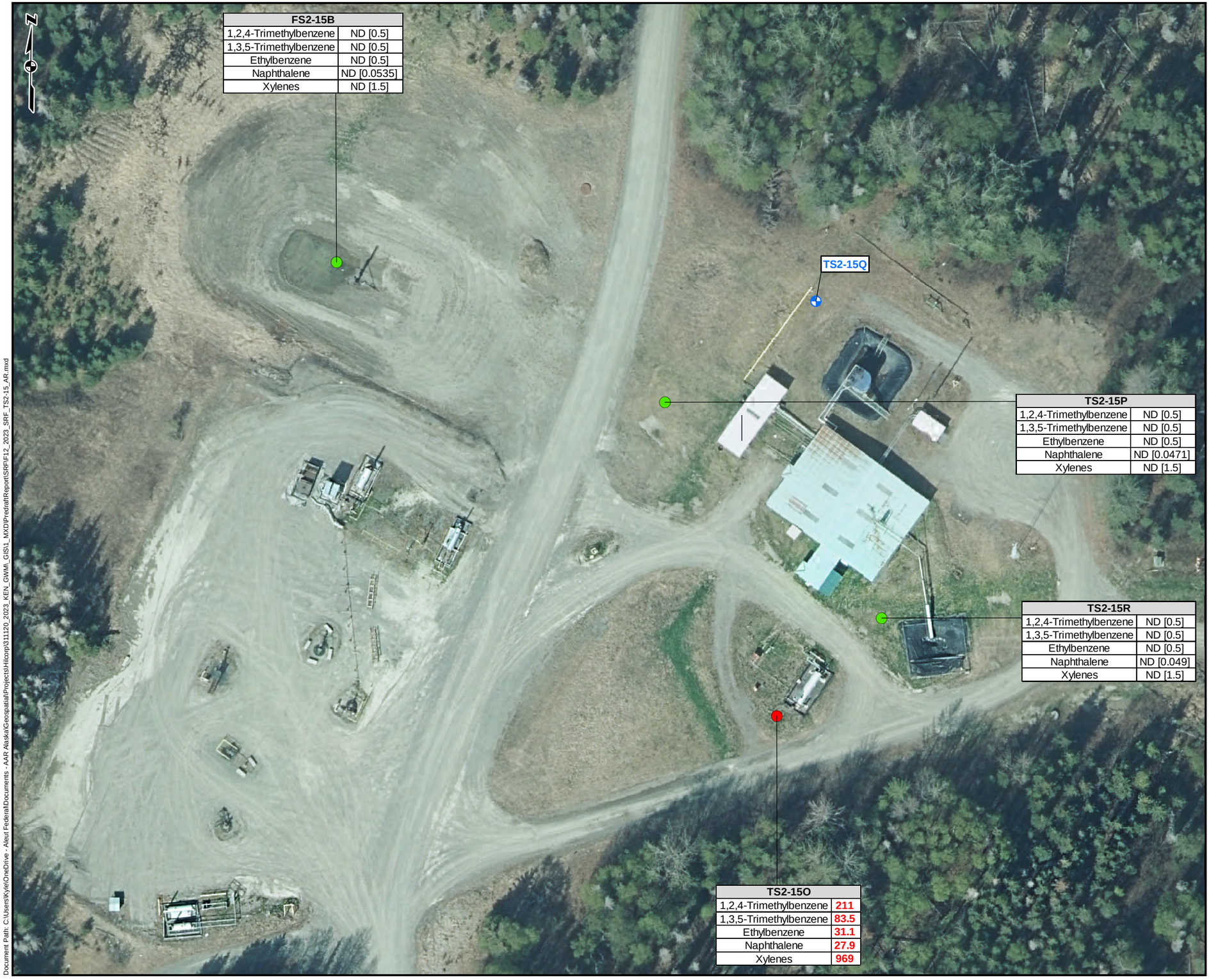
60 30 0 60

SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	11
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 2-15 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Monitoring Well Location

- Gauge Only
- All Results Below CLs
- Result(s) Exceeding CLs

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presentedfor analytes exceeding the CL in one or more monitoring wells.. See Appendix E for complete analytical results.
5. Bold indicates result exceeding ADEC Table C groundwater CL.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, ethylbenzene, and total xylenes) and SW8270D SIM (naphthalene).

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
1,2,4-Trimethylbenzene	56
1,3,5-Trimethylbenzene	60
Ethylbenzene	15
Naphthalene	1.7
Xylenes	190

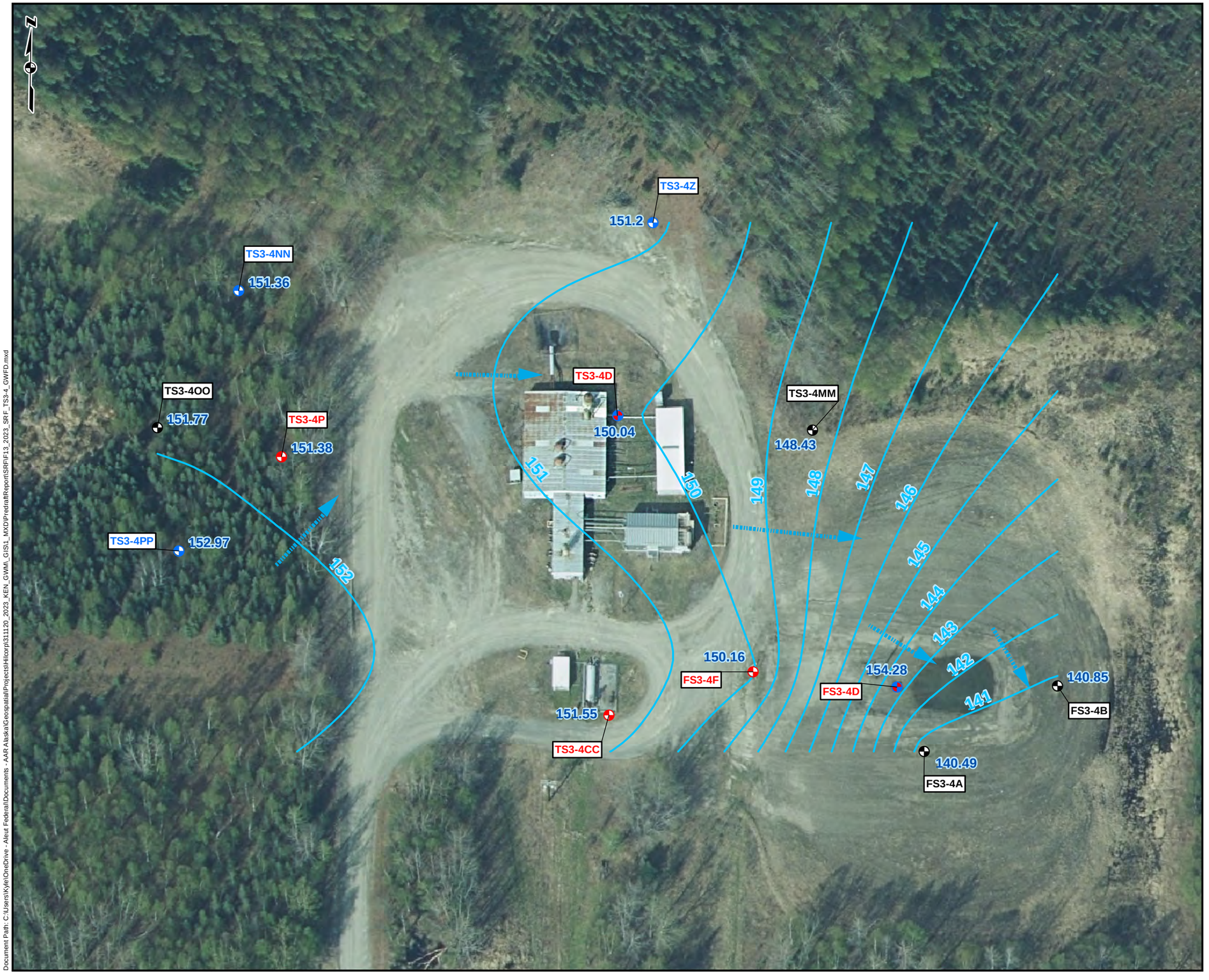
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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

60 30 0 60
SCALE IN FEET

PROJECT No.: 311120	DATE: 4/23/2024	FIGURE: 12
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM
REPORT SWANSON RIVER FIELD
KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 3-4 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- Approximate Groundwater Flow Direction
- –100.0– — Groundwater Contour with Elevation (feet)

Monitoring Well Location

- Gauged 2023
- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance
- Gauged 2023; LNAPL detected in 2023

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and compared to the Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (Nort h American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.
7. Monitoring well FS3-4D was not used in the groundwater model because groundwater could not be measured due to more than 1 foot of light nonaqueous phase liquid present at the time of gauging.

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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

60 30 0 60
SCALE IN FEET

PROJECT No.: 311120	DATE: 4/29/2024	FIGURE: 13
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM
REPORT SWANSON RIVER FIELD
KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 3-4 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Monitoring Well Location

- Gauge Only
- All Results Below CLs
- Result(s) Exceeding CLs
- Gauged 2023; LNAPL Present

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
5. **Bold** indicates result exceeding ADEC Table C groundwater CL or ADEC Surface Water Standard.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene [TS3-4D only], and total xylenes) and SW8270D SIM (naphthalene [TS3-4CC, TS3-4P, FS3-4A, and FS3-4F]).

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
Benzene	4.6
Ethylbenzene	15
Naphthalene	1.7

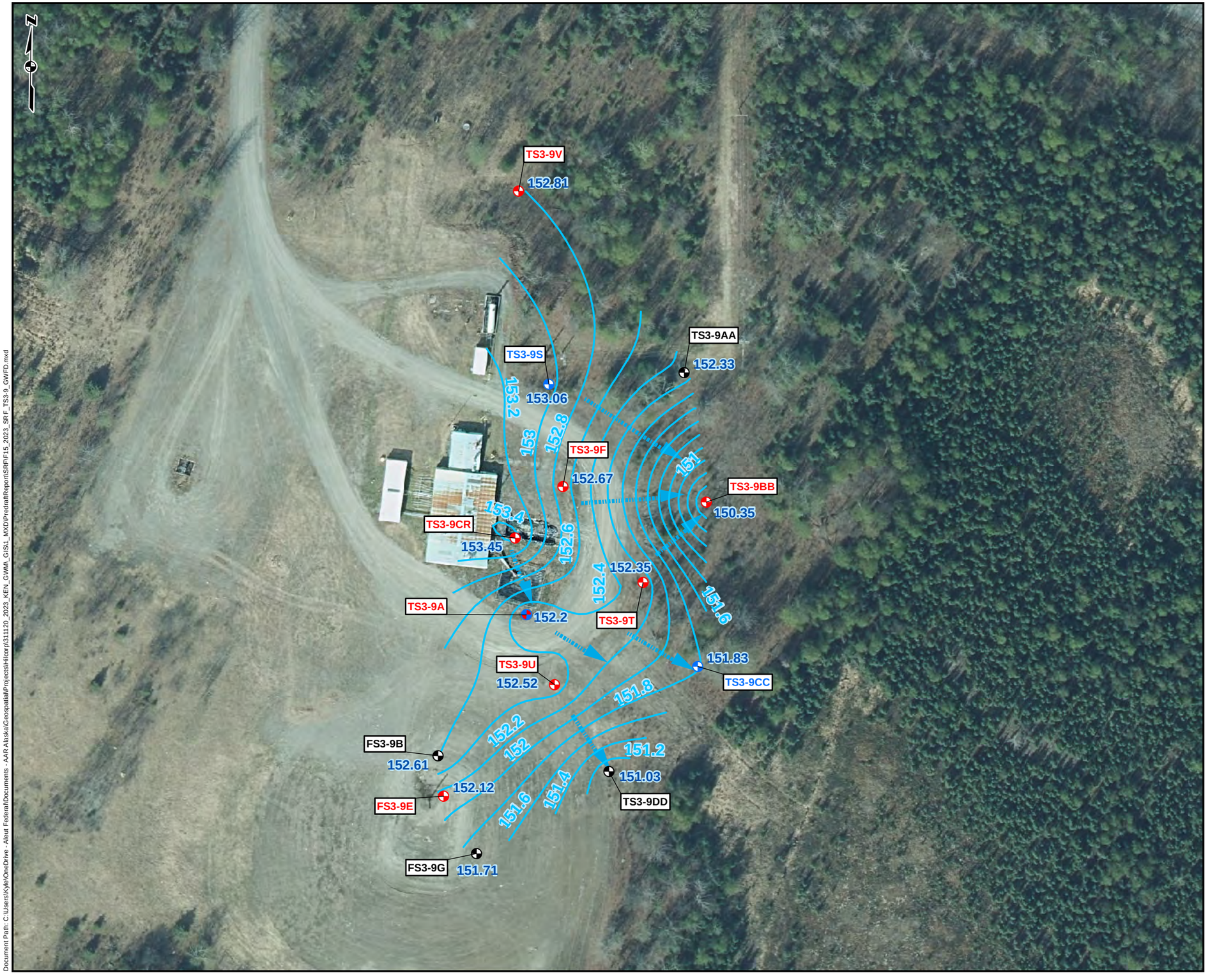
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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

80 40 0 80
SCALE IN FEET

PROJECT No.: 311120	DATE: 4/24/2024	FIGURE: 14
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM
REPORT SWANSON RIVER FIELD
KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 3-9 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- Approximate Groundwater Flow Direction
- —100.0— Groundwater Contour with Elevation (feet)

Monitoring Well Location

- Gauged 2023
- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance
- Gauged 2023; LNAPL detected in 2023

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and compared to the Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (North American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.
7. Water level at monitoring well TS3-9A was adjusted for the approximate specific gravity (0.84) of the 0.14 feet of light non-aqueous phase liquid measured during gauging activities.

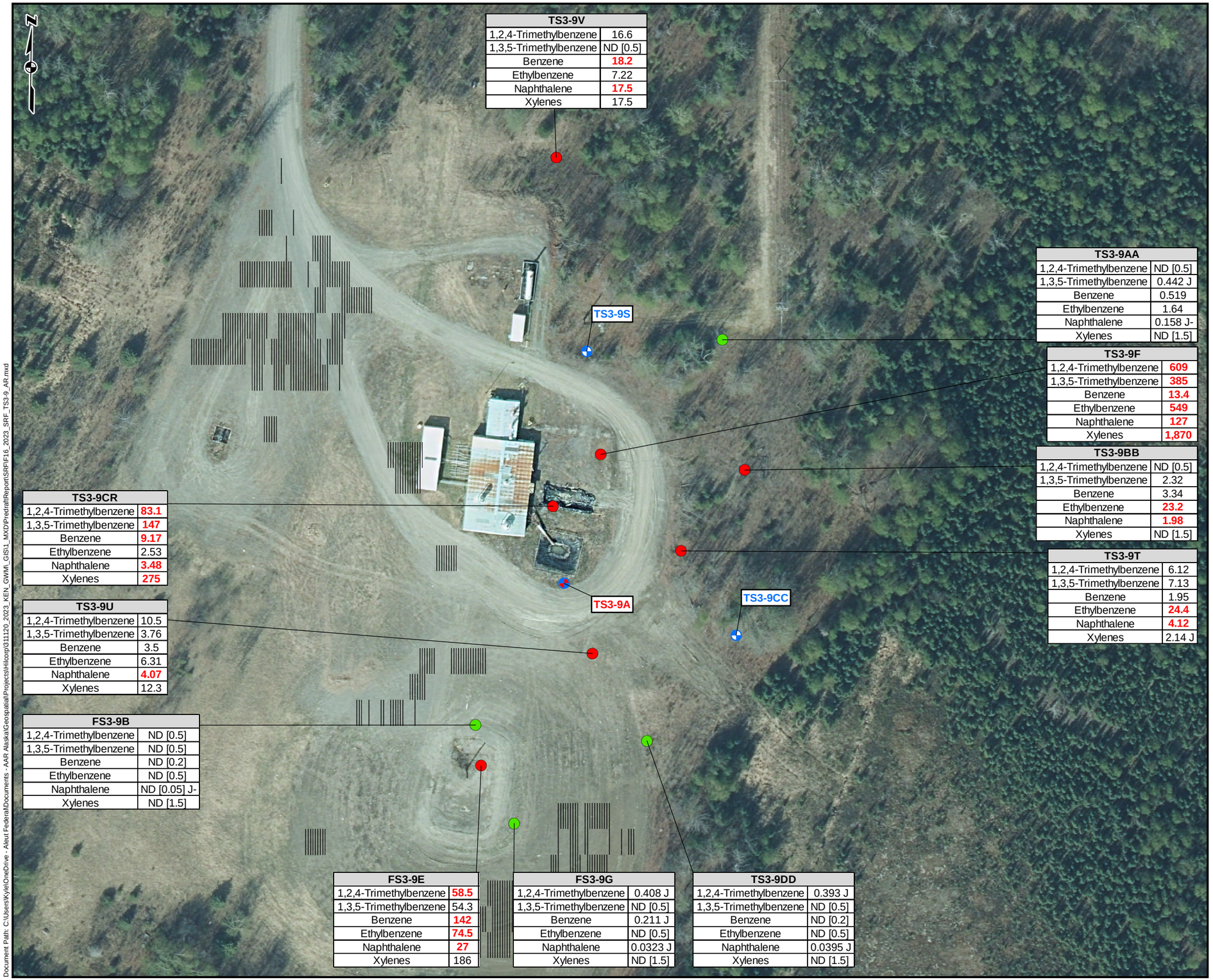
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ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

80 40 0 80
SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	15
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD TANK SETTING 3-9 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Monitoring Well Location

- Gauge Only
- All Results Below CLs
- Result(s) Exceeding CLs
- Gauged 2023; LNAPL

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
5. Bold indicates result exceeding ADEC Table C groundwater CL.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by method SW8260D (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, naphthalene, and total xylenes).

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
1,2,4-Trimethylbenzene	56
1,3,5-Trimethylbenzene	60
Benzene	4.6
Ethylbenzene	15
Naphthalene	1.7
Xylenes	190

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

80 40 0 80
SCALE IN FEET

PROJECT No.: 311120	DATE: 4/24/2024	FIGURE: 16
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD SCU 23B-03 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- Approximate Groundwater Flow Direction
- 100.0 — Groundwater Contour with Elevation (feet)

Monitoring Well Location

- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and compared to the Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (North American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET

HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

60 30 0 60

SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	17
P.M.: S.H.	DRAWN: K.T.	

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MW-03	
1,2,4-Trimethylbenzene	ND [0.5]
1,3,5-Trimethylbenzene	ND [0.5]
Benzo(a)anthracene	**0.576**
Benzo(a)pyrene	**1.5**
Dibenz(a,h)anthracene	**3.52**
Diesel Range Organics	309 J
Indeno(1,2,3-cd)pyrene	**3.14**
Naphthalene	0.0369 J

MW-02	
1,2,4-Trimethylbenzene	ND [0.5]
1,3,5-Trimethylbenzene	ND [0.5]
Benzo(a)anthracene	ND [0.025]
Benzo(a)pyrene	ND [0.01]
Dibenz(a,h)anthracene	ND [0.01]
DRO	286 J
Indeno(1,2,3-cd)pyrene	ND [0.025]
Naphthalene	ND [0.05]

MW-01*	
1,2,4-Trimethylbenzene	**106**
1,3,5-Trimethylbenzene	**66.8**
Benzo(a)anthracene	ND [0.0261]
Benzo(a)pyrene	ND [0.0104]
Dibenz(a,h)anthracene	0.0399 J
DRO	**2,880 J-**
Indeno(1,2,3-cd)pyrene	0.0403 J
Naphthalene	**15.8**

2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD SCU 23B-03 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Monitoring Well Location

- All Results Below CLs
- Result(s) Exceeding CLs

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
DRO	diesel range organics
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
5. Bold indicates result exceeding ADEC Table C groundwater CL or ADEC Surface Water Standard.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, ethylbenzene, and total xylenes) and SW8270D SIM (naphthalene).

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
1,2,4-Trimethylbenzene	56
1,3,5-Trimethylbenzene	60
Benzo(a)anthracene	0.3
Benzo(a)pyrene	0.25
Dibenz(a,h)anthracene	0.25
Diesel Range Organics	1,500
Indeno(1,2,3-cd)pyrene	2.5
Naphthalene	1.7

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

60 30 0 60 SCALE IN FEET

PROJECT No.:	DATE:	FIGURE:
311120	4/24/2024	18
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD SCU 312-09 WELL LOCATIONS AND GROUNDWATER FLOW DIRECTION

Legend

- XX.XX — Groundwater Elevation (feet)
- Approximate Groundwater Flow Direction
- –100.0– — Groundwater Contour with Elevation (feet)
- Structure Location

Monitoring Well Location

- Gauged and Sampled 2023; No Exceedance
- Gauged and Sampled 2023; Exceedance

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented groundwater results are based on findings from 2023 activities and compared to the Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels (ADEC 2023).
5. Groundwater elevations are expressed in feet (North American Vertical Datum of 1988). Map in North American Datum of 1983 (2011) Alaska State Plane Zone 4.
6. Groundwater contours were generated with Surfer 16 software using kriging.

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET
HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

40 20 0 40
SCALE IN FEET

PROJECT No.: 311120	DATE: 4/24/2024	FIGURE: 19
P.M.: S.H.	DRAWN: K.T.	

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2023 GROUNDWATER MONITORING PROGRAM REPORT SWANSON RIVER FIELD

KENAI PENINSULA, ALASKA

SWANSON RIVER FIELD SCU 312-09 WELL LOCATIONS AND ANALYTICAL RESULTS

Legend

Structure Location

Monitoring Well Location

All Results Below CLs

Result(s) Exceeding CLs

Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
J (±)	estimated value
ND	non-detect, value shown in brackets is the limit of quantitation

Notes

1. For conceptual purposes only. All viable wells were surveyed in 2023. All other site feature locations are approximate.
2. Imagery acquired from Quantum Spatial Inc. Imagery was taken on May 18 and July 15, 2021.
3. Map produced using ESRI ArcMap v. 10.8.
4. All presented analytical results are based on findings from 2023 activities and compared to ADEC Table C groundwater CLs (ADEC 2023). Groundwater analytical results are presented for analytes exceeding the CL in one or more monitoring wells. See Appendix E for complete analytical results.
5. Bold indicates result exceeding ADEC Table C groundwater CL or ADEC Surface Water Standard.
6. All results presented in µg/L.
7. Duplicate samples collected at wells indicated by (*). The highest detected result is reported.
8. Results are reported by methods SW8260D (1,2,4-trimethylbenzene, ethylbenzene, and total xylenes) and SW8270D SIM (naphthalene).

18 AAC 75 Table C Cleanup Levels (ADEC 2023)	
Analyte	**µg/L**
Dibenz(a,h)anthracene	0.25

ALEUT

ALASKA STATE PLANE COORDINATE SYSTEM ZONE 4, U.S. SURVEY FEET

HORIZONTAL DATUM: NAD83 (2011) | VERTICAL DATUM: NAVD88

60 30 0 60

SCALE IN FEET

PROJECT No.: 311120	DATE: 4/24/2024	FIGURE: 20
P.M.: S.H.	DRAWN: K.T.	

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APPENDIX B

DATA TABLES

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Table B1-1: SRF Tank Setting 1-4 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
TS 1-4	FS1-4E	6/14/2023	8.00	-	-	17.40	141.28	133.28	No
	FS1-4H	6/14/2023	12.21	-	-	20.28	140.24	128.03	No
	FS1-4I	6/14/2023	7.25	-	-	20.20	134.54	127.29	No
	TS1-4DD	6/14/2023	4.36	-	-	16.49	136.99	132.63	No
	TS1-4EE	6/14/2023	5.10	-	-	15.62	137.14	132.04	No
	TS1-4F	6/14/2023	9.28	-	Trace	24.22	148.70	139.42	No
	TS1-4GR	6/14/2023	9.60	-	-	20.35	151.71	142.11	No
	TS1-4J	6/14/2023	8.32	-	Trace	-	155.38	147.06	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

Abbreviaitons:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

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Table B1-2: SRF Tank Setting 1-4 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260							SW8270 SIM		SW8260/SW8270 SIM		SW8015
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**Isopropylbenzene**	**1-Methylnaphthalene**	**2-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**	**Ethylene Glycol**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**450**	**11**	**36**	**1.7**	**--**	**40000**
TS1-4CC	TS1-4CC	11/16/2010		ND [0.5]	ND [0.5]	ND [0.5]	ND [1]	--	--	--	**--**	**--**	**--**	--	--
	TS1-4CC-0914	9/10/2014		ND [0.4]	ND [1]	0.32 J	5.08 J	--	--	--	**--**	**--**	**--**	--	--
	Gauged only	9/22/2017		--	--	--	--	--	--	**--**	--	--	--	--	--
	Obstruction - not gauged	6/29/2019		--	--	--	--	--	--	**--**	--	--	--	--	--
	Decommissioned	6/26/2021		*Decommissioned in 2021.*											
TS1-4DD	TS1-4DD	11/16/2010		ND [0.5]	ND [0.5]	ND [0.5]	ND [1]	**--**	--	--	--	--	--	--	--
	TS1-4DD-0914	9/10/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	**--**	--	--	--	--	**--**	--	--
	SRTS1-4DD-1015	10/7/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	**--**	--	--	--	--	**--**	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2017.*											
TS1-4EE	TS1-4EE	11/16/2010		ND [0.5]	ND [0.5]	ND [0.5]	ND [1]	**--**	--	--	--	--	--	--	--
	TS1-4EE-0914	9/10/2014		ND [0.4]	ND [1]	0.77 J	11.96	**--**	--	--	--	--	**--**	--	--
	SRTS1-4EE-1015	10/7/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	**--**	--	--	--	--	**--**	--	11000
	SRF14-TS14EE-0917	9/22/2017	X	ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [1]	ND [0.05]	ND [0.05]	ND [0.1]	All other results ND.	ND [10000] H
	SRF14-TS14EE-0719	7/7/2019		ND [0.4] J-	ND [1] J-	ND [1] J-	ND [3] J-	ND [1] J-	ND [1] J-	ND [1] J-	ND [0.0472]	ND [0.0472]	ND [0.0943]	All other results ND.	ND [10000]
	SRF14-TS14EE-0621	6/26/2021		ND [0.4]	--	ND [1]	ND [3]	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.0261]	ND [0.0261]	ND [0.0520]	All other results ND.	19000
	SRF14-TS14EE-23	6/17/2023		ND [0.200] J-	--	ND [0.500] J-	ND [1.50] J-	ND [0.500] J-	ND [0.500] J-	ND [0.500] J-	ND [0.0255]	ND [0.0255]	ND [0.0510]	All other results ND.	ND [10000]
TS1-4F	TS1-4F	11/16/2010		**31.2**	12.5	**206**	**2900**	--	--	--	--	--	--	--	--
	TS1-4F-0914	9/10/2014	X	**27**	4.8 J	**172**	**2499**	--	--	--	--	--	--	--	--
	SRTS1-4F-1015	10/7/2015	X	**25**	ND [50]	**197**	**2257**	--	--	--	--	--	--	--	--
	LNAPL present	9/22/2017		--	--	--	--	--	--	--	--	--	--	--	--
	LNAPL present	6/29/2019		--	--	--	--	--	--	--	--	--	--	--	--
	SRF14-TS14F-0621	6/28/2021	X	**13.3 J**	ND [100]	**137**	**968**	**5090**	**3620**	**1110**	9.67 J-	10.1 J-	**75.7 J**	All results ND or below CLs.	--
	SRF14-TS14F-23	6/18/2023		15.0 J	--	149	**1070**	**5820**	**4100**	**1300**	**15.1**	16.6	**90.3**	All results ND or below CLs.	--
TS1-4G	TS1-4G	10/10/2017		*Obstruction in well. Decommissioned in 2017.*											
TS1-4GR	SRF14-TS14GR-1017	10/10/2017	X	**38.5 J-**	2.41 J-	**138 J-**	**199**	**354 J-**	**267 J-**	112 J-	**21.4**	23.1	**70.2 J-**	All results ND or below CLs.[3]	**24000000**
	SRF14-TS14GR-0719	7/7/2019	X	**66.2**	3.8	**149**	**233**	**370**	**118**	130	**35.9**	**41.1**	**606**	All results ND or below CLs.	**34000000**
	SRF14-TS14GR-0621	6/26/2021	X	**48.7 J-**	--	**211 J-**	**438 J-**	**850 J-**	**497 J-**	182 J-	**45.6**	**53.1**	**79.5**	All results ND or below CLs.	**3300000**
	SRF14-TS14GR-23	6/18/2023	X	**19.0**	--	**146**	**380**	**711**	**390 J**	109	**44.2**	**54.0**	**117**	All results ND or below CLs.	**64000**
TS1-4J	TS1-4J	12/26/2010		**758**	21.6	**50.2**	**247**	**--**	--	**--**	**--**	**--**	**--**	--	--
	TS1-4J-0914	9/10/2014		**698**	ND [10]	**131**	**343.1**	**--**	--	**--**	--	**--**	**--**	--	--
	LNAPL present	10/7/2015		--	--	--	--	**--**	**--**	**--**	--	--	--	--	--
	LNAPL present	9/22/2017		--	--	--	--	**--**	**--**	**--**	--	--	--	--	--
	LNAPL present	6/29/2019		--	--	--	--	**--**	**--**	**--**	--	--	--	--	--
	SRF14-TS14J-0621	6/26/2021		**535**	0.912 J	**148**	**303**	**89.0**	41.7	7.12	2.89	2.29	**103**	All results ND or below CLs.	--
	LNAPL present	6/14/2023		--	--	--	--	--	**--**	--	--	--	--	--	**--**
FS1-4H	FS1-4H	12/26/2010		**8.18**	8.52	**24.2**	ND [1.5]	**--**	--	--	--	--	--	--	--
	FS1-4H-0914	9/10/2014		2.65	ND [1]	2.05	11.89	**--**	--	--	--	--	**--**	--	--
	SRFS1-4H-1015	10/8/2015		3.21	0.48 J	6.2	3.44	**--**	--	--	--	--	**--**	--	--
	SRF14-FS14H-0917	9/22/2017		**8.52**	1.13	**46.6**	7	5.27	8.11	12.2	0.828	0.156	**1.79**	All results ND or below CLs.	--
	SRF14-FS14H-0719	7/6/2019		**5.03**	0.534 J	8.29	4.52	3.33	6.44	5.87	ND [0.0472]	ND [0.0472]	**5.51**	All results ND or below CLs.	--
	SRF14-FS14H-0621	6/26/2021		3.95	--	2.37	ND [3]	0.607 J	1.97	2.38	1.27	0.241	0.269	All results ND or below CLs.	--
	SRF14-FS14H-23	6/17/2023		**5.09**	--	0.972 J	ND [1.50]	1.02	1.82	1.40	0.200 J-	0.0628 J-	0.460 J	All results ND or below CLs.	--
FS1-4E	FS1-4E	12/26/2010		**44.9**	1.22	**38.3**	48.6	**--**	--	--	--	**--**	**--**	--	--
	FS1-4E-0914	9/10/2014		**25.9**	ND [1]	**42.5**	90.01 J	**--**	--	--	--	**--**	**--**	--	--
	SRFS1-4E-1015	10/8/2015		**36.4**	ND [5]	**45.8**	77.45	**--**	--	--	--	**--**	**--**	--	--
	SRF14-FS14E-0917	9/22/2017		**33**	0.35 J	**42.4**	70	53.8	18.5	9.64	7.65	5.64	**60.2**	All results ND or below CLs.	--
	SRF14-FS14E-0719	7/6/2019		**44**	0.429 J	**71.2**	161	**95.6**	31.2	14.4	**20**	20.6	**107**	All results ND or below CLs.	--
	SRF14-FS14E-0621	6/26/2021		**42.4**	--	**74.0**	147	**100**	34.0	19.8	**17.1**	17.9	**51.5**	All results ND or below CLs.	--
	SRF14-FS14E-23	6/17/2023		**30.8**	**--**	**75.2**	176	**106**	36.3	17.0	**12.6**	8.87	**116**	All results ND or below CLs.	--

Table B1-2: SRF Tank Setting 1-4 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

Notes:
All results in µg/L.
Bold indicates that the result exceeds the ADEC groundwater cleanup level.
Historical results for samples collected prior to 2010 can be found in previous monitoring reports.
Non-detect results from 2021 and later are reported with the LOD shown in brackets.
Method SW8021B was used for BTEX analytes for samples dated 11/16/2010 and 12/26/2010.
[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).
[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.
[3] Results for several PAH compounds were ND with LOQs that exceeded the cleanup levels due to dilutions required for high concentrations of non-target analytes
[ ] - LOD. In some cases the LOQ/PQL was reported for historical ND results.
-- Not analyzed.

Data Flags:

H	Result is an estimated value due to a holding time exceedance.
J (±)	Result is an estimated value biased high/low/indeterminate.

Definitions:

µg/L	microgram(s) per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
ID	Identification
LNAPL	light non-aqueous phase liquid
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect
PAH	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
SIM	selected ion monitoring
VOC	volatile organic compound

Table B1-3: SRF TS1-4 Historic Product Recovery
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			PRODUCT RECOVERY METHOD	PRODUCT REMOVED (gal)	SORBENT SOCK	Total Cumulative Product Removed[2] (gal)
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)				
Swanson River Field Tank Setting 1-4	TS1-4F	10/7/2015	10.05	--	--	-	-	Replaced	0.00
		9/22/2017	LNAPL - depth to product not noted at time of gauging			-	-	Replaced	
		6/29/2019	11.15	11.14	0.01	-	-	Replaced	
		6/26/2021	10.62	10.62	Trace	-	-	Replaced	
		6/14/2023	9.28	-	Trace	-	-	Turned over	
	TS1-4J	10/7/2015	7.58	7.55	0.03	-	-	Replaced	0.05
		9/22/2017	LNAPL - depth to product not noted at time of gauging			Bailer[1]	0.05	Replaced	
		6/29/2019	10.2	--	--	-	-	Replaced	
		6/26/2021	9.54	9.53	Trace	-	-	Replaced	
		6/14/2023	8.32	-	Trace	-	-	Replaced	

Notes:

- Not measured/not applicable/unknown

[1] 2-inch by 3-foot polyethylene bailer, tied and left inside of steel monument.

[2] Cumulative total since 2017.

Abbreviations:

BTOC below top of casing
gal gallons
ID identification number

Table B2-1: SRF Tank Setting 1-9 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
TS 1-9	FS1-9D	6/15/2023	12.88	-	-	19.91	129.12	116.24	No
	FS1-9F [2]	6/14/2023	11.87	11.53	0.34	-	127.72	116.14	Yes
	FS1-9I	6/15/2023	12.56	-	-	19.66	128.79	116.23	No
	FS1-9M	6/15/2023	19.45	-	-	25.94	135.64	116.19	Yes
	FS1-9N	6/15/2023	15.87	-	-	25.02	132.09	116.22	No
	TS1-9A	6/15/2023	21.57	-	Trace	29.61	137.78	116.21	Yes
	TS1-9B	6/15/2023	21.19	-	-	26.40	137.19	116.00	No
	TS1-9C	6/15/2023	21.45	-	-	27.00	137.70	116.25	No
	TS1-9D	6/15/2023	20.76	-	-	27.40	136.87	116.11	No
	TS1-9HH	6/15/2023	19.82	-	-	30.60	135.81	115.99	Yes
	TS1-9II	6/15/2023	20.26	-	-	30.71	136.39	116.13	No
	TS1-9U	6/15/2023	22.72	-	-	29.53	138.65	115.93	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

[2] Potentiometric surface elevations are corrected for LNAPL thickness assuming a specific gravity of 0.84 g/cm^3 based upon Swanson River Crude having an API gravity of 37 degrees.

Abbreviaitons:

API	American Petroleum Institute
BTOC	below top of casing
g/cm^3	grams per cubic centimeter
ID	identification number
LNAPL	light non-aqueous phase liquid
NAVD88	North American Vertical Datum of 1988

Table B2-2: SRF Tank Setting 1-9 Groundwater Analytical Results
2019 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM		SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**2-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**36**	**1.7**	**--**
TS1-9A	TS1-9A	12/26/2010	X	**19.6**	53.6	**278**	**1660**	--	--	--	--	--	--
	TS1-9A-0914	9/8/2014		**7.77**	50	**175**	**1392**	--	--	--	--	--	--
	SRTS1-9A-1015	10/6/2015		**9.91**	43.5	**152**	**1197**	--	--	--	--	--	--
	SRF19-TS19A-0917	9/24/2017		**6.4**	17.3 J	**117**	**890**	**108**	**63.3**	10.2 J	4.64 J	**29.5**	[3] All results ND or below CLs.
	SRF19-TS19AZ-0917	9/24/2017	X	**5.6**	9.9 J	**100**	**783**	**104**	**60.9**	**13.5**	9.74 J	**32**	[3] All results ND or below CLs.
	LNAPL present	6/27/2019		--	--	--	--	--	--	--	--	--	--
	LNAPL present	6/24/2021		--	--	--	--	--	--	--	--	--	--
	SRF19-TS19A-23	6/19/2023		**4.78**	1.49	**93.3**	**681**	**168**	**85.8**	**12.1**	11.3	**38.9**	All results ND or below CLs.
TS1-9B	TS1-9B	12/26/2010	X	**444**	24	**286**	**6000**	--	--	**--**	--	**--**	--
	LNAPL present	9/8/2014		--	--	--	--	**--**	--	--	--	--	--
	SRTS1-9B-1015	10/6/2015		**306**	ND [5]	**466**	**2637**	--	--	**--**	**--**	**--**	--
	SRTS1-9B9-1015	10/6/2015	X	**315**	ND [5]	**449**	**2587**	--	--	**--**	**--**	**--**	--
	LNAPL present	9/23/2017		--	--	--	--	**--**	--	--	--	--	--
	LNAPL present	6/27/2019		--	--	--	--	**--**	--	--	--	--	--
	LNAPL present	6/27/2021		--	--	--	--	**--**	--	--	--	--	--
	SRF19-TS19B-23	6/19/2023		**104**	5.42	**217**	**1560**	**804**	**721**	9.61	9.41	**74.3**	All results ND or below CLs.
TS1-9C	TS1-9C	12/26/2010		ND [0.5]	1.41	**29.6**	**1990**	--	--	--	--	--	--
	TS1-9C-0914	9/8/2014		ND [0.4]	16.3	**17.2**	**1840**	--	--	--	--	--	--
	SRTS1-9C-1015	10/7/2015		ND [2]	10.8	**19.2**	**2665**	--	--	--	--	--	--
	SRF19-TS19C-0917	9/24/2017		ND [0.4]	3.32	5.22	**557**	**96.3**	**74.5**	**24.2**	26.6	**24.7**	All results ND or below CLs.
	SRF19-TS19C-0719	7/6/2019		0.247 J	6.16	**22.1**	**2530**	**417**	**320**	**16.9**	19.1	**31.0**	All results ND or below CLs.
	SRF19-TS19C-0621	6/27/2021		0.434	8.47	**28.6**	**3580**	**459**	**393**	**33.1**	**36.5**	**38.7**	All results ND or below CLs.
	SRF19-TS19C-23	6/19/2023		0.596	--	**34.5**	**3750 J-**	**543**	**458**	**17.8 J-**	20.2 J-	**42.9**	All results ND or below CLs.
TS1-9D	TS1-9D	12/26/2010		**125**	3.97	**320**	**3400**	--	--	**--**	--	**--**	--
	TS1-9D-0914	9/8/2014		**34.4**	ND [1]	**293**	**1715**	--	--	**--**	--	**--**	**--**
	SRTS1-9D-1015	10/7/2015		**18.8**	ND [5]	**142**	**586**	--	--	**--**	--	**--**	**--**
	LNAPL present	9/23/2017		--	--	--	--	**--**	--	--	--	--	--
	SRF19-TS19D-0719	7/6/2019	X	**8.08**	0.359 J	**197**	**757**	**558**	**318**	**11.4**	12.7	**59.6**	All results ND or below CLs.
	SRF19-TS19D-0621	6/27/2021	X	**4.92**	ND [1]	**172**	**496**	**378**	**239**	**14.1**	14.6	**43**	All results ND or below CLs.
	SRF19-TS19D-23	6/19/2023		0.599	--	12.7	57.3	**60.3**	39.6	0.0865 J-	0.0298 J,B	**3.95**	All results ND or below CLs.
TS1-9U	TS1-9U	11/11/2010		1.08	ND [1]	10.5	28.5	--	--	--	--	--	**--**
	TS1-9U-0914	9/7/2014		4.38	0.35 J	5.64	14.75	--	--	--	--	**--**	**--**
	SRTS1-9U-1015	10/6/2015		2.8	ND [5]	3.25 J	9.35 J	--	--	--	--	**--**	**--**
	Gauged only	9/23/2017		--	--	--	--	**--**	--	--	--	--	--
	SRF19-TS19U-0719	7/5/2019		1.48	0.357 J	5.56	10.4	**64.2**	39.8	**11.5**	12.6	**11.8**	All results ND or below CLs.
	Gauged only	6/24/2021		--	--	--	--	**--**	--	--	--	--	--
	SRF19-TS19U-23	6/18/2023	X	0.458	ND [0.500]	4.59	8.16	16.9	11.5	1.82	1.82	**4.3**	All results ND or below CLs.
TS1-9HH	TS1-9HH	11/11/2010		1.02	ND [1]	ND [1]	6.39	--	--	--	--	--	**--**
	TS1-9HH-0914	9/7/2014		0.36 J	ND [1]	ND [1]	ND [2]	--	--	--	--	**--**	**--**
	SRTS1-9HH-1015	10/6/2015		0.49	ND [1]	ND [1]	ND [3]	--	--	--	--	--	**--**
	Gauged only	9/23/2017		--	--	--	--	**--**	--	--	--	--	--
	SRF19-TS19HH-0719	7/5/2019		0.257 J	ND [1]	ND [1]	ND [3]	1.63	4.4	0.249	0.242	0.641 J	All results ND or below CLs.
	Gauged only	6/24/2021		--	--	--	--	--	--	--	--	--	--
	SRF19-TS19HH-23	6/18/2023		0.227 J	ND [0.500]	ND [0.500]	ND [1.50]	0.509 J	2.8	0.153	0.0885 B	0.0970 J	All results ND or below CLs.

Table B2-2: SRF Tank Setting 1-9 Groundwater Analytical Results
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All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM		SW8260/SW8270 SIM	
Well ID	Sample ID	Date		Benzene	Toluene	Ethylbenzene	Xylenes (Total)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Petroleum-Related VOCs/PAHs[2]
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**36**	**1.7**	**--**
TS1-9II	TS1-9II	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	TS1-9II-0914	9/7/2014		ND [0.4]	ND [1]	0.31 J	2.21 J	--	--	--	--	--	--
	SRTS1-9II-1015	10/6/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	Gauged only	6/15/2023		*Gauged biennially since 2017.*									
FS1-9D	FSI-9D	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	FSI-9D-0914	9/8/2014		ND [0.4]	1.77	0.54 J	5.11 J	--	--	--	--	--	--
	SRFS1-9D-1015	10/7/2015		ND [0.4]	ND [1]	ND [1]	2 J	--	--	--	--	--	--
	Gauged only	9/23/2017		--	--	--	--	--	--	--	--	--	--
	SRF19-FS19D-0719	7/5/2019		0.442	0.391 J	0.557 J	2.72 J	0.786 J	0.412 J	0.0586	ND [0.0472]	0.817	All results ND or below CLs.
	Gauged only	6/25/2021		--	--	--	--	--	--	--	--	--	--
	SRF19-FS19D-23	6/19/2023		0.688	ND [0.500]	1.15	4.53	2.91	1.16	0.376	0.317	1.05	All results ND or below CLs.
FS1-9F	FS1-9F	12/26/2010		**68.8**	7.3	**41.3**	176	--	--	--	--	--	--
	LNAPL present	6/14/2023		*LNAPL present biennially since 2015.*									
FS1-9I	FS1-9I	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	FS1-9I-0914	9/8/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--	--
	SRFS1-9I-1015	10/7/2015		ND [0.4]	ND [1]	ND [1]	1.15 J	--	--	--	--	--	--
	Gauged only	9/23/2017		--	--	--	--	--	--	--	--	--	--
	SRF19-FS19I-0719	7/5/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0455]	ND [0.0455]	ND [0.0909]	All results ND.
	Gauged only	6/25/2021		--	--	--	--	--	--	--	--	--	--
	SRF19-FS19I-23	6/19/2023		ND [0.200] J-	ND [0.500] J-	ND [0.500] J-	ND [1.50] J-	ND [0.500] J-	ND [0.500] J-	0.0170 J,B	0.0213 J,B	ND [0.0471]	All results ND or below CLs.
FS1-9M	FS1-9M	11/11/2010		0.53	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	FS1-9M-0914	9/8/2014	X	ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--	--
	SRFST-9M-1015	10/6/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	Gauged only	9/23/2017		--	--	--	--	--	--	--	--	--	--
	SRF19-FS19M-0719	7/5/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0472]	ND [0.0472]	ND [0.0943]	All results ND.
	Gauged only	6/25/2021		--	--	--	--	--	--	--	--	--	--
	SRF19-FS19M-23	6/19/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	0.0251 J,B	0.0284 J,B	0.0371 J	All results ND or below CLs.
FS1-9N	FS1-9N	11/11/2010		**21.9**	ND [1]	1.33	58.4	--	--	--	--	--	--
	FS1-9N-0914	9/8/2014		**26.3**	ND [1]	ND [1]	6.95	--	--	--	--	--	--
	SRFS1-9N-1015	10/7/2015		**5.09**	ND [1]	0.77 J	23.51	--	--	--	--	--	--
	SRF19-FS19N-0917	9/24/2017		**4.85**	ND [1]	0.61 J	18.1	11.9	2.97	3.05	2.61	**8.17**	All results ND or below CLs.
	SRF19-FS19N-0719	7/5/2019	X	0.55	ND [1]	ND [1]	2.31 J	3.41 J	0.401 J	0.328	0.212	**1.90**	All results ND or below CLs.
	SRF19-FS19N-0621	6/27/2021		2.94	ND [1]	0.72 J	8.32	6.78	0.795 J	1.46	1.22	**4.34**	All results ND or below CLs.
	SRF19-FS19N-23	6/19/2023	X	0.684	--	ND [0.500]	1.38 J	2.31	ND [0.500]	0.258	0.205	1.27	All results ND or below CLs.

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

Historical results for samples collected prior to 2010 can be found in previous monitoring reports.

Non-detect results from 2021 and later are reported with the LOD shown in brackets.

Method SW8021B was used for BTEX analytes for samples dated 11/16/2010 and 12/26/2010.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[3] Results for several PAH compounds were ND with LOQs that exceeded the cleanup levels due to dilutions required for high concentrations of non-target analytes.

[ ] - LOD. In some cases the LOQ/PQL was reported for historical ND results.

-- Not analyzed.

Data Flags:

J (±)	Result is an estimated value biased high/low/indeterminate.
B	Result is an estimated value biased high due to contamination detected in an associated blank.

Definitions:

µg/L	microgram(s) per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
BTEX	benzene, toluene, ethylbenzene, xylenes
CL	cleanup level
ID	Identification
LNAPL	light non-aqueous phase liquid
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect
PAH	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
SIM	selected ion monitoring
VOC	volatile organic compound

Table B2-3: SRF TS1-9 Historic Product Recovery
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			PRODUCT RECOVERY METHOD	PRODUCT REMOVED (gal)	SORBENT SOCK	Total Cumulative Product Removed[2] (gal)
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)				
Swanson River Field Tank Setting 1-9	FS1-9F	10/7/2015	14.7	12.71	1.99	-	-	Replaced	0.95
		9/23/2017	--	13	--	Bailer[1]	0.05	Replaced	
		6/27/2019	12.69	12.64	0.05	-	-	Present	
		6/25/2021	13.1	12.45	0.65	Bailer[1]	0.75	Replaced	
		6/14/2023	11.87	11.53	0.34	Bailer[1]	0.15	Replaced	
	TS1-9A	10/7/2015	22.88	--	--	-	-	-	0.00
		9/23/2017	23.21	--	--	-	-	-	
		6/27/2019	22.73	--	Trace	-	-	Replaced	
		6/24/2021	22.6	22.6	Trace	-	-	Replaced	
		6/15/2023	21.57	-	Trace	-	-	Replaced	
	TS1-9B	10/7/2015	21.99	--	--	-	-	Replaced	0.00
		9/23/2017	22.53	--[3]	--	-	-	Placed	
		6/27/2019	22.31	--	Trace	-	-	Replaced	
		6/24/2021	22.2	--	--	-	-	Turned over	
		6/15/2023	21.19	-	-	-	-	Replaced	

Notes:

- Not measured/not applicable/unknown

[1] 2-inch by 3-foot polyethylene bailer, tied and left inside of steel monument.

[2] Cumulative total since 2017.

[3] No measurable LNAPL detected, but globules were observed during gauging and sampling activities.

Abbreviations:

BTOC below top of casing
gal gallons
ID identification number

Table B3-1: SRF Tank Setting 1-27 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS		WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
TS 1-27	FS1-27C	6/14/2023	8.88	-	25.90	257.17	248.29	No
	TS1-27G	6/14/2023	10.00	-	25.77	259.37	249.37	No
	TS1-27J	6/14/2023	13.27	-	20.89	266.42	253.15	No
	TS1-27K	6/14/2023	11.00	-	25.13	262.11	251.11	No
	TS1-27L	6/14/2023	12.32	-	19.75	267.95	255.63	No
	TS1-27M	6/14/2023	11.91	-	25.43	258.42	246.51	No
	TS1-27N	6/14/2023	14.28	-	24.35	258.69	244.41	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

Abbreviations:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

Table B3-2: SRF Tank Setting 1-27 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM		SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**2-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**36**	**1.7**	**--**
TS1-27G	TS1-27G	11/10/2010		1.54	1.1	4.71	22.1	--	--	--	--	--	--
	TS1-27G-0914	9/12/2014		3.4	ND [1]	13.1	29.61	--	--	--	--	--	--
	TS1-927G-0914	9/12/2014		2.96	ND [1]	9.98	21.08	--	--	--	--	--	--
	SRTS1-27G-1015	10/4/2015		**5.51**	ND [1]	**17.1**	84.13 J	--	--	--	--	--	--
	SRF127-TS127G-0917	9/21/2017	X	**13.4**	ND [1]	**26.7**	**282**	**58.5**	18.4	0.371	0.129	**17.2 J**	All results ND or below CLs.
	SRF127-TS127G-0719	7/10/2019		**9.24**	ND [1]	**23.2 J-**	**265 J-**	**60.6 J-**	19.6	0.457	0.181	**9.94**	All results ND or below CLs.
	SRF127-TS127G-0621	6/25/2021		**9.11**	--	6.76	**362**	**77.3**	24.4	0.662	0.274	**9.66**	All results ND or below CLs.
	SRF127-TS127G-23	6/17/2023		3.66	--	3.08	123	38.5	12.4	0.24	0.112	**7.51**	All results ND or below CLs.
TS1-27J	TS1-27J	11/10/2010	X	1.53	ND [1]	1.14	3.91	--	--	--	--	--	--
	TS1-27J-0914	9/12/2014		0.74	ND [1]	0.46 J	0.93 J	--	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*									
TS1-27K	TS1-27K	11/10/2010		**75.8**	ND [1]	**378**	**1870**	--	--	--	--	--	--
	TS1-27K-0914	9/12/2014		**66.2**	0.31 J	**1120**	**4662**	--	--	--	--	--	--
	SRTS1-27K-1015	10/4/2015		**58.8**	0.34 J	**537**	**3006**	--	--	--	--	--	--
	SRTS1-27K9-1015	10/4/2015	X	**59.4**	ND [1]	**619**	**3386**	--	--	--	--	--	--
	SRF127-TS127K-0917	9/22/2017		**35.1**	1.02	**247**	**1130**	**646**	**208**	**34.4**	32	**193**	[3] All results ND or below CLs.
	SRF127-TS127K-0719	7/10/2019	X	**36.6**	ND [1]	**704**	**2590**	**1320**	**394**	**58**	**60.9**	**301**	All results ND or below CLs.
	SRF127-TS127K-0621	6/25/2021	X	**34.2**	--	**548**	**2300**	**941**	**224**	**62.3**	**60.9**	**182**	All results ND or below CLs.
	SRF127-TS127K-23	6/17/2023		**25.3 J-**	--	**481 J-**	**2080 J-**	**1130 J-**	**295 J-**	**34.9**	**38.1**	**296 J-**	All results ND or below CLs.
TS1-27L	TS1-27L	11/10/2010		0.8	ND [1]	4.03	14.5	--	--	--	--	--	--
	TS1-27L-0914	9/11/2014		**9.74**	4.18	**99.1**	**464**	--	--	--	--	--	--
	SRTS1-27L-1015	10/4/2015		4.4	ND [10]	**55.7**	**248**	--	--	--	--	--	--
	SRF127-TS127L-0917	9/22/2017		**4.78**	1.54	**46**	172	**234**	**78.2**	**30**	31.1	**49.5**	[3] All results ND or below CLs.
	SRF127-TS127L-0719 [4]	7/10/2019		ND [0.4]	ND [1]	0.67 J	ND [3]	ND [1]	ND [1]	0.358	0.248	**2.47**	All results ND or below CLs.
	SRF127-TS127L-0621	6/25/2021		**7.26**	--	**120**	**408**	**424**	**175**	**41.2**	**46.5**	**55.1**	All results ND or below CLs.
	SRF127-TS127L-23	6/17/2023		**4.7**	--	**61.6**	**246**	**281**	**98.8**	**21.5**	22.5	**63.1**	All results ND or below CLs.
TS1-27M	TS1-27M	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	TS1-27M-0914	9/12/2014		ND [0.4]	ND [1]	11.2	0.9 J	--	--	--	--	--	--
	SRTS1-27M-1015	10/4/2015		ND [0.4]	ND [1]	1.6	1.1 J	--	--	--	--	--	--
	SRF127-TS127M-0917	9/22/2017		ND [0.4]	ND [1]	1.44	ND [3]	ND [1]	ND [1]	0.0452 J	0.0812	**3.77**	All results ND or below CLs.
	SRF127-TS127M-0719 [4]	7/10/2019		3.85	0.33 J	**41.4**	180	**343**	**99.4**	**15.4**	15.3	**64.9**	All results ND or below CLs.
	SRF127-TS127M-0621	6/25/2021		ND [0.200]	--	4.65	ND [1.50]	ND [0.500]	0.546 J	0.903	0.857	5.23	All results ND or below CLs.
	SRF127-TS127M-23	6/17/2023		ND [0.200]	--	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	ND [0.0255]	ND [0.0255]	ND [0.500]	All results ND.
TS1-27N	TS1-27N	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	TS1-27N-0914	9/12/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*									
FS1-27C	FS1-27C	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	FS1-27C-0914	9/12/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--	--
	SRFS1-27C-1015	10/4/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	Gauged only	9/22/2017		--	--	--	--	**--**	--	--	--	--	--
	SRF127-FS127C-0719	7/10/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0525]	ND [0.0525]	ND [0.105]	All results ND.
	Gauged only	6/25/2021		--	--	--	--	**--**	--	--	--	--	--
	SRF127-FS127C-23	6/17/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	ND [0.0250]	ND [0.0250]	ND [0.0500]	All results ND or below CLs.

Table B3-2: SRF Tank Setting 1-27 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

Historical results for samples collected prior to 2010 can be found in previous monitoring reports.

Non-detect results from 2021 and later are reported with the LOD shown in brackets.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[3] Results for several PAH compounds were ND with LOQs that exceeded the cleanup levels due to dilutions required for high concentrations of non-target analytes

[4] Results are suspected to have been switched.

[ ] - LOD. In some cases the LOQ/PQL was reported for historical ND results.

-- Not analyzed.

Data Flags:

H	Result is an estimated value due to a holding time exceedance.
J (±)	Result is an estimated value biased high/low/indeterminate.

Definitions:

µg/L	microgram(s) per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
ID	Identification
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect
PAH	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
SIM	selected ion monitoring
VOC	volatile organic compound

Table B4-1: SRF Tank Setting 1-33 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS		WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
TS 1-33	FS1-33F	6/14/2023	25.79	-	44.56	159.08	133.29	No
	FS1-33H	6/14/2023	21.40	-	42.39	159.78	0.43	No
	FS1-33O	6/14/2023	26.49	-	47.85	159.37	132.88	No
	FS1-33S	6/14/2023	23.70	-	47.21	159.17	135.47	No
	FS1-33T	6/14/2023	18.34	-	42.82	156.24	137.90	No
	FS1-33W	6/14/2023	21.55	-	32.17	158.12	136.57	No
	TS1-33JJ	6/14/2023	10.70	-	22.66	165.37	154.67	No
	TS1-33KK	6/14/2023	6.86	-	22.00	163.3	156.44	No
	TS1-33O2	6/14/2023	8.17	-	22.60	167.18	159.01	No
	TS1-33P	6/14/2023	6.25	-	18.83	162.68	156.43	No
	TS1-33Q	6/14/2023	Destroyed					
	TS1-33UR	6/14/2023	7.10	-	15.37	165.13	158.03	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

Abbreviations:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

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Table B4-2: SRF Tank Setting 1-33 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM		SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**2-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**36**	**1.7**	**--**
TS1-33JJ	TS1-33JJ	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	TS1-33JJ-0914	9/12/2014		ND [0.4]	ND [1]	0.35 J	ND [2]	--	--	--	--	--	--
	SRTS1-33JJ-1015	10/4/2015		0.27 J	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	Gauged only	9/23/2017		--	--	--	--	--	--	--	--	--	--
	SRF133-TS133JJ-0719	7/11/2019		0.58	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0558] J-	ND [0.0558] J-	0.31 J	All results ND or below CLs.
	Gauged only	6/24/2021		--	--	--	--	--	--	--	--	--	--
	SRF133-TS133JJ-23	6/17/2023	X	0.836	ND [0.500] J-	ND [0.500] J-	ND [1.50] J-	ND [0.500] J-	ND [0.500]	0.0758 J,B	0.113 J,B	0.0512 J	All results ND or below CLs.
TS1-33KK	TS1-33KK	11/10/2010		**4.62**	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	TS1-33KK-0914	9/12/2014		3.64	47	0.75 J	3.56	--	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*									
TS1-33N	*Decommissioned*	6/24/2021		*Decommissioned in 2021.*									
TS1-33P	TS1-33P	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	TS1-33P-0914	9/12/2014		0.32 J	ND [1]	0.38 J	ND [2]	--	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*									
TS1-33Q	--	11/11/2010		--	--	--	--	--	--	--	--	--	--
	TS1-33Q-0914	9/11/2014	X	**22.8**	0.41 J	**255**	**337.1**	--	--	--	--	--	--
	SRTS1-33Q-1015	10/4/2015	X	**35.4**	ND [1]	**292**	**202.4 J**	--	--	--	--	--	--
	SRF133-TS133Q-0917	9/23/2017	X	**38.9**	ND [10]	**532**	**584**	**199**	**149**	1.96 J	0.566	**8.31**	All results ND or below CLs.
	SRF133-TS133Q-0719	7/11/2019		**45.3 J-**	0.66 J	**1050**	**1760**	**542**	**345**	3.43	2.12	**41.3**	All results ND or below CLs.
	SRF133-TS133Q-0621	6/30/2021		**22.1**	--	**516**	**1400**	**404**	**250**	4.62	2.74	**17.4**	All results ND or below CLs.
	Destroyed - no sample	6/14/2023		*Well destroyed.*									
TS1-33U	*Damaged - No sample*	10/5/2015		*Damaged casing observed during previous sampling events. Obstruction and LNAPL observed in 2015. No sample.*									
	Decomissioned	10/10/2017		*Decommissioned in 2017.*									
TS1-33UR	*LNAPL present*	10/10/2017		--	--	--	--	--	--	--	--	--	--
	SRF133-TS133UR-0719	7/11/2019		**22.4**	0.34 J	**23.6**	1.77 J	0.75 J	ND [1]	ND [0.0508]	ND [0.0508]	**15.8**	All results ND or below CLs.
	SRF133-TS133UR-0621	6/30/2021	X	**13**	ND [1]	3.38	ND [3]	ND [0.500]	ND [0.500]	ND [0.0255] J	ND [0.0255] J	**4.63**	All results ND or below CLs.
	SRF133-TS133UR-23	6/17/2023		**9.68**	--	4.15	ND [1.50]	ND [0.500]	ND [0.500]	0.141	0.06	1.46	All results ND or below CLs.
TS1-33O2	TS1-33O2	11/11/2010		**952**	ND [1]	**198**	82	--	--	--	--	--	--
	TS1-33O2-0914	9/11/2014		**865**	1.65	**286**	145.99	--	--	--	--	--	--
	SRTS1-33O2-1015	10/4/2015		**584**	ND [10]	**200**	82.6 J	--	--	--	--	--	--
	SRF133-TS133O2-0917	9/23/2017		**140**	0.73 J	**58.2**	24	9.44	0.56 J	**18.5**	9.61	**12.8**	[3] All results ND or below CLs.
	SRF133-TS133O2-0719	7/11/2019	X	**192**	0.61 J	**179**	30.3	1.44	ND [1]	**24.4**	20.3	**48.4**	All results ND or below CLs.
	SRF133-TS133O2-0621	6/29/2021		**111**	--	**145**	4.01	ND [0.500]	ND [0.500]	**14.4**	12.29	**14**	All results ND or below CLs.
	SRF133-TS133O2-23	6/18/2023		**143 J-**	--	**174**	2.21 J	ND [0.500]	ND [0.500]	9.75	7.32	**49.4**	All results ND or below CLs.
FS1-33F	FS1-33F	11/11/2010		**119**	ND [1]	4.28	6	--	--	--	--	--	--
	FS1-33F-0914	9/11/2014		**396**	ND [1]	7.52	9.62	--	--	--	--	--	--
	SRFS1-33F-1015	10/4/2015		**349**	ND [1]	3.12	7.25	--	--	--	--	--	--
	SRF133-FS133F-0917	9/23/2017		**250**	ND [1]	3.45	5.1	0.82 J	0.37 J	0.184	0.163	0.64 J	All results ND or below CLs.
	SRF133-FS133F-0719	7/9/2019	X	**123 J**	ND [1]	0.68 J	3.22 J	0.49 J	ND [1]	0.17	0.148	0.333	All results ND or below CLs.
	SRF133-FS133F-0621	6/28/2021	X	**292**	--	0.841 J	6.95	1.22	0.688 J	0.139 J-	0.118 J-	0.261 J-	All results ND or below CLs.
	SRF133-FS133F-23	6/18/2023	X	**322**	--	ND [1.00]	4.37 J	ND [1.00]	ND [1.00]	0.154 J	0.160 J	0.369	All results ND or below CLs.

Table B4-2: SRF Tank Setting 1-33 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM		SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**2-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**36**	**1.7**	**--**
FS1-33H	FS1-33H	12/26/2010		**45.3**	24.2	**92.3**	50.3	--	--	--	--	--	--
	LNAPL present	9/11/2014		--	--	--	--	--	--	--	--	--	--
	SRFS1-33H-1015	10/5/2015		**21.3**	0.38 J	**78.1**	34.3	--	--	--	--	--	--
	SRF133-FS133H-0917	9/23/2017		**9.77**	0.53 J	**32.2**	12.9	4.21	11.2	2.43	2.41	**4.23**	[3] All results ND or below CLs.
	SRF133-FS133H-0719	7/11/2019		**9.33**	0.47 J	**35.1**	12.1	4.75	12.5	1.72	1.82	**4.41**	All results ND or below CLs.
	SRF133-FS133H-0621	6/30/2021		**16.7**	--	**60.8**	19	6.07	17	1.69	1.39	**3.77**	All results ND or below CLs.
	SRF133-FS133H-23	6/18/2023		**16.9**	--	**24.9**	8.34	3.06	6.02	0.416 J-	0.310 J-	**3.87**	All results ND or below CLs.
FS1-33O	FS1-33O	11/11/2010		**15**	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	FS1-33O-0914	9/11/2014		**92.3**	ND [1]	0.52 J	0.67 J	--	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*									
FS1-33R	FS1-33R	11/10/2010		**12**	ND [1]	**47.5**	ND [3]						
	FS1-33R-0914	9/11/2014		2.73	ND [1]	**37**	3.11						
	Not located - No sample	10/5/2015		*Not located 2015.*									
	Not located	10/4/2017		*Not located 2017. Assumed decommissioned or destroyed during Pad 41-33B expansion and improvements.*									
FS1-33S	FS1-33S	11/10/2010		**9.47**	ND [1]	**35**	7.05	--	--	--	--	--	--
	FS1-33S-0914	9/11/2014		1.4	ND [1]	**15.3**	2.09	--	--	--	--	--	--
	SRTS1-33S-1015	10/4/2015		ND [0.4]	ND [1]	0.85 J	1.51 J	--	--	--	--	--	--
	SRF133-FS133S-0917	9/23/2017		0.19 J	ND [1]	0.43 J	ND [3]	ND [1]	1.84	ND [0.05]	ND [0.05]	0.0613 J	All results ND or below CLs.
	SRF133-FS133S-0719	7/11/2019		0.98	ND [1]	ND [1]	ND [3]	ND [1]	5.29	ND [0.0553]	ND [0.0553]	ND [0.111]	All results ND or below CLs.
	SRF133-FS133S-0621	6/30/2021		2.35	--	0.988 J	ND [3]	ND [0.500]	4.94	0.0404 J	0.0434 J	0.0941 J	All results ND or below CLs.
	SRF133-FS133S-23	6/17/2023		0.62	--	0.818 J	ND [1.50]	0.343 J	3.36	0.0432 J	0.0437 J	0.0900 J	All results ND or below CLs.
FS1-33T	FS1-33T	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--	--	--
	FS1-33T-0914	9/11/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*									
FS1-33W	SRF133-FS133W-1017	10/8/2017		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.05]	ND [0.05]	ND [0.1]	All results ND.
	SRF133-FS133W-0719	7/9/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0481] H	ND [0.0481] H	ND [0.0962] H	All results ND.
	Gauged only	6/24/2021		--	--	--	--	--	--	--	--	--	--
	SRF133-FS133W-23	6/17/2023		ND [0.200]	--	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	ND [0.0240]	ND [0.0240]	ND [0.0481]	All results ND or below CLs.

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

Historical results for samples collected prior to 2010 can be found in previous monitoring reports.

Non-detect results from 2021 and later are reported with the LOD shown in brackets.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[3] Results for several PAH compounds were ND with LOQs that exceeded the cleanup levels due to dilutions required for high concentrations of non-target analytes.

[ ] - LOD. In some cases the LOQ/PQL was reported for historical ND results.

-- Not analyzed.

Data Flags:

B	Result is an estimated value biased high due to contamination detected in an associated blank.
H	Result is an estimated value due to a holding time exceedance.
J (±)	Result is an estimated value biased high/low/indeterminate.

Definitions:

µg/L	microgram(s) per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
ID	Identification
LNAPL	light non-aqueous phase liquid
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect
PAH	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
SIM	selected ion monitoring
VOC	volatile organic compound

Table B5-1: SRF Tank Setting 2-15 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS		WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
TS 2-15	FS2-15B	6/14/2023	10.04	-	35.60	315.19	305.15	Yes
	TS2-15O	6/14/2023	7.69	-	21.24	324.71	317.02	Yes
	TS2-15P	6/14/2023	7.62	-	27.75	320.58	312.96	Yes
	TS2-15Q	6/14/2023	11.50	-	32.78	326.67	315.17	No
	TS2-15R	6/14/2023	9.69	-	25.39	327.13	317.44	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

Abbreviations:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

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Table B5-2: SRF Tank Setting 2-15 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**1.7**	**--**
TS2-15O	*Dry - No sample*	11/2010		--	--	--	--	**--**	--	--	--
	TS2-15O-0914	9/12/2014		**7.08**	64.9	**263**	**1621**	--	--	**--**	--
	SRTS2-15O-1015[b]	10/3/2015		**6.9**	7.9 J	**80.3**	**436**	--	--	**--**	**--**
	SRF215-TS215O-0917	9/21/2017	X	2.99	2.87	**39.2**	158	**19.1**	8.31	**6.14**	All results ND or below CLs.
	SRF215-TS215O-0719	7/10/2019	X	**6.44**	1.24	**189**	**633**	**84.7**	26.1	**14.4**	All results ND or below CLs.
	SRF215-TS215O-0621	6/27/2021	X	3.35	--	**38.5 J-**	**396**	**67.0 J-**	22.1	**7.31**	All results ND or below CLs.
	SRF215-TS215O-23	6/17/2023		3.37	--	**31.1**	**969**	**211**	**83.5**	**27.9**	All results ND or below CLs.
TS2-15P	TS2-15P	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--
	TS2-15P-0914	9/12/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--
	SRTS2-15P-1015[b]	10/3/2015		ND [0.4]	ND [1]	ND [1]	1.03 J	--	--	--	--
	Gauged only	9/21/2017		--	--	--	--	--	--	--	--
	SRF215-TS215P-0719	7/10/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0909]	All results ND.
	Gauged only	6/25/2021		--	--	--	--	**--**	--	--	--
	SRF215-TS215P-23	6/17/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	ND [0.0471]	All results ND or below CLs.
TS2-15Q	TS2-15Q	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--
	TS2-15Q-0914	9/12/2014		ND [0.4]	ND [1]	ND [1]	0.42 J	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*							
TS2-15R	TS2-15R	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--
	TS2-15R-0914	9/12/2014		ND [0.4]	ND [1]	ND [1]	2.58 J	--	--	--	--
	SRTS2-15R-1015 [3]	10/3/2015		ND [0.4]	ND [1]	ND [1]	1.12 J	--	--	--	--
	Gauged only	9/21/2017		--	--	--	--	--	--	--	--
	SRF215-TS215R-0719	7/10/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.107]	All results ND.
	Gauged only	6/25/2021		--	--	--	--	--	--	--	--
	SRF215-TS215R-23	6/17/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	ND [0.0490]	All results ND.
FS2-15B	FS2-15B	11/10/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	--
	FS2-15B-0914	9/12/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--
	SRFS2-15B-1015	10/5/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	--
	Gauged only	9/21/2017		--	--	--	--	--	--	--	--
	SRF215-FS215B-0719	7/10/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.104]	All results ND.
	Gauged only	6/25/2021		--	--	--	--	--	--	--	--
	SRF215-FS215B-23	6/17/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	ND [0.0535]	All results ND or below CLs.

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

Historical results for samples collected prior to 2010 can be found in previous monitoring reports.

Non-detect results from 2021 and later are reported with the LOD shown in brackets.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[3] Collection date in laboratory report is incorrect, stating samples were collected on 4 October 2015.

[ ] - LOD. In some cases the LOQ/PQL was reported for historical ND results.

-- Not analyzed.

Data Flags:

J (±) Result is an estimated value biased high/low/indeterminate.

Definitions:

µg/L	microgram(s) per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
ID	Identification
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect
PAH	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
SIM	selected ion monitoring
VOC	volatile organic compound

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Table B6-1: SRF Tank Setting 3-4 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
TS 3-4	FS3-4A	6/15/2023	12.26	-	-	37.41	152.75	140.49	Yes
	FS3-4B	6/15/2023	6.80	-	-	30.85	147.65	140.85	Yes
	FS3-4D	6/15/2023	-	8.09	>3	-	154.28	-	No
	FS3-4F	6/15/2023	11.38	-	-	25.90	161.54	150.16	Yes
	TS3-4CC	6/15/2023	10.96	-	-	20.81	162.51	151.55	No
	TS3-4D	6/15/2023	13.44	-	-	-	163.48	150.04	No
	TS3-4MM	6/15/2023	5.74	-	-	21.00	154.17	148.43	No
	TS3-4NN	6/15/2023	5.45	-	-	27.70	156.81	151.36	Yes
	TS3-4OO	6/15/2023	4.25	-	-	20.90	156.02	151.77	Yes
	TS3-4P	6/15/2023	7.51	-	-	22.53	158.89	151.38	No
	TS3-4PP	6/15/2023	5.31	-	-	17.50	158.28	152.97	Yes
	TS3-4Z	6/15/2023	10.36	-	-	20.64	161.56	151.20	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

Abbreviations:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

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Table B6-2: SRF Tank Setting 3-4 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM	SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Sample Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**1.7**	**--**
TS3-4D	TS3-4D	11/30/2010		**27.6**	ND [10]	**107**	**340**	--	--	**--**	**--**	**--**
	LNAPL present	9/8/2014		--	--	--	--	**--**	--	--	--	--
	SRTS3-4D-1015	10/5/2015		**17**	ND [20]	**108**	142.2	--	--	**--**	**--**	**--**
	LNAPL present	9/24/2017		--	--	--	--	**--**	--	--	--	--
	LNAPL present	6/27/2019		--	--	--	--	**--**	--	--	--	--
	SRF34-TS34D-0621	6/28/2021	X	**24.5**	ND [10]	**122**	**230**	**199**	**83.2**	9.03	**57.7**	All results ND or below CLs.
	Gauged only	6/15/2023		**--**	--	--	--	**--**	--	**--**	**--**	--
TS3-4P	TS3-4P	11/30/2010		**557**	43.6	**229**	**233**	--	--	**--**	**--**	--
	TS3-4P-0914	9/9/2014		**204**	19.9	**116**	111.4	--	--	**--**	**--**	--
	SRTS3-4P-1015	10/4/2015	X	**763**	68.9	**107**	131.4	--	--	**--**	**--**	--
	SRF34-TS34P-0917	9/25/2017		**481**	39.1	**134**	110	16.9	27.2	2.49	**16.9**	[3] All results ND or below CLs.
	SRF34-TS34P-0719	7/9/2019	X	**595**	33	**176**	142	27.4	49	1.7	**30.1**	All results ND or below CLs.
	SRF34-TS34P-0621	6/28/2021		**859**	--	**202**	135	14.4	35.9	1.27	**11.5**	All results ND or below CLs.
	SRF34-TS34P-23	6/18/2023		**475**	--	**250**	168	13.4	39.6	1.34	**28.5**	All results ND or below CLs.
TS3-4Z	TS3-4Z	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	**--**	**--**
	TS3-4Z-0914	9/8/2014		ND [0.4]	ND [1]	ND [1]	0.34 J	--	--	--	**--**	**--**
	Gauged only	6/15/2023		*Gauged biennially since 2015.*								
TS3-4CC	*Insufficient water for sample*	2010		--	--	--	--	**--**	--	--	--	--
	TS3-4CC-0914	9/9/2014		3.15	2.65	**45.3**	103.65	--	--	--	**--**	--
	SRTS3-4CC-1015	10/4/2015		0.61	ND [1]	7.68	18.91	--	--	--	--	**--**
	SRF34-TS34CC-0917	9/25/2017		**11 J-**	4.78	**93.9 J-**	172	**93.8 J-**	55.1 J-	4.5	**14.7 J-**	[3] All results ND or below CLs.
	SRF34-TS34CC-0719	7/9/2019		0.44	ND [1]	11.5	21.5	28.5	17.3	2.9	**6.55**	All results ND or below CLs.
	SRF34-TS34CC-0621	6/28/2021		0.855	--	**26.6**	60.1	**89**	41.9	1.98	**4.15**	All results ND or below CLs.
	SRF34-TS34CC-23	6/19/2023		0.169 J	--	7.51	17.9	17.7	9.7	0.552	**1.88**	All results ND.
TS3-4MM	TS3-4MM	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	**--**	**--**
	TS3-4MM-0914	9/8/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	**--**	**--**
	SRTS3-4MM-1015	10/5/2015		**ND [8]**	ND [20]	**ND [20]**	ND [60]	--	--	--	**--**	**--**
	Gauged only	9/24/2017		--	--	--	--	**--**	--	--	--	--
	SRF34-TS34MM-0719	7/9/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0508]	ND [0.102]	All results ND.
	Gauged only	6/24/2021		--	--	--	--	**--**	--	--	--	--
	SRF34-TS34MM-23	6/18/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	0.0214 J,B	ND [0.0520]	All results ND or below CLs.
TS3-4NN	TS3-4NN	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	**--**	**--**
	TS3-4NN-0914	9/9/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	**--**	**--**
	Gauged only	6/15/2023		*Gauged biennially since 2015.*								
TS3-4OO	TS3-4OO	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	**--**	**--**
	TS3-4OO-0914	9/9/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	**--**	**--**
	SRTS3-4OO-1015	10/5/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	**--**	**--**
	Gauged only	9/24/2017		--	--	--	--	**--**	--	--	--	--
	SRF34-TS34OO-0719	7/9/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0534]	ND [0.107]	All results ND.
	Gauged only	6/24/2021		--	--	--	--	**--**	--	--	--	--
	SRF34-TS34OO-23	6/18/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	0.0170 J,B	1.11	All results ND or below CLs.
TS3-4PP	TS3-4PP	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	**--**	**--**
	TS3-4PP-0914	9/9/2014		ND [0.4]	ND [1]	0.47 J	ND [2]	--	--	--	**--**	**--**
	Gauged only	6/15/2023		*Gauged biennially since 2015.*								

Table B6-2: SRF Tank Setting 3-4 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM	SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Sample Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**1.7**	**--**
FS3-4A	FS3-4A	11/11/2010		ND [0.5]	ND [1]	ND [1]	ND [3]	--	--	--	**--**	**--**
	FS3-4A-0914	9/9/2014		1.86	ND [1]	1.02	ND [2]	--	--	--	**--**	**--**
	SRFS3-4A-1015	10/5/2015		4 J	ND [20]	**ND [20]**	ND [60]	--	--	--	**--**	**--**
	SRF34-FS34A-0917	9/25/2017		1.47	ND [1]	0.43 J	ND [3]	0.43 J	1.43	ND [0.0508]	ND [0.102]	All results ND or below CLs.
	SRF34-FS34A-0719	7/9/2019		2.05	ND [1]	0.46 J	ND [3]	ND [1]	ND [1]	0.0194 J	ND [0.0943]	All results ND or below CLs.
	SRF34-FS34A-0621	6/28/2021		2.76	--	ND [1]	ND [3]	ND [0.500]	ND [0.500]	ND [0.0245]	ND [0.0490]	All results ND.
	SRF34-FS34A-23	6/18/2023		2.68	--	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	0.0265 J,B	0.0384 J	All results ND or below CLs.
FS3-4B	FS3-4B	11/11/2010		0.72	ND [1]	ND [1]	ND [3]	--	--	--	--	**--**
	FS3-4B-0914	9/9/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	**--**	**--**
	SRFS3-4B-1015	10/5/2015		0.94	ND [1]	ND [1]	ND [3]	--	--	--	--	**--**
	Gauged only	9/24/2017		--	--	--	--	**--**	--	--	--	--
	SRF34-FS34B-0719	7/9/2019		0.56	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0496]	ND [0.0992]	All other results ND.
	Gauged only	6/24/2021		--	--	--	--	**--**	--	--	--	--
	SRF34-FS34B-23	6/18/2023	X	0.424	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	0.0200 J	0.0325 J	All results ND or below CLs.
FS3-4D	FS3-4D	12/26/2010		**2150**	764	**294**	**4080**	--	--	**--**	**--**	--
	LNAPL present	9/8/2014		--	--	--	--	**--**	--	--	--	--
	LNAPL present	6/15/2023		*LNAPL present biennially since 2015.*								
FS3-4F	FS3-4F	11/11/2010		2.13	ND [1]	9.51	5.48	--	--	--	**--**	**--**
	FS3-4F-0914	9/9/2014	X	**66.1**	ND [1]	**163**	95.07	--	--	**--**	**--**	**--**
	SRFS3-4F-1015	10/4/2015		**28.6**	ND [1]	**48.1**	23.86 J	**--**	--	**--**	**--**	**--**
	SRF34-FS34F-0917	9/25/2017	X	**29.6**	ND [10]	**81.8**	23.6 J	18.3	20.4	**13.4**	**19.7**	All results ND or below CLs.
	SRF34-FS34F-0719	7/9/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0455] J-	ND [0.0909] J-	All results ND.
	SRF34-FS34F-0621	6/28/2021		**20**	--	2.32	2.16 J	1.79	1.16	4.52	**13.5**	All results ND or below CLs.
	SRF34-FS34F-23	6/18/2023		**9.14**	--	3.2	2.64 J	3.55	2.08	1.55	**9.31**	All results ND or below CLs.

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

Historical results for samples collected prior to 2010 can be found in previous monitoring reports.

Non-detect results from 2021 and later are reported with the LOD shown in brackets.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[3] Results for several PAH compounds were ND with LOQs that exceeded the cleanup levels due to dilutions required for high concentrations of non-target analytes.

[ ] - LOD. In some cases the LOQ/PQL was reported for historical ND results.

-- Not analyzed.

Data Flags:

B	Result is an estimated value biased high due to contamination detected in an associated blank.
J (±)	Result is an estimated value biased high/low/indeterminate.

Definitions:

µg/L	microgram(s) per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
ID	Identification
LNAPL	light non-aqueous phase liquid
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect
PAH	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
SIM	selected ion monitoring
VOC	volatile organic compound

Table B6-3: SRF TS3-4 Historic Product Recovery
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			PRODUCT RECOVERY METHOD	PRODUCT REMOVED (gal)	SORBENT SOCK	Total Cumulative Product Removed[2] (gal)
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)				
Swanson River Field Tank Setting 3-4	FS3-4D	10/6/2015	--	9.82	--[3]	-	-	-	8.25
		9/24/2017	--	7.82	--[4]	-	-	None	
		6/27/2019	--	10.96	--	Bailer[1]	2.50	Placed	
		6/24/2021	--	11.01	>1	Bailer[1]	0.75	Replaced	
		6/15/2023	-	8.09	>3	Pump	5.00	Replaced	
	TS3-4D	10/6/2015	15.42	--	--	-	-	Replaced	0.00
		9/24/2017	--	16.35[c]	--[4]	-	-	None	
		6/27/2019	15.34	--	Trace	-	-	Placed	
		6/24/2021	14.93	--	--	-	-	Replaced	
		6/15/2023	13.44	-	-	-	-	Replaced	

Notes:

- Not measured/not applicable/unknown

[1] 2-inch by 3-foot polyethylene bailer, tied and left inside of steel monument.

[2] Cumulative total since 2019.

[3] Could not obtain a clear water level signal to determine product thickness in FS3-4D. Product thickness estimated to be >2 feet.

[4] Could not obtain a clear water level signal to determine product thickness in TS3-4D and FS3-4D.

Abbreviations:

BTOC below top of casing
gal gallons
ID identification number

Table B7-1: SRF Tank Setting 3-9 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
TS 3-9	FS3-9B	6/14/2023	10.82	-	-	22.49	163.43	152.61	No
	FS3-9E	6/14/2023	8.15	-	-	21.96	160.27	152.12	No
	FS3-9G	6/14/2023	8.19	-	-	24.92	159.9	151.71	Yes
	TS3-9A [2]	6/14/2023	15.68	15.33	0.35	-	167.88	152.49	No
	TS3-9AA	6/14/2023	13.25	-	-	33.75	165.58	152.33	No
	TS3-9BB	6/14/2023	14.50	-	-	37.54	164.85	150.35	No
	TS3-9CC	6/14/2023	7.15	-	-	21.97	158.98	151.83	No
	TS3-9CR	6/14/2023	15.54	-	-	26.92	168.99	153.45	No
	TS3-9DD	6/14/2023	5.99	-	-	27.22	157.02	151.03	No
	TS3-9F	6/14/2023	15.77	-	-	30.81	168.44	152.67	No
	TS3-9S	6/14/2023	11.96	-	-	29.46	165.02	153.06	No
	TS3-9T	6/14/2023	13.54	-	-	31.20	165.89	152.35	No
	TS3-9U	6/14/2023	6	-	-	29.71	165.55	159.55	No
	TS3-9V	6/14/2023	6.21	-	-	24.83	159.02	152.81	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

[2] Potentiometric surface elevations are corrected for LNAPL thickness assuming a specific gravity of 0.84 g/cm^3 based upon Swanson River Crude having an API gravity of 37 degrees.

Abbreviaitons:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

Table B7-2: SRF Tank Setting 3-9 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM	SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**1.7**	**--**
TS3-9A	TS3-9A	12/26/2010	X	2.96	4.92	3.13	**3000**	--	--	--	--	--
	LNAPL present	9/5/2014		--	--	--	--	--	--	--	--	--
	LNAPL present	6/14/2023		*LNAPL observed biennially since 2015.*								
TS3-9C	TS3-9C	12/26/2010		**24.6**	8.43	**229**	**3300**	--	--	--	--	--
	LNAPL present	9/5/2014		--	--	--	--	--	--	--	--	--
	LNAPL present	10/7/2015		*Obstruction in well at 20.2 ft below top of casing. LNAPL observed above obstruction.*								
	Decommissioned	10/10/2017		*Decommissioned in 2017.*								
TS3-9CR	SRF39-TS39CR-1017	10/10/2017		**5.77**	1.65	6.71	**1105**	**439**	**440**	9.09	**21.1**	All results ND or below CLs.
	SRF39-TS39CR-0719	7/12/2019		**8.55**	ND [5]	7.86	**894**	**424**	**395**	5.02 J-	**21.1**	All results ND or below CLs.
	SRF39-TS39CR-0621	6/27/2021		**5.92**	0.776 J	4.73	**530**	**399**	**535**	ND [0.123] J	**15.8**	All results ND or below CLs.
	SRF39-TS39CR-23	6/20/2023		**9.17**	--	2.53	**275**	**83.1**	**147**	0.151	**3.48**	All results ND or below CLs.
TS3-9F	TS3-9F	12/26/2010		**20.1**	7.76	**377**	**3840**	--	--	--	--	--
	TS3-9F-0914	9/5/2014	X	**32.8**	ND [1]	**496**	**1771**	--	--	--	--	--
	SRTS3-9F-1015	10/5/2015		**24.5**	ND [50]	**471**	**1551**	--	--	--	--	--
	LNAPL present	9/24/2017		--	--	--	--	--	--	--	--	--
	SRF39-TS39F-0719	7/12/2019		**13.7**	ND [5]	**493**	**1580**	**536**	**290**	**24.2**	**89.7**	All results ND or below CLs.
	LNAPL present	6/24/2021		--	--	--	--	--	--	--	--	--
	SRF39-TS39F-23	6/20/2023		**13.4**	0.524 J	**549**	**1870**	**609**	**385**	**25**	**127**	All results ND or below CLs.
TS3-9S	TS3-9S	11/16/2010		0.925	ND [0.5]	ND [0.5]	2.72	--	--	--	--	--
	TS3-95-0914	9/5/2014		0.98	ND [1]	1.51	3.66 J	--	--	--	--	--
	Gauged only	10/7/2015		--	--	--	--	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2019.*								
TS3-9T	TS3-9T	12/26/2010		3.25	34.9	**26.2**	24.3	--	--	--	--	--
	TS3-9T-0914	9/6/2014		3.88	0.45 J	**35.6**	2.32	--	--	--	--	--
	SRTS3-9T-1015	10/6/2015		**19.8**	ND [5]	**38.1**	4.65 J	--	--	--	--	--
	SRF39-TS39T-0917	9/24/2017	X	**6.5**	ND [1]	**21.7**	1.65 J	4.14	11.7	1.48	**2.3**	All results ND or below CLs.
	SRF39-TS39T-0719	7/12/2019		3.19	0.341 J	**31.7**	2.55 J	7.76	9.31	3.3	**3.82**	All results ND or below CLs.
	SRF39-TS39T-0621	6/26/2021		4.12	ND [1]	26.3	2.47 J	5.88	8.39	2.57	**4.79**	All results ND or below CLs.
	SRF39-TS39T-23	6/20/2023		1.95	--	**24.4**	2.14 J	6.12	7.13	2.62	**4.12**	All results ND or below CLs.
TS3-9U	TS3-9U	12/26/2010		1.94	14.2	0.833	9.44	--	--	--	--	--
	TS3-9U-0914	9/6/2014		**7.53**	0.48 J	12.8	31.23	--	--	--	--	--
	SRTS3-9U-1015	10/5/2015		3.95	ND [5]	10.2	25.35 J	--	--	--	--	--
	Gauged only	9/24/2017		--	--	--	--	--	--	--	--	--
	SRF39-TS39U-0719	7/12/2019		1.05	ND [1]	1.73	3.37	2.11	0.9 J	ND [0.049]	0.913 J	All results ND or below CLs.
	SRF39-TS39U-0621	6/26/2021		0.838	ND [1]	2.78	4.48	3.48	1.55	ND [0.0266]	**2.56**	All results ND or below CLs.
	SRF39-TS39U-23	6/19/2023		3.5	--	6.31	12.3	10.5	3.76	0.489 J-	**4.07**	All results ND or below CLs.
TS3-9V	TS3-9V	11/16/2010		1.51	ND [0.5]	ND [0.5]	1.6	--	--	--	--	--
	TS3-9V-0914	9/6/2014		**18**	ND [1]	4.52	11.42	--	--	--	--	--
	SRTS3-9V-1015	10/6/2015		**52.5**	ND [5]	**25.4**	54.3	--	--	--	--	--
	SRF39-TS39V-0917	9/25/2017		**26**	ND [1]	6.36	13.4	5.59	ND [1]	3.1	**10.8**	All results ND or below CLs.
	SRF39-TS39V-0719	7/12/2019	X	**17.5**	ND [1]	2.8	15.9	18.5	17.1 J	2.74	**17.8**	All results ND or below CLs.
	SRF39-TS39V-0621	6/26/2021	X	**47.5**	ND [1]	**21.1**	59.5	33.5	7	4.67 J-	**31.8**	All results ND or below CLs.
	SRF39-TS39V-23	6/19/2023		**18.2**	--	7.22	17.5	16.6	ND [0.500]	2.75 J-	**17.5**	All results ND or below CLs.

Table B7-2: SRF Tank Setting 3-9 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All results presented in µg/L.			Duplicate	SW8260						SW8270 SIM	SW8260/SW8270 SIM	
Well ID	**Sample ID**	**Date**		**Benzene**	**Toluene**	**Ethylbenzene**	**Xylenes (Total)**	**1,2,4-Trimethylbenzene**	**1,3,5-Trimethylbenzene**	**1-Methylnaphthalene**	**Naphthalene**	**Petroleum-Related VOCs/PAHs[2]**
ADEC Groundwater Cleanup Levels[1]				**4.6**	**1100**	**15**	**190**	**56**	**60**	**11**	**1.7**	**--**
TS3-9AA	TS3-9AA	11/16/2010		ND [1.85]	ND [4.01]	ND [1.7]	1.72	--	--	--	--	--
	TS3-9AA-0914	9/6/2014		0.76	0.31 J	2.44	ND [2]	--	--	--	--	--
	SRTS3-9AA-1015	10/6/2015		0.84	ND [1]	1.68	ND [3]	--	--	--	--	--
	Gauged only	9/24/2017		--	--	--	--	--	--	--	--	--
	SRF39-TS39AA-0719	6/30/2019		0.786	0.449 J	2.87	ND [3]	ND [1]	0.413 J	0.033 J	0.42 J	All results ND or below CLs.
	Gauged only	6/24/2021		--	--	--	--	--	--	--	--	--
	SRF39-TS39AA-23	6/19/2023		0.519	ND [0.500]	1.64	ND [1.50]	ND [0.500]	0.442 J	0.0391 J,B	0.158 J-	All results ND or below CLs.
TS3-9BB	TS3-9BB	11/16/2010		2.81	ND [0.5]	10.7	1.52	--	--	--	--	--
	TS3-9BB-0914	9/6/2014	X	**5.67**	ND [1]	**39.6**	ND [2]	--	--	--	--	--
	SRTS3-9BB-1015	10/6/2015		**7.84**	ND [0.31]	**30.9**	1.41 J	--	--	--	--	--
	SRF39-TS39BB-0917	9/24/2017		**6.9**	ND [10]	**37.1**	ND [30]	ND [10]	ND [10]	ND [0.05]	**6.7 J**	All results ND or below CLs.
	SRF39-TS39BB-0719	6/30/2019	X	**5.34**	0.388 J	**35.9**	ND [3]	ND [1]	2.27	ND [0.0463]	0.842 J	All results ND or below CLs.
	SRF39-TS39BB-0621	6/27/2021	X	**6.64**	ND [1]	**18.7**	ND [3]	ND [0.500]	1.6	0.0406 J	0.994 J	All results ND or below CLs.
	SRF39-TS39BB-23	6/19/2023		3.34	--	**23.2**	ND [1.50]	ND [0.500]	2.32	0.0531 J-,B	**1.98**	All results ND.
TS3-9CC	TS3-9CC	11/16/2010		ND [0.5]	ND [0.5]	ND [0.5]	ND [1]	--	--	--	--	--
	TS3-9CC-0914	9/9/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--
	Gauged only	6/14/2023		*Gauged biennially since 2015.*								
TS3-9DD	TS3-9DD	11/16/2010		ND [0.5]	ND [0.5]	ND [0.5]	ND [1]	--	--	--	--	--
	TS3-9DD-0914	9/6/2014		ND [0.4]	ND [1]	ND [1]	0.71 J	--	--	--	--	--
	SRTS3-9DD-1015	10/6/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	--	--
	Gauged only	9/24/2017		--	--	--	--	--	--	--	--	--
	SRF39-TS39DD-0719	6/30/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0463]	ND [0.0926]	All results ND.
	Gauged only	6/24/2021		--	--	--	--	--	--	--	--	--
	SRF39-TS39DD-23	6/18/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	0.393 J	ND [0.500]	0.0263 J,B	0.0395 J	All results ND or below CLs.
FS3-9B	*Dry - No sample*	11/2010		--	--	--	--	--	--	--	--	--
	FS3-9B-0914	9/6/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--
	SRFS3-9B-1015	10/5/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	--	--
	Gauged only	9/24/2017		--	--	--	--	--	--	--	--	--
	SRF39-FS39B-0719	6/30/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0463]	ND [0.0926]	All results ND.
	Gauged only	6/24/2021		--	--	--	--	--	--	--	--	--
	SRF39-FS39B-23	6/19/2023		ND [0.200]	ND [0.500]	ND [0.500]	ND [1.50]	ND [0.500]	ND [0.500]	ND [0.0250] J-	ND [0.0500] J-	All results ND or below CLs.
FS3-9E	FS3-9E	12/26/2010		**276**	78.7	**79.2**	**309**	--	--	--	--	--
	FS3-9E-0914	9/6/2014		**159**	1.64	**33.9**	121.9	--	--	--	--	--
	SRFS3-9E-1015	10/6/2015		**185**	2.7 J	**37.6**	134.9	--	--	--	--	--
	LNAPL present	9/24/2017		--	--	--	--	--	--	--	--	--
	LNAPL present	6/28/2019		--	--	--	--	--	--	--	--	--
	SRF39-FS39E-0621	6/27/2021		**114**	1.18	**54.2**	147	54.7	56	ND [0.0261] J	**22.5**	All results ND or below CLs.
	SRF39-FS39E-23	6/19/2023		**142**	1.51	**74.5**	186	**58.5**	54.3	1.34 J-	**27**	All results ND or below CLs.
FS3-9G	FS3-9G	11/16/2010		ND [0.5]	ND [0.5]	ND [0.5]	ND [1]	--	--	--	--	--
	FS3-9G-0914	9/6/2014		ND [0.4]	ND [1]	ND [1]	ND [2]	--	--	--	--	--
	SRFS3-9G-1015	10/6/2015		ND [0.4]	ND [1]	ND [1]	ND [3]	--	--	--	--	--
	Gauged only	9/24/2017		--	--	--	--	--	--	--	--	--
	SRF39-TS39G-0719	7/12/2019		ND [0.4]	ND [1]	ND [1]	ND [3]	ND [1]	ND [1]	ND [0.0504]	ND [0.101]	All results ND.
	Gauged only	6/24/2021		--	--	--	--	--	--	--	--	--
	SRF39-FS39G-23	6/19/2023		0.211 J	ND [0.500]	ND [0.500]	ND [1.50]	0.408 J	ND [0.500]	ND [0.0261] J-	0.0323 J	All results ND or below CLs.

Table B7-2: SRF Tank Setting 3-9 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

Historical results for samples collected prior to 2010 can be found in previous monitoring reports.

Non-detect results from 2021 and later are reported with the LOD shown in brackets.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[ ] - LOD. In some cases the LOQ/PQL was reported for historical ND results.

-- Not analyzed.

Data Flags:

B	Result is an estimated value biased high due to contamination detected in an associated blank.
J (±)	Result is an estimated value biased high/low/indeterminate.

Definitions:

µg/L	microgram(s) per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
CL	cleanup level
ID	Identification
LNAPL	light non-aqueous phase liquid
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect
PAH	polycyclic aromatic hydrocarbons
PQL	practical quantitation limit
SIM	selected ion monitoring
VOC	volatile organic compound

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Table B7-3: SRF TS3-9 Historic Product Recovery
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS			PRODUCT RECOVERY METHOD	PRODUCT REMOVED (gal)	SORBENT SOCK	Total Cumulative Product Removed[2] (gal)
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	PRODUCT THICKNESS (feet)				
Swanson River Field Tank Setting 3-9	FS3-9E	10/7/2015	11.55	--	--	-	-	Replaced	0.00
		10/18/2017	LNAPL - depth to product not noted at time of gauging			-	-	None	
		6/28/2019	12.2	11.91	0.29	-	-	Replaced	
		6/24/2021	12.28	12.28	Trace	-	-	Replaced	
		6/14/2023	8.15	-	-	-	-	Replaced	
	TS3-9A	10/7/2015	20.3	20	0.3	-	-	Replaced	1.40
		10/18/2017	LNAPL - depth to product not noted at time of gauging			-	-	Replaced	
		6/28/2019	17.06	15.74	1.32	-	-	Replaced	
		6/24/2021	20.25	20.11	0.14	Bailer[1]	1.00	Replaced	
		6/14/2023	15.68	15.33	0.35	Bailer[1]	0.40	Replaced	
	TS3-9F	10/7/2015	23.25	--	--	-	-	-	0.00
		10/18/2017	LNAPL - depth to product not noted at time of gauging			-	-	-	
		6/28/2019	19.56	--	Trace	-	-	Turned over	
		6/24/2021	20.63	20.63	Trace	-	-	Replaced	
		6/14/2023	15.77	-	-	-	-	Turned over	

Notes:

- **-** Not measured/not applicable/unknown
- [1] 2-inch by 3-foot polyethylene bailer, tied and left inside of steel monument.
- [2] Cumulative total since 2019.

Abbreviations:

BTOC below top of casing
gal gallons
ID identification number

Table B8-1: SRF SCU 23B-03 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS		WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
SCU 23B-03	MW-01	6/18/2023	15.04	-	23.48	132.83	117.79	No
	MW-02	6/18/2023	15.12	-	21.66	132.92	117.80	No
	MW-03	6/18/2023	17.06	-	21.91	134.74	117.68	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

Abbreviations:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

Table B8-2: Soldotna Creek Unit 23B-03 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All values presented in units of µg/L.			Duplicate	AK102	AK103	SW8260			SW8270 SIM						SW8260/SW8270 SIM	
Well ID	Sample ID	Sample Date		DRO	RRO	Ethylbenzene	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	1-Methyl-naphthalene	2-Methyl-naphthalene	Benzo(a) anthracene	Benzo(a) pyrene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd) pyrene	Naphthalene	Petroleum-Related VOCs/PAHs[2]
ADEC Groundwater Cleanup Levels[1]				1500	1100	15	56	60	11	36	0.3	0.25	0.25	2.5	1.7	--
MW-01	2303-MW01-062622	6/26/2022	X	**4,070**	**1,440**	**26.6**	**216**	**139**	1.29	0.227	ND [0.0250]	ND [0.0100]	ND [0.0100]	ND [0.0250]	**21.7**	All results ND or below CLs
	2303-MW01-093022	9/30/2022		**3,900 J-**	**1,250 J-**	**29.6**	**211**	**146**	6.84	5.16	ND [0.0212]	ND [0.00845] UJ	ND [0.00845]	ND [0.0212] UJ	**29.3**	All results ND or below CLs
	23B3-MW01-23	6/20/2023	X	**2,880 J-**	719 J	9.43	**106**	**66.8**	0.0263 J,B	0.0229 J,B	ND [0.0261]	ND [0.0104]	0.0399 J	0.0403 J	**15.4**	All results ND or below CLs
MW-02	2303-MW02-093022	9/30/2022		ND [306]	738	ND [0.5]	ND [0.5]	ND [0.5]	0.0147 J	0.0176 J	0.0166 J	0.0176	ND [0.00845]	ND [0.0212]	ND [0.0423]	All results ND or below CLs
	23B3-MW02-23	6/20/2023		286 J	ND [255]	ND [0.5]	ND [0.5]	ND [0.5]	0.0154 J,B	0.0196 J,B	ND [0.0250]	ND [0.0100]	ND [0.0100]	ND [0.0250]	ND [0.05]	All results ND
MW-03	2303-MW03-093022	9/30/2022	X	ND [283]	333 J	ND [0.5]	ND [0.5]	ND [0.5]	ND [0.0205]	0.0173 J	ND [0.0205]	ND [0.0082]	ND [0.0082]	ND [0.0205]	ND [0.041]	All results ND
	23B3-MW03-23	6/20/2023		309 J	562	ND [0.5]	ND [0.5]	ND [0.5]	0.0188 J,B	0.0216 J,B	**0.576**	**1.5**	**3.52**	**3.14**	0.0369 J	All results ND or below CLs

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[ ] The LOD is shown in brackets for ND results.

-- Not analyzed.

Data Flags:

B Result is an estimated value biased high due to contamination detected in an associated blank.

J (±) Result is an estimated value biased high/low/indeterminate.

UJ The anayte was not detected and the LOD is an estimated value.

Definitions:

µg/L microgram(s) per liter

AAC Alaska Administrative Code

ADEC Alaska Department of Environmental Conservation

CL cleanup level

DRO diesel range organics

ID Identification

LOD limit of detection

ND non-detect

PAH polycyclic aromatic hydrocarbons

RRO residual-range organics

SIM selected ion monitoring

VOC volatile organic compound

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Table B9-1: SRF SCU 312-09 Groundwater Elevation Data
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

LOCATION	WELL ID	DATE	MEASURED DEPTHS		WELL CASING		GROUNDWATER ELEVATION[1] (feet)	HEAVING OBSERVED
			TO WATER (feet BTOC)	TO PRODUCT (feet BTOC)	TOTAL DEPTH (feet BTOC)	TOP ELEVATION[1] (feet)		
SCU 312-09	MW-01	6/19/2023	16.05	-	23.01	125.40	109.35	No
	MW-02	6/19/2023	19.32	-	22.42	128.76	109.44	No
	MW-03	6/19/2023	18.22	-	22.95	127.56	109.34	No

Notes:

- Not measured/not applicable.

[1] Elevation data from a survey conducted by Aleut Remediation, LLC in June 2023. Elevations relative to NAVD88.

Abbreviations:

BTOC below top of casing
ID identification number
NAVD88 North American Vertical Datum of 1988

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Table B8-2: Soldotna Creek Unit 312-09 Groundwater Analytical Results
2023 Groundwater Monitoring Program Report
Kenai Peninsula, Alaska

All values presented in units of µg/L.			Duplicate	AK102	AK103	SW8270 SIM			SW8260/SW8270 SIM	
Well ID	Sample ID	Sample Date		DRO	RRO	Benzo(a) pyrene	Dibenz(a,h) anthracene	Indeno(1,2,3-cd) pyrene	Naphthalene	Petroleum-Related VOCs/PAHs[2]
ADEC Groundwater Cleanup Levels[1]				1500	1100	0.25	0.25	2.5	1.7	--
MW-01	31209-MW01-093022	9/30/2022		418 J	1,100	ND [0.00805]	ND [0.00805]	ND [0.0202]	0.39 J	All results ND or below CLs
	31209-MW01-23	6/20/2023		ND [306] J-	ND [255] J-	0.019 J	0.057	0.0565	ND [0.0520] J-	All results ND or below CLs
MW-02	31209-MW02-093022	9/30/2022		ND [288]	234 J	ND [0.0078]	ND [0.0078]	ND [0.0196]	ND [0.0391]	All results ND
	31209-MW02-23	6/20/2023		ND [326] J-	ND [272] J-	ND [0.0107]	ND [0.0107]	ND [0.0266]	ND [0.0530]	All results ND or below CLs
MW-03	31209-MW03-093022	9/30/2022	X	ND [288]	233 J	ND [0.0082]	ND [0.0082]	ND [0.0205]	0.36 J	All results ND or below CLs
	31209-MW03-23	6/20/2023		ND [294] J-	ND [245]	0.235	**2.10 J-**	1.41 J-	ND [0.0530]	All results ND or below CLs

Notes:

All results in µg/L.

Bold indicates that the result exceeds the ADEC groundwater cleanup level.

[1] 18 AAC 75.345, Table C groundwater cleanup levels (ADEC 2023).

[2] Includes petroleum-related VOC and PAH analytes that are not shown in this table.

[ ] The LOD is shown in brackets for ND results.

-- Not analyzed.

Data Flags:

J (±) Result is an estimated value biased high/low/indeterminate.

Definitions:

µg/L microgram(s) per liter

AAC Alaska Administrative Code

ADEC Alaska Department of Environmental Conservation

CL cleanup level

DRO diesel range organics

ID Identification

LOD limit of detection

ND non-detect

PAH polycyclic aromatic hydrocarbons

RRO residual-range organics

SIM selected ion monitoring

VOC volatile organic compound

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APPENDIX C

FIELD FORMS

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Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 1:44 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-4	FS1-4E	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Stained Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 8 ft btoc Total Well Depth: 17.4 ft btoc Height of Water Column: 9.4 ft Bottom of Well Conditions: Hard Probe Observations: Rust flakes Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: West
Photo Notes:

ALEUT FEDERAL, LLC

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 1:33 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-4	FS1-4H	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled?
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? No Needs lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations: Casing lid will not close
Well Gauging	Is the well dry? No Current Depth to Water: 12.21 ft btoc Total Well Depth: 20.28 ft btoc Height of Water Column: 8.07 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: East
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

ALEUT FEDERAL, LLC

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 5:32 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-4	FS1-4I	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? No Lock broken and needs to be replaced
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 7.25 ft btoc Total Well Depth: 20.2 ft btoc Height of Water Column: 12.95 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: SouthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 5:54 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-4	TS1-4DD	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 4.36 ft btoc Total Well Depth: 16.49 ft btoc Height of Water Column: 12.13 ft Bottom of Well Conditions: Soft Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:04 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-4	TS1-4EE	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Stained, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 5.1 ft btoc Total Well Depth: 15.62 ft btoc Height of Water Column: 10.52 ft Bottom of Well Conditions: Soft Probe Observations: Mud Mud Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 10:21 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-4	TS1-4F	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled?
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Strong PID Reading: Tubing Present: Peristaltic pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: Yes Sorbent Sock Saturation: < 50% Other Observations: Gasoline smell
Well Gauging	Is the well dry? No Current Depth to Water: 9.28 ft btoc Total Well Depth: 24.22 ft btoc Height of Water Column: 14.94 ft Bottom of Well Conditions: Hard Probe Observations: Other Strong gasoline odor Product Present: No

Site Photos



Photo Name:
Photo Direction: West
Photo Notes:



Photo Name:
Photo Direction: South
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:18 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-4	TS1-4GR	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Mild PID Reading: Tubing Present: Bladder pump tubing Condition of Tubing: Good, Stained, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 9.6 ft btoc Total Well Depth: 20.35 ft btoc Height of Water Column: 10.75 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: SouthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 10:37 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-4	TS1-4J	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Moderate PID Reading: Tubing Present: Peristaltic pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 8.32 ft btoc Total Well Depth: ft btoc Height of Water Column: ft Bottom of Well Conditions: Probe Observations: Product Product, Other Small amount Product Present: No

Site Photos



Photo Name:
Photo Direction: West
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:48 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-9	FS1-9D	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled?
Well Condition	Decent (requires maintenance that does not affect the well function) Other Tree trimming
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 12.88 ft btoc Total Well Depth: 19.91 ft btoc Height of Water Column: 7.03 ft Bottom of Well Conditions: Hard Probe Observations: Sheen Sheen Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 1:54 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-9	FS1-9F	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Decent (requires maintenance that does not affect the well function) Needs Maintenance, PVC heaved Replace plug, Replace cap, Cut PVC down PVC heaved by inches
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: None Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Strong PID Reading: Tubing Present: None Condition of Tubing: N/A Bailer Present: Yes Product Removed by Bailer: 100 Bailing Time: 5 Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 11.87 ft btoc Total Well Depth: ft btoc Height of Water Column: ft Bottom of Well Conditions: Probe Observations: Product Product Product Present: Yes Product Thickness: 0.34

Site Photos



Photo Name: Sock
Photo Direction: West
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: East
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:38 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-9	FS1-9I	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Other Fished from well Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 12.56 ft btoc Total Well Depth: 19.66 ft btoc Height of Water Column: 7.1 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

ALEUT FEDERAL, LLC

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:20 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-9	FS1-9M	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Bollards
Monument Label	Is the monument labeled? Yes
Well Condition	Decent (requires maintenance that does not affect the well function) Other Pvc against collar
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 19.45 ft btoc Total Well Depth: 25.94 ft btoc Height of Water Column: 6.49 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:25 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-9	FS1-9N	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Other Fished from well Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 15.87 ft btoc Total Well Depth: 25.02 ft btoc Height of Water Column: 9.15 ft Bottom of Well Conditions: Hard Probe Observations: Rust flakes Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:09 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-9	TS1-9A	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Decent (requires maintenance that does not affect the well function) Concrete base heaved/cracked Concrete base is heaved by 0 just craccked inches from ground surface
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: Yes Product Removed by Bailer: 0 Bailing Time: 0 none Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations: No product
Well Gauging	Is the well dry? No Current Depth to Water: 21.57 ft btoc Total Well Depth: 29.61 ft btoc Height of Water Column: 8.04 ft Bottom of Well Conditions: Hard Probe Observations: Other Some lnapl Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: South
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 8:52 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-9	TS1-9B	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Mild PID Reading: Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 21.19 ft btoc Total Well Depth: 26.4 ft btoc Height of Water Column: 5.21 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Product Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: South
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:50 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS1-9	TS1-9C	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Mild PID Reading: Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: Yes Sorbent Sock Saturation: < 50% Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 21.45 ft btoc Total Well Depth: 27 ft btoc Height of Water Column: 5.55 ft Bottom of Well Conditions: Semi-soft Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Petrosock before flipping
Photo Direction: Close-up
Photo Notes:



Photo Name: Exterior of well
Photo Direction: SouthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:27 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS1-9	TS1-9D	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel, None POL/Fuel Odor Strength: Mild PID Reading: 0 Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: Yes Product Removed by Bailer: Bailing Time: Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 20.76 ft btoc Total Well Depth: 27.4 ft btoc Height of Water Column: 6.64 ft Bottom of Well Conditions: Sticky Probe Observations: Product Present: No

Site Photos



Photo Name: TS1-9D overview
Photo Direction: West
Photo Notes:



Photo Name: TS1-9 Downhole with bailers. No product present.
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:07 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS1-9	TS1-9HH	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? Yes
Well Condition	Decent (requires maintenance that does not affect the well function) Concrete base heaved/cracked Concrete base is heaved by ~4 inches inches from ground surface
Well Security	Is the well secured? No Other Cap requires second lock to secure. See photo.
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Stained, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 19.82 ft btoc Total Well Depth: 30.6 ft btoc Height of Water Column: 10.78 ft Bottom of Well Conditions: Soft Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well. Note cap requires more than one lock to secure.
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: South
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 8:58 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS1-9	TS1-9II	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Peristaltic pump tubing Condition of Tubing: Stained Bailer Present: No Sorbent Sock Present: No Other Observations: Orange staining on tubing, possibly biological infiltration
Well Gauging	Is the well dry? No Current Depth to Water: 20.26 ft btoc Total Well Depth: 30.71 ft btoc Height of Water Column: 10.45 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name: TS1-9II Overview
Photo Direction: West
Photo Notes:



Photo Name: TS1-9II tubing staining
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 9:19 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS1-9	TS1-9U	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Slight/Faint PID Reading: 0 Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 22.72 ft btoc Total Well Depth: 29.53 ft btoc Height of Water Column: 6.81 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name: TS1-9U overview
Photo Direction: NorthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:47 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-27	FS1-27C	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled?
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Other Unk Condition of Tubing: Other Way down well Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 8.88 ft btoc Total Well Depth: 25.9 ft btoc Height of Water Column: 17.02 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: East
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:54 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-27	TS1-27G	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 10 ft btoc Total Well Depth: 25.77 ft btoc Height of Water Column: 15.77 ft Bottom of Well Conditions: Soft Probe Observations: Other Nothing on the probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Well TP1-27G
Photo Direction: SouthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:40 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-27	TS1-27J	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 13.27 ft btoc Total Well Depth: 20.89 ft btoc Height of Water Column: 7.62 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: East
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:59 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-27	TS1-27K	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Stained Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 11 ft btoc Total Well Depth: 25.13 ft btoc Height of Water Column: 14.13 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: West
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:53 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-27	TS1-27L	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Decent (requires maintenance that does not affect the well function) Functions but missing some components Components missing: Casing cap
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Stained Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 12.32 ft btoc Total Well Depth: 19.75 ft btoc Height of Water Column: 7.43 ft Bottom of Well Conditions: Hard Probe Observations: Orange sediment Product Present: No

Site Photos



Photo Name:
Photo Direction: SouthEast
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 1:11 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-27	TS1-27M	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 11.91 ft btoc Total Well Depth: 25.43 ft btoc Height of Water Column: 13.52 ft Bottom of Well Conditions: Semi-soft Probe Observations: Other Nothing on the probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Well TS1-27M
Photo Direction:
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:41 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-27	TS1-27N	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 14.28 ft btoc Total Well Depth: 24.35 ft btoc Height of Water Column: 10.07 ft Bottom of Well Conditions: Semi-soft Probe Observations: Other Nothing on the probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Well TS1-27N
Photo Direction: NorthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 2:53 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	FS1-33F	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 25.79 ft btoc Total Well Depth: 44.56 ft btoc Height of Water Column: 18.77 ft Bottom of Well Conditions: Semi-soft Probe Observations: Other Nothing on the probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: SouthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 3:07 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	FS1-33H	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Stained, Kinked Bailer Present: No Sorbent Sock Present: Yes Sorbent Sock Saturation: < 50% Other Observations: Two bailers were in the casing outside the riser. Petrosock is wet, and has some iron precipitation, but does not appear to have any product. I only have WLM today. Will need to revisit with IP another time. Inside of riser looks pretty gunky.
Well Gauging	Is the well dry? No Current Depth to Water: 21.76 ft btoc Total Well Depth: 42.29 ft btoc Height of Water Column: 20.53 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Bailers that were inside casing, but outside riser.
Photo Direction: Close-up
Photo Notes:



Photo Name: Absorbent sock from well. Down is left.
Photo Direction: Close-up
Photo Notes:



Photo Name: Exterior of well. Note black conduit in finish.
Photo Direction: East
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 4:53 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS1-33	FS1-33H	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: Yes Product Removed by Bailer: 0 Bailing Time: 0 Sorbent Sock Present: Yes Sorbent Sock Saturation: < 50% Other Observations: No product
Well Gauging	Is the well dry? No Current Depth to Water: 21.4 ft btoc Total Well Depth: 42.39 ft btoc Height of Water Column: 20.99 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: NorthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 2:38 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	FS1-33O	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 26.49 ft btoc Total Well Depth: 47.85 ft btoc Height of Water Column: 21.36 ft Bottom of Well Conditions: Semi-soft Probe Observations: Orange sediment Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: West
Photo Notes:



Photo Name: Finish is a few large stones placed around the casing.
Photo Direction: South
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 2:03 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	FS1-33S	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted, Bollards, Other Bollard cage
Monument Label	Is the monument labeled? Yes
Well Condition	Poor Other Casing hit by vehicle before bollards, top section of well comes apart, cap is mangled. Still sampleable, though.
Well Security	Is the well secured? No Other Cap is mangled, see photo
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Stained, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations: WLM had an odor I couldn't place. Not really fuel, iron, or H2S, maybe some combination of the three?
Well Gauging	Is the well dry? No Current Depth to Water: 23.7 ft btoc Total Well Depth: 47.21 ft btoc Height of Water Column: 23.51 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on the probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well, note cap damage and casing damage
Photo Direction: SouthEast
Photo Notes:



Photo Name: Top section of riser removed
Photo Direction: Close-up
Photo Notes:



Photo Name: Exterior of well closed up
Photo Direction: SouthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 2:26 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	FS1-33T	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 18.34 ft btoc Total Well Depth: 42.82 ft btoc Height of Water Column: 24.48 ft Bottom of Well Conditions: Soft Probe Observations: Other Nothing on the probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: East
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 1:51 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	FS1-33W	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 21.55 ft btoc Total Well Depth: 32.17 ft btoc Height of Water Column: 10.62 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on the probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Well FS1-33W
Photo Direction: SouthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 4:07 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	TS1-33JJ	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 10.7 ft btoc Total Well Depth: 22.66 ft btoc Height of Water Column: 11.96 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well. Some sort of equipment staged and covered behind.
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 3:52 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	TS1-33KK	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 6.86 ft btoc Total Well Depth: 22 ft btoc Height of Water Column: 15.14 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: NorthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 4:33 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	TS1-33O2	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Decent (requires maintenance that does not affect the well function) Other Casing is bashed in and cap is missing. Riser is intact.
Well Security	Is the well secured? No Other Cap is missing completely
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked, Other Lots of orange precipitation Bailer Present: No Sorbent Sock Present: Other Observations: Smells like gasoline here, but not from the well i don't think.
Well Gauging	Is the well dry? No Current Depth to Water: 8.17 ft btoc Total Well Depth: 22.6 ft btoc Height of Water Column: 14.43 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well. Wire/conduit rack above
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well with cable/conduit rack above
Photo Direction: NorthWest
Photo Notes:

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Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 3:41 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	TS1-33P	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging, Other Rebar cage
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 6.25 ft btoc Total Well Depth: 18.83 ft btoc Height of Water Column: 12.58 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well with rebar cage
Photo Direction: SouthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 4:50 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	TS1-33Q	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted, Bollards
Monument Label	Is the monument labeled? Yes
Well Condition	Poor Destroyed
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Other Unable to open Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Other Unable to open Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations: Well is destroyed. Unable to see what's inside it
Well Gauging	Is the well dry? Current Depth to Water: ft btoc Total Well Depth: ft btoc Height of Water Column: ft Bottom of Well Conditions: Probe Observations: Product Present: No

Site Photos



Photo Name: Despite the protective bollards, well has been knocked over. Bollards will need to be moved before well can be repaired.

Photo Direction: South

Photo Notes: Bollards are not set into the soil and can just be pushed over. This is probably how the well got pushed over. Note that the concrete finish is also damaged.

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 4:21 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS1-33	TS1-33UR	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked, Other Slimy Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 7.1 ft btoc Total Well Depth: 15.37 ft btoc Height of Water Column: 8.27 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: NorthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 11:41 AM	Hilcorp	Kyle Therrien
Site ID	**Well ID**	
SRFTS2-15	FS2-15B	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations: Pvc along edge of casing. Could be cut down
Well Gauging	Is the well dry? No Current Depth to Water: 10.04 ft btoc Total Well Depth: 35.6 ft btoc Height of Water Column: 25.56 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name: FS2-15B
Photo Direction: East
Photo Notes:



Photo Name: FS2-15B
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:03 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS2-15	TS2-15O	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Bollards, Other A bollard frame of sorts
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 7.69 ft btoc Total Well Depth: 21.24 ft btoc Height of Water Column: 13.55 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Well TP2-15O
Photo Direction: East
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 11:47 AM	Hilcorp	Karina Packer, Brad Ramsay
Site ID	**Well ID**	
SRFTS2-15	TS2-15P	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 7.62 ft btoc Total Well Depth: 27.75 ft btoc Height of Water Column: 20.13 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Well TP2-15P
Photo Direction: SouthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 11:58 AM	Hilcorp	Karina Packer
Site ID	**Well ID**	
SRFTS2-15	TS2-15Q	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 11.5 ft btoc Total Well Depth: 32.78 ft btoc Height of Water Column: 21.28 ft Bottom of Well Conditions: Semi-soft Probe Observations: Other Tan sediment Product Present: No

Site Photos



Photo Name: In well
Photo Direction: Down
Photo Notes:



Photo Name: Close up
Photo Direction: NorthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 12:04 PM	Hilcorp	Kyle Therrien
Site ID	**Well ID**	
SRFTS2-15	TS2-15R	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 9.69 ft btoc Total Well Depth: 25.39 ft btoc Height of Water Column: 15.7 ft Bottom of Well Conditions: Soft Probe Observations: Other None Product Present: No

Site Photos



Photo Name: Ts2-15R
Photo Direction: North
Photo Notes:



Photo Name: TS2-15R
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 11:20 AM	Hilcorp	Jacob Bougere
Site ID	**Well ID**	
SRFTS3-4	FS3-4A	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components) Other PVC heaved against monument.
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Stained, Other Gray staining at bottom of tubing. Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 12.26 ft btoc Total Well Depth: 37.41 ft btoc Height of Water Column: 25.15 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name: FS3-4A downhole showing PVC heaved against monument.
Photo Direction: Down
Photo Notes:



Photo Name: FS3-4A overview
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 11:29 AM	Hilcorp	Jacob Bougere
Site ID	**Well ID**	
SRFTS3-4	FS3-4B	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components) Other PVC heaved against monument
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 6.8 ft btoc Total Well Depth: 30.85 ft btoc Height of Water Column: 24.05 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name: FS3-4B downhole showing PVC heaved against monument
Photo Direction: Down
Photo Notes:



Photo Name: FS3-4B overview
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 2:40 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-4	FS3-4D	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other Bollard cage
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: None Well Diameter: Other 2inch with 1.5 inch black pvc insert Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Strong PID Reading: Tubing Present: None Condition of Tubing: N/A Bailer Present: Yes Product Removed: 5 gallons Product Recovery Time: 40 min of pumping with peri Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations: 1 inch sock with fishing weight
Well Gauging	Is the well dry? No Current Depth to Water: ft btoc Total Well Depth: ft btoc Height of Water Column: ft Bottom of Well Conditions: Probe Observations: Product Product Product Present: Yes Product Thickness: 3

Site Photos



Photo Name: Product sock
Photo Direction: East
Photo Notes:



Photo Name: Peri pumping product
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: West
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 19, 2023 7:19 PM	Hilcorp	Jacob Bougere, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-4	FS3-4D	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Bollards, Other Painted metal barrier
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? No Dummy lock
Well Description	Well Seal: None Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Strong PID Reading: Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: Yes Sorbent Sock Saturation: Other Observations: Well contains product and is pumped with a peri pump. Sock installed after gauging. 1.5" pvc insert removed as directed by hilcorp pm.
Well Gauging	Is the well dry? No Current Depth to Water: ft btoc Total Well Depth: ft btoc Height of Water Column: ft Bottom of Well Conditions: Probe Observations: Product Product Product Present: Yes Product Thickness:

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Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 11:09 AM	Hilcorp	Jacob Bougere
Site ID	**Well ID**	
SRFTS3-4	FS3-4F	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other Metal barrier
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components) Other PVC heaved against monument
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 11.38 ft btoc Total Well Depth: 25.9 ft btoc Height of Water Column: 14.52 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name: FS3-4F downhole. PVC heaved against monument.
Photo Direction: Down
Photo Notes:



Photo Name: FS3-4F overview.
Photo Direction: NorthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 11:29 AM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS3-4	TS3-4CC	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other Reflective flexi post (see photo)
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Stained, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 10.96 ft btoc Total Well Depth: 20.81 ft btoc Height of Water Column: 9.85 ft Bottom of Well Conditions: Other A little sticky Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: West
Photo Notes:



Photo Name: Exterior of well showing reflective flexi post
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 10:59 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-4	TS3-4D	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Moderate PID Reading: Tubing Present: Peristaltic pump tubing Condition of Tubing: Stained Bailer Present: Yes Product Removed by Bailer: 0 Bailing Time: 4 Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 13.44 ft btoc Total Well Depth: ft btoc Height of Water Column: ft Bottom of Well Conditions: Probe Observations: Product Product Product Present: No

Site Photos



Photo Name:
Photo Direction: West
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 11:23 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-4	TS3-4MM	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled?
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 5.74 ft btoc Total Well Depth: 21 ft btoc Height of Water Column: 15.26 ft Bottom of Well Conditions: Hard Probe Observations: Mud Mud Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: NorthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 10:19 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS3-4	TS3-4NN	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? Yes
Well Condition	Poor Heaved Well is heaved by 0.5 feet
Well Security	Is the well secured? Yes Other Key lock. Can remove lid without unlocking
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations: Monument heaved around well casing. Casing secure.
Well Gauging	Is the well dry? No Current Depth to Water: 5.45 ft btoc Total Well Depth: 27.7 ft btoc Height of Water Column: 22.25 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name: TS3-4 NN overview
Photo Direction: SouthWest
Photo Notes:



Photo Name: Heaving at TS3-4NN
Photo Direction: Close-up
Photo Notes:



Photo Name: TS3-4NN downhole
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 10:27 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS3-4	TS3-4OO	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? Yes
Well Condition	Poor Heaved, Bent Well is heaved by 1.0 foot Bent angle = See photo.
Well Security	Is the well secured? Yes Other Key lock. Lid can be removed while locked.
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 4.25 ft btoc Total Well Depth: 20.9 ft btoc Height of Water Column: 16.65 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name: TS3-4OO heaved and bent
Photo Direction: SouthWest
Photo Notes:



Photo Name: TS3-4OO downhole
Photo Direction: Down
Photo Notes:



Photo Name: TS3-4OO heave/bent angle
Photo Direction: Close-up
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 11:12 AM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS3-4	TS3-4P	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Slight/Faint PID Reading: Tubing Present: Bladder pump tubing Condition of Tubing: Good, Kinked, Other Moderate gasoline odor on tubing Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 7.51 ft btoc Total Well Depth: 22.53 ft btoc Height of Water Column: 15.02 ft Bottom of Well Conditions: Soft Probe Observations: Other Nothing on probe, but definite gasoline odor Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 10:41 AM	Hilcorp	Jacob Bougere, Brad Ramsay
Site ID	**Well ID**	
SRFTS3-4	TS3-4PP	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? Yes
Well Condition	Poor Heaved Well is heaved by 0.3 feet
Well Security	Is the well secured? Yes Other Key lock. Lid can be removed while locked.
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Peristaltic pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations: Monument heaved into casing
Well Gauging	Is the well dry? No Current Depth to Water: 5.31 ft btoc Total Well Depth: 17.5 ft btoc Height of Water Column: 12.19 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name: TS3-4PP Overview
Photo Direction: NorthWest
Photo Notes:



Photo Name: TS3-4PP Downhole
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 15, 2023 11:35 AM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-4	TS3-4Z	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Submersible pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 10.36 ft btoc Total Well Depth: 20.64 ft btoc Height of Water Column: 10.28 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:21 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	FS3-9B	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 10.82 ft btoc Total Well Depth: 22.49 ft btoc Height of Water Column: 11.67 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: West
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 5:58 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	FS3-9E	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Moderate PID Reading: Tubing Present: Peristaltic pump tubing Condition of Tubing: N/A Bailer Present: Yes Product Removed by Bailer: 0 Bailing Time: 1 Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations: Removed sock and replaced
Well Gauging	Is the well dry? No Current Depth to Water: 8.15 ft btoc Total Well Depth: 21.96 ft btoc Height of Water Column: 13.81 ft Bottom of Well Conditions: Hard Probe Observations: Other Oily residue Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: South
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:15 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	FS3-9G	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled?
Well Condition	Decent (requires maintenance that does not affect the well function) Needs Maintenance, Concrete base heaved/cracked Replace plug Concrete base is heaved by 0.5 feet from ground surface
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: None Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 8.19 ft btoc Total Well Depth: 24.92 ft btoc Height of Water Column: 16.73 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: SouthWest
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

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Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 7:22 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9A	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: Yes Product Removed by Bailer: 300 Bailing Time: 5 Sorbent Sock Present: Yes Sorbent Sock Saturation: > 50% Other Observations: Saturated
Well Gauging	Is the well dry? No Current Depth to Water: 15.68 ft btoc Total Well Depth: ft btoc Height of Water Column: ft Bottom of Well Conditions: Probe Observations: Product Present: Yes Product Thickness: 0.35

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:56 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9AA	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Other Tubing down well not visable Condition of Tubing: Other Unknown Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 13.25 ft btoc Total Well Depth: 33.75 ft btoc Height of Water Column: 20.5 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: South
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 7:03 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9BB	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 14.5 ft btoc Total Well Depth: 37.54 ft btoc Height of Water Column: 23.04 ft Bottom of Well Conditions: Soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: West
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:29 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9CC	

Inspection	
Monument Type	Stick-up
Visibility Indicator	
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations: Cap was not installed
Well Gauging	Is the well dry? No Current Depth to Water: 7.15 ft btoc Total Well Depth: 21.97 ft btoc Height of Water Column: 14.82 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 7:13 PM	Hilcorp	Brad Ramsay
Site ID	**Well ID**	
SRFTS3-9	TS3-9CR	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good, Stained, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 15.54 ft btoc Total Well Depth: 26.92 ft btoc Height of Water Column: 11.38 ft Bottom of Well Conditions: Hard Probe Observations: Other Nothing on probe Product Present: No

Site Photos



Photo Name: Down well
Photo Direction: Down
Photo Notes:



Photo Name: Exterior of well
Photo Direction: SouthEast
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 5:44 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9DD	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 5.99 ft btoc Total Well Depth: 27.22 ft btoc Height of Water Column: 21.23 ft Bottom of Well Conditions: Hard Probe Observations: Other None Product Present: No

Site Photos



Photo Name: TS3-9DD
Photo Direction: East
Photo Notes:



Photo Name: TS3-9DD
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 7:09 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9F	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: Yes Product Removed by Bailer: 0 Bailing Time: 0 Sorbent Sock Present: Yes Sorbent Sock Saturation: < 50% Other Observations: Orange staining
Well Gauging	Is the well dry? No Current Depth to Water: 15.77 ft btoc Total Well Depth: 30.81 ft btoc Height of Water Column: 15.04 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: South
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:51 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9S	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 11.96 ft btoc Total Well Depth: 29.46 ft btoc Height of Water Column: 17.5 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos

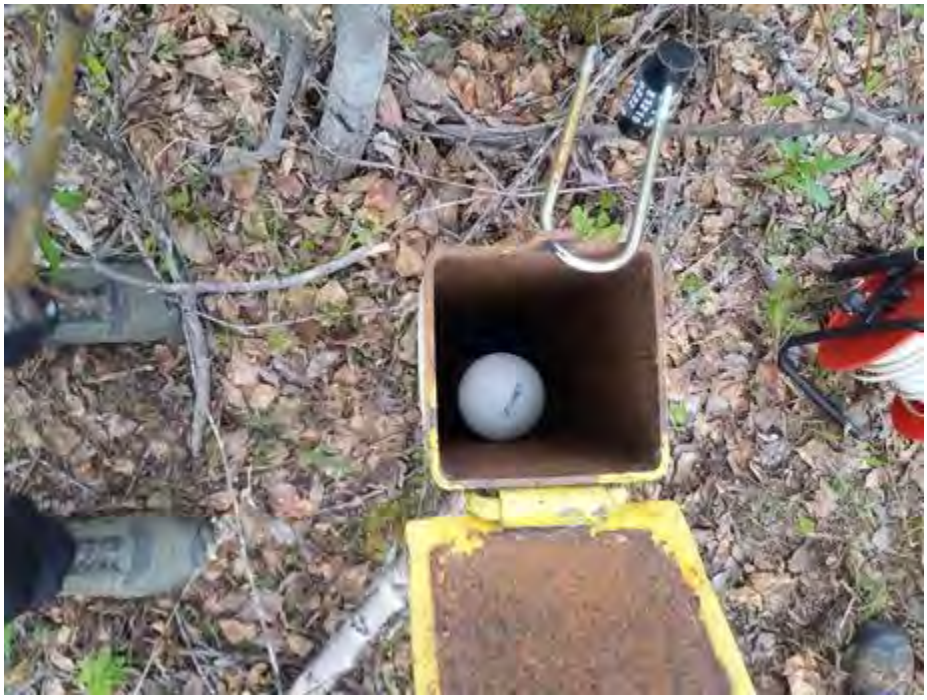


Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 5:50 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9T	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Other None
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Key lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: Yes Product Removed by Bailer: 0 Bailing Time: 0 Sorbent Sock Present: No Other Observations: No product
Well Gauging	Is the well dry? No Current Depth to Water: 13.54 ft btoc Total Well Depth: 31.2 ft btoc Height of Water Column: 17.66 ft Bottom of Well Conditions: Semi-soft Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: South
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:37 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9U	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: Yes Product Removed by Bailer: 0 Bailing Time: 0 Sorbent Sock Present: No Other Observations: No product observed
Well Gauging	Is the well dry? No Current Depth to Water: 13.03 ft btoc Total Well Depth: 29.71 ft btoc Height of Water Column: 16.68 ft Bottom of Well Conditions: Sticky Probe Observations: Bentonite Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: NorthWest
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 14, 2023 6:45 PM	Hilcorp	Karina Packer, Kyle Therrien
Site ID	**Well ID**	
SRFTS3-9	TS3-9V	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well cap Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Bladder pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 6.21 ft btoc Total Well Depth: 24.83 ft btoc Height of Water Column: 18.62 ft Bottom of Well Conditions: Soft Probe Observations: Other Sandy Clay Product Present: No

Site Photos



Photo Name:
Photo Direction: East
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 18, 2023 7:09 PM	Hilcorp	Jacob Bougere, Kyle Therrien
Site ID	**Well ID**	
23B-3	MW-01	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging, Painted, Bollards
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Slight/Faint PID Reading: 0 Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations: Added label, flagging, and lock. Removed old submersible poly tubing.
Well Gauging	Is the well dry? No Current Depth to Water: 15.04 ft btoc Total Well Depth: 23.48 ft btoc Height of Water Column: 8.44 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name: Downhole 23B-03 MW-01
Photo Direction: Down
Photo Notes:



Photo Name: 23B-03 MW-01
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 18, 2023 7:19 PM	Hilcorp	Jacob Bougere, Kyle Therrien
Site ID	**Well ID**	
23B-3	MW-02	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging, Painted, Bollards
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: POL/Fuel POL/Fuel Odor Strength: Slight/Faint PID Reading: 0 Tubing Present: Submersible pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations: Added flagging, label, lock. No gravel in monument annular space
Well Gauging	Is the well dry? No Current Depth to Water: 15.12 ft btoc Total Well Depth: 21.66 ft btoc Height of Water Column: 6.54 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name: 23B-03 MW-02 Downhole
Photo Direction: Down
Photo Notes:



Photo Name: 23B-03 MW-02 Overview
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 18, 2023 7:26 PM	Hilcorp	Jacob Bougere, Kyle Therrien
Site ID	**Well ID**	
23B-3	MW-03	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging, Painted
Monument Label	Is the monument labeled? Yes
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Submersible pump tubing Condition of Tubing: Good Bailer Present: No Sorbent Sock Present: No Other Observations: Added lock, label, flagging
Well Gauging	Is the well dry? No Current Depth to Water: 17.06 ft btoc Total Well Depth: 21.91 ft btoc Height of Water Column: 4.85 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name: 23B-03 MW-03 upon inspection
Photo Direction: North
Photo Notes:



Photo Name: 23B-03 MW-03 Downhole
Photo Direction: Down
Photo Notes:



Photo Name: 23B-03 MW-03 Overview
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 18, 2023 6:38 PM	Hilcorp	Jacob Bougere, Kyle Therrien
Site ID	**Well ID**	
312-09	MW-01	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations: Added lock, label, flagging
Well Gauging	Is the well dry? No Current Depth to Water: 16.1 ft btoc Total Well Depth: 23.01 ft btoc Height of Water Column: 6.91 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: North
Photo Notes:



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes: MW with lock installed and flagging

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 19, 2023 3:54 PM	Hilcorp	Jacob Bougere, Kyle Therrien
Site ID	**Well ID**	
312-09	MW-01	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled?
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? Yes Combination lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: None Condition of Tubing: N/A Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 16.05 ft btoc Total Well Depth: 23.01 ft btoc Height of Water Column: 6.96 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 19, 2023 4:04 PM	Hilcorp	Jacob Bougere, Kyle Therrien
Site ID	**Well ID**	
312-09	MW-02	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? No Needs lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Submersible pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 19.32 ft btoc Total Well Depth: 22.42 ft btoc Height of Water Column: 3.1 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes:

Well Inspection and Gauging

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Inspection Date	**Client**	**Field Team**
June 19, 2023 3:59 PM	Hilcorp	
Site ID	**Well ID**	
312-09	MW-03	

Inspection	
Monument Type	Stick-up
Visibility Indicator	Flagging
Monument Label	Is the monument labeled? No Re-labeled
Well Condition	Good (contains all applicable components)
Well Security	Is the well secured? No Needs lock
Well Description	Well Seal: Well plug Well Diameter: 2-inch Well Casing Material: PVC Odor: None Tubing Present: Submersible pump tubing Condition of Tubing: Good, Kinked Bailer Present: No Sorbent Sock Present: No Other Observations:
Well Gauging	Is the well dry? No Current Depth to Water: 18.22 ft btoc Total Well Depth: 22.95 ft btoc Height of Water Column: 4.73 ft Bottom of Well Conditions: Hard Probe Observations: Product Present: No

Site Photos



Photo Name:
Photo Direction: Down
Photo Notes:



Photo Name:
Photo Direction: North
Photo Notes:

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-4E	Swanson River Facility SRFTS1-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Partly Overcast		66
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.14 ft ags	8.33 ft btoc	17.4 ft btoc	9.07 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	9.33 ft btoc	1.5419 gal	4.6257 gal	7.7095 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	17:55	18:53	0.53 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
18:23	8.9	0.57	1,400	50	14.81	7.32	457	-73.2	1.76	36.26
18:26	8.92	0.02	155	51.67	14.38	7.15	452	-77.4	1.25	25.41
18:29	8.9	-0.02	150	50	14.3	7.15	451	-79	1.18	19.73
18:32	8.9	0	150	50	15.01	7.19	454	-77.7	1.2	21.21
18:35	8.88	-0.02	150	50	15.21	7.22	458	-75.7	1.17	18.66

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF14-FS14E-23	18:40	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

50-55 mL/min flowrate. Globules in purge water 0.6 gal of purge and decon water ran through GAC twice.

Site Photos



Photo Name

Sampling at FS1-4E

Photo Direction

SouthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-4H	Swanson River Facility SRFTS1-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Partly Overcast		61
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.05 ft ags	12.54 ft btoc	20.28 ft btoc	7.74 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	13.54 ft btoc	1.3158 gal	3.9474 gal	6.579 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	16:58	17:42	0.77 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
17:09	12.92	0.38	1,800	163.64	11.96	6.78	347	44.4	2.27	16.07
17:12	12.9	-0.02	225	75	11.4	7.22	339	32.7	1.17	12.23
17:15	13	0.1	225	75	11.36	6.66	340	27.7	1	9.56
17:18	13.06	0.06	225	75	11.41	6.54	343	20.6	0.9	9.08
17:21	13.07	0.01	225	75	11.31	6.54	346	14.5	0.83	8.8
17:24	13.11	0.04	225	75	11.51	6.55	349	7.8	0.74	7.27

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF14-FS14H-23	17:30	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

0.8 gal purge water treated with gac system. Pump set to 10 psi

Site Photos



Photo Name

Gw sampling

Photo Direction

SouthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-4I	Swanson River Facility SRFTS1-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.77 ft ags	7.69 ft btoc	20.2 ft btoc	12.51 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	11.2 ft btoc	2.1267 gal	6.3801 gal	10.6335 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	14:05	14:42	0.29 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
14:19	8.1	0.41	500	35.71	16	7.48	353	95.6	4.81	5.52
14:24	8.1	0	300	60	16.29	7.48	356	91.9	4.27	6.39
14:29	8.16	0.06	300	60	15	7.46	347	87.1	4.42	6.51

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF14-FS14I-23	14:33	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

Filling sample jars

Photo Direction

North

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-4EE	Swanson River Facility SRFTS1-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		68
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.07 ft ags	5.21 ft btoc	15.71 ft btoc	10.5 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	6.71 ft btoc	1.785 gal	5.355 gal	8.925 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	15:09	16:05	gal
Stability was reached by:				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
15:20	5.3	0.09	2,500	227.27	10.61	6.83	658	88.8	2.64	49.87
15:24	5.33	0.03	1,000	250	9.18	6.1	624	77.1	0.51	29.77
15:27	5.28	-0.05	675	225	8.97	6.09	587	72.7	0.36	22.17
15:30	5.26	-0.02	675	225	8.7	6.07	553	69	0.3	15.51
15:33	5.26	0	675	225	8.56	6.2	529	6.66	0.28	12.44
15:36	5.28	0.02	65	21.67	8.61	6.26	514	64.7	0.3	11.95
15:39	5.28	0	675	225	8.53	6.31	494	62.4	0.25	8.13
15:42	5.28	0	675	225	8.53	6.39	481	61.1	0.29	7.13
15:45	5.28	0	675	225	8.83	6.43	473	59.4	0.28	6.8
15:48	5.28	0	675	225	8.93	6.47	466	58	0.29	4.85

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF14-TS14EE-23	16:00	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 2: VOCs SW8260D / Glycols SW8015M | PAH SW8270D SIM	6 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

3.25 gal purge and decon water placed in 55 gal open top drum at TS1-4 building. Steady flowrate at 225 mL/min.

Site Photos



Photo Name

Gw sampling

Photo Direction

North

Photo Notes



Photo Name

Containerized gw

Photo Direction

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-4F	Swanson River Facility SRFTS1-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		75
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.2 ft ags	9.02 ft btoc	24.22 ft btoc	15.2 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	15.3 ft btoc	2.584 gal	7.752 gal	12.92 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Peristaltic Pump	16:00	16:45	0.35 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
16:11	10.82	1.8	500	45.45	17.36	6.91	527	28.4	9.12	9.86
16:16	10.92	0.1	275	55	18.34	6.95	545	19.3	9.07	11.1
16:21	11.08	0.16	275	55	19.29	6.96	559	16.8	8.65	9.97
16:26	11.25	0.17	275	55	19.79	6.97	566	13.2	8.56	11.51

Sample Information

Sample ID	Sample Time	Sample Date	QC Type	
SRF14-FS14F-23	16:31	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Adjusted pump to 55mL/min to minimize drawdown. Sheen not observed until filling glassware. PID not available, but there would have almost certainly been a response down well, at least, if not also in ambient air.

Site Photos



Photo Name

Sampling work area

Photo Direction

NorthWest

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-4GR	Swanson River Facility SRFTS1-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.35 ft ags	9.95 ft btoc	20.35 ft btoc	10.4 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	11 ft btoc	1.768 gal	5.304 gal	8.84 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	12:07	13:58	0.87 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:12	10.1	0.15	550	110	16.88	5.65	1,383	62.4	4.38	31.8
12:17	10.3	0.2	1,350	270	14.11	5.64	1,323	58.6	3.57	12.24
12:22	10.3	0	300	60	13.91	5.6	1,334	61.7	2.92	11.5
12:27	10.3	0	300	60	15.77	5.62	1,399	56.3	2.81	8.84
12:31	10.3	0	500	125	17.73	5.63	1,482	54	2.69	9.54
12:37	10.5	0.2	300	50	19.24	5.72	1,480	55.5	2.9	9.98

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
SRF14-TS14GR-23	12:45	June 18, 2023	Duplicate	SRF14-TS14GRZ-23
Method	**Bottle**		**Preservative**	
List 2: VOCs SW8260D / Glycols SW8015M | PAH SW8270D SIM	6 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

TS1-4GR

Photo Direction

Close-up

Photo Notes

Sampling set up, orange purge water

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Well ID	**Site**	**Client**
TS1-4J	Swanson River Facility SRFTS1-4	Hilcorp

Location Information				
Event Date		**Weather**		**Ambient Temperature (°F)**
June 18, 2023		Sunny ☀		68
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.2 ft ags	5.1 ft btoc	15.62 ft btoc	10.52 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
	ft btoc	gal	gal	gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
				gal
Stability was reached by:				

Product

Product Range

5.1 ft bgs (product on probe, but no measurable thickness observed).

Thickness of Product

Stability Readings										
Reading Time	**Depth to Water (ft btoc)**	**Draw Down (ft)**	**Volume Purged (mL)**	**Flow Rate (mL/min)**	**Temperature (°C)** ±3%	**pH** ±0.1	**Conductivity (µS/cm)** ±3%	**ORP (mV)** ±10mV	**DO (mg/L)** ±10%	**Turbidity (NTU)** ±10% or ±1 NTU

Comments

Well not sampled due to product

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-9D	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Partly Overcast		76
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.81 ft ags	13 ft btoc	19.91 ft btoc	6.91 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	14 ft btoc	1.1747 gal	3.5241 gal	5.8735 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	14:09	14:41	1.36 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
14:12	13.01	0.01	500	166.67	11.56	5.66	184	89.5	9	5.81
14:17	13.01	0	1,050	210	8.22	5.67	142	96.6	4.47	2.44
14:22	13.02	0.01	1,350	270	7.38	5.77	150	94.3	3.24	1.78
14:27	13.01	-0.01	1,075	215	7.18	5.8	152	91.4	2.74	1.37
14:32	13.01	0	1,175	235	7.08	5.84	154	90.2	3.75	1.66

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-FS19D-23	14:36	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

Purging well

Photo Direction

NorthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-9I	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		76
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.07 ft ags	12.65 ft btoc	19.66 ft btoc	7.01 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	13.7 ft btoc	1.1917 gal	3.5751 gal	5.9585 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	12:51	13:24	0.73 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:57	12.67	0.02	600	100	10.16	5.83	178	92.3	13.26	6.97
13:02	12.68	0.01	1,000	200	8.04	5.81	108	96.4	11.74	6.52
13:07	12.69	0.01	1,150	230	7.42	5.91	104	90.7	10.93	3.82

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-FS19I-23	13:15	June 19, 2023	MS/MSD	
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

Sampling setup

Photo Direction

North

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-9M	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		60
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.15 ft ags	19.65 ft btoc	25.94 ft btoc	6.29 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	20.5 ft btoc	1.0693 gal	3.2079 gal	5.3465 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	10:39	11:14	0.59 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:48	19.8	0.15	500	55.56	10.5	5.48	75	118.2	10.3	13.33
10:53	19.65	-0.15	500	100	9.67	5.49	69	113.8	9.22	8.16
10:58	19.6	-0.05	500	100	8.97	5.53	67	111.1	7.87	5.65
11:04	19.6	0	750	125	9.26	5.59	67	111.6	7.31	3.97

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-FS19M-23	11:05	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

Sampling set up

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-9N	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		62
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.71 ft ags	16 ft btoc	25.02 ft btoc	9.02 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	17 ft btoc	1.5334 gal	4.6002 gal	7.667 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	12:05	12:59	0.53 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:17	17	1	500	41.67	13.21	5.87	53	99.4	3.85	46.07
12:22	17	0	250	50	11.35	5.89	50	102.2	2.43	38.67
12:27	17	0	250	50	10.65	5.87	49	103.7	1.84	26.69
12:32	17	0	500	100	10.32	5.88	48	103.7	1.77	16.35
12:37	17	0	500	100	10.58	5.9	48	104.2	1.82	10.96

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
SRF19-FS19N-23	12:40	June 19, 2023	Duplicate	SRF19-FS19NZ-23
Method	**Bottle**			**Preservative**
List 1: VOCs SW8260D | List 1: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass			HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C

Comments

Site Photos



Photo Name

FS1-9N sampling

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-9A	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Partly Overcast		62
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.17 ft ags	21.65 ft btoc	29.61 ft btoc	7.96 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	23 ft btoc	1.3532 gal	4.0596 gal	6.766 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	16:02	16:40	0.79 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
16:08	21.7	0.05	500	83.33	10.73	5.88	198	83.1	2.85	1.83
16:13	21.7	0	500	100	10.32	5.91	195	80	2.19	1.86
16:18	21.72	0.02	500	100	9.51	6.07	190	74.3	1.94	1.13
16:23	21.7	-0.02	500	100	9.03	6.15	186	69.1	1.58	0.79
16:28	21.7	0	500	100	8.83	6.18	184	66.4	1.46	0.01
16:33	21.7	0	500	100	8.7	6.18	184	64.1	1.45	0.7

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-TS19A-23	16:34	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-9B	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Overcast		71
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.1 ft ags	21.17 ft btoc	26.4 ft btoc	5.23 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	22.2 ft btoc	0.8891 gal	2.6673 gal	4.4455 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Peristaltic Pump	17:33	18:40	2.39 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
17:38	21.18	0.01	400	80	9.89	6.12	878	70.1	2.46	18.27
17:43	21.19	0.01	850	170	8.75	6.39	753	57	0.82	18.58
17:48	21.2	1.01	850	170	8.6	6.43	732	51.3	0.71	18.09
17:53	21.2	0	850	170	8.55	6.46	716	43.1	0.54	18.22
17:58	21.21	0.01	850	170	8.38	6.47	709	35.2	0.38	18.58
18:03	21.22	-0.99	825	165	8.43	6.49	704	25.9	0.31	16.08
18:08	21.23	0.01	850	170	8.45	6.51	700	19.6	0.32	15.72
18:13	21.24	0.01	850	170	8.33	6.53	698	9.9	0.26	12.19
18:17	21.24	0	680	170	8.3	6.55	698	3.6	0.19	12.92
18:21	21.24	0	680	170	8.3	6.56	699	-3.2	0.17	11.36
18:25	21.25	0.01	680	170	8.28	6.56	696	-6.8	0.21	8.74
18:29	21.25	0	680	170	8.31	6.58	694	-12.1	0.19	8.86

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-TS19B-23	18:35	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-9C	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Partly Overcast		76
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.5 ft ags	21.55 ft btoc	27 ft btoc	5.45 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	22.6 ft btoc	0.9265 gal	2.7795 gal	4.6325 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	15:47	16:32	1.36 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
15:52	21.58	0.03	500	100	13.91	5.92	254	83.3	2.49	35.16
15:57	21.56	-0.02	850	170	12.16	5.94	233	81.1	1	29.74
16:02	21.57	0.01	800	160	11.2	6.03	224	76.6	1.49	17.9
16:07	21.56	-0.01	775	155	10.96	6.07	219	74.1	0.75	12.7
16:12	21.56	0	725	145	10.6	6.08	209	72.2	0.51	8.27
16:17	21.56	0	750	150	10.39	6.08	197	71.1	0.62	6.33
16:22	21.56	0	750	150	10.37	6.09	193	70	0.53	6.47

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-TS19C-23	16:26	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | List 1: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

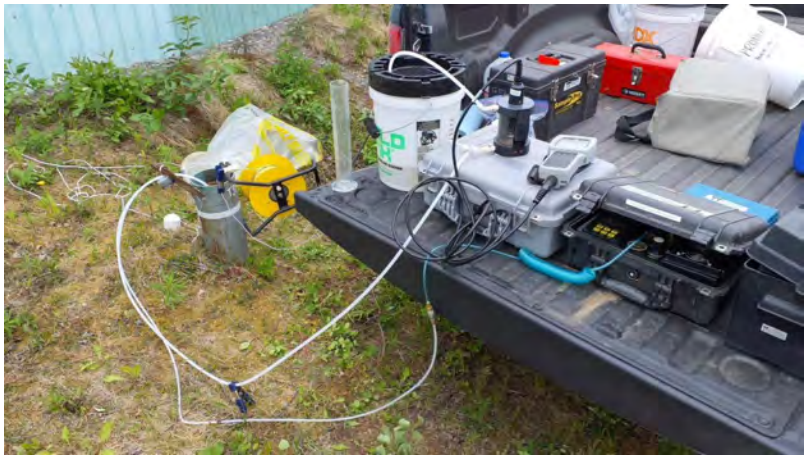


Photo Name

Purging setup

Photo Direction

West

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-9D	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Partly Overcast		68
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.45 ft ags	20.98 ft btoc	27.4 ft btoc	6.42 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	22 ft btoc	1.0914 gal	3.2742 gal	5.457 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	14:18	14:51	0.33 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
14:26	21.5	0.52	500	62.5	18.57	5.67	148	111	2.55	9.2
14:31	21.5	0	250	50	16.86	5.65	144	110.2	2.11	9.01
14:36	21.5	0	250	50	16.39	5.64	139	112	1.62	6.97
14:41	21.5	0	250	50	1,634	5.62	139	115.6	1.34	6.39

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-TS19D-23	14:45	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | List 1: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

TS1-9D sampling set up

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-9HH	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		71
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.3 ft ags	19.9 ft btoc	30.6 ft btoc	10.7 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	21.6 ft btoc	1.819 gal	5.457 gal	9.095 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	14:12	14:48	1.67 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
14:20	19.9	0	1,800	225	7.6	5.68	90	56.5	4.65	14.55
14:25	19.9	0	1,125	225	7.06	5.47	90	37.8	3.96	11.13
14:28	19.9	0	690	230	7.55	5.52	91	35.3	3.81	12.46
14:31	19.9	0	675	225	7.18	5.51	3.7	33.9	3.39	8.28
14:34	19.9	0	675	225	6.37	5.56	89	33.1	3.81	10.05
14:37	19.9	0	675	225	6.23	5.61	88	32	4.15	6.5
14:40	19.9	0	675	225	6.13	5.64	87	31.3	4.27	5.36

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF19-TS19HH-23	14:45	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg Cs	

Comments

Stable flowrate at 225 mL/min 1.70 gal purge and decon water GACd

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-9U	Swanson River Facility SRFTS1-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.66 ft ags	22.82 ft btoc	29.53 ft btoc	6.71 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	23.8 ft btoc	1.1407 gal	3.4221 gal	5.7035 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	15:41	16:18	1.43 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
15:50	22.85	0.03	1,800	200	8.28	5.81	155	33.1	2.28	10.06
15:53	22.85	0	600	200	7.8	5.87	151	31.6	0.74	4.87
15:56	22.85	0	600	200	7.39	5.9	147	31.2	0.6	4.42
15:59	22.85	0	600	200	7.05	5.97	144	30.8	0.5	4.05
16:02	22.85	0	600	200	7.07	6.05	142	30.5	0.45	7.24
16:05	22.85	0	600	200	7.05	6.08	142	30.4	0.43	5.14
16:08	22.85	0	600	200	6.88	6.11	142	30.6	0.44	4.04

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
SRF19-TS19U-23	16:10	June 18, 2023	Duplicate	SRF19-TS19UZ-23
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Steady flowrate at 200 mL/min. 1.5 gal of purge and decon water GACd.

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-27C	Swanson River Facility SRFTS1-27	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		66
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.33 ft ags	9.03 ft btoc	25.9 ft btoc	16.87 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	0 ft btoc	2.8679 gal	8.6037 gal	14.3395 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	12:12	12:55	0.9 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:20	9.25	0.22	1,000	125	8.56	5.36	81	105.7	11.1	19.06
12:24	9.2	-0.05	480	120	8.51	5.34	75	101.6	71.3	12.24
12:27	9.23	0.03	480	160	8.06	5.41	72	96.2	8.44	10.22
12:30	9.24	0.01	480	160	7.74	5.49	71	94.9	8.32	8.65
12:33	9.22	-0.02	480	160	7.36	5.52	71	94.5	8.33	8.82
12:36	9.22	0	480	160	7.34	5.49	70	94.8	8.11	6.77

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF127-FS127C-0723	12:40	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

1.5 gal of purge and decon water treated with gac system. Stable flow rate of 160 mL per min

Site Photos

ALEUT FEDERAL, LLC

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-27G	Swanson River Facility SRFTS1-27	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Partly Overcast		60
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.6 ft ags	10.3 ft btoc	25.9 ft btoc	15.6 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	16.9 ft btoc	2.652 gal	7.956 gal	13.26 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	11:55	13:26	1.14 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:05	11.7	1.4	1,400	140	9.52	6.82	228	42.1	2.9	13.29
12:51	11.12	-0.58	1,600	34.78	14.85	6.91	288	7.6	6.91	12.98
12:56	11.2	0.08	325	65	13.35	6.88	299	-5.1	6.3	12.73
13:01	11.27	0.07	325	65	13.09	6.89	308	-16.5	5.58	12.72
13:06	11.33	0.06	325	65	12.89	6.89	311	-18.6	5.54	14.87
13:11	11.36	0.03	325	65	12.62	6.88	312	-20	5.25	13.54

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF127-TS127G-0723	13:14	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Drawdown too high, backed off pump from 12 to 10 psi at 1205. Spent a lot of time messing with pump settings trying to minimize drawdown, but still get any water from the well.

Site Photos



Photo Name

Purging

Photo Direction

NorthWest

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-27K	Swanson River Facility SRFTS1-27	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		60
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.75 ft ags	11.32 ft btoc	25.09 ft btoc	13.77 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	15.2 ft btoc	2.3409 gal	7.0227 gal	11.7045 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	13:34	14:06	1.59 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
13:40	11.9	0.58	2,000	333.33	11.1	6.22	225	51.2	4.63	12.64
13:45	11.95	0.05	1,000	200	9.99	6.22	263	43.4	4.12	9.09
13:50	11.96	0.01	1,000	200	9.57	6.24	284	32.4	3.94	9.46
13:55	11.97	0.01	1,000	200	9.61	6.27	291	24.7	3.56	8.85
14:00	11.99	0.02	1,000	200	9.52	6.29	291	20.4	3.62	7.53

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF127-TS127K-0723	14:02	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-27L	Swanson River Facility SRFTS1-27	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		66
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.3 ft ags	12.62 ft btoc	20 ft btoc	7.38 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	13.6 ft btoc	1.2546 gal	3.7638 gal	6.273 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	14:29	15:13	0.54 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
14:37	13.2	0.58	1,000	125	12.41	6.55	309	24.3	8.24	21.77
14:43	13.16	-0.04	300	50	12.89	6.63	311	19.3	6.53	12.36
14:48	13.16	0	250	50	13.4	6.68	317	13.1	6.12	9.36
14:53	13.19	0.03	250	50	13.84	6.66	324	17.7	5.69	5.72
14:58	13.28	0.09	250	50	14.03	6.64	337	17.9	5.52	5.6

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF127-TS127L-0723	15:01	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

1435 out flowcell. 1437 turn down pump.

Site Photos



Photo Name

Filling PAH bottle

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-27M	Swanson River Facility SRFTS1-27	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		68
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.47 ft ags	12.03 ft btoc	25.5 ft btoc	13.47 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	16.5 ft btoc	2.2899 gal	6.8697 gal	11.4495 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	13:35	14:09	0.36 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
13:42	13.1	1.07	595	85	10.48	5.61	137	127.3	2.99	8.87
13:45	13.53	0.43	255	85	10.46	5.59	134	121.1	2.44	8.81
13:49	13.7	0.17	255	63.75	10.49	5.63	134	118.2	2.26	6.55
13:52	14	0.3	255	85	11.21	5.71	136	117.1	2.14	6.92

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF127-TS127M-0723	14:00	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 1: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

0.6 gal og Purge water treated with GAC system. Pumped at 3 psi

Site Photos



Photo Name

GW sampling

Photo Direction

East

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-33F	Swanson River Facility SRFTS1-33	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		69
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.44 ft ags	26.21 ft btoc	44.56 ft btoc	18.35 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	35.5 ft btoc	3.1195 gal	9.3585 gal	15.5975 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	11:35	12:34	0.63 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
11:48	26.57	0.36	500	38.46	14.67	6.78	1,040	11.7	3.77	6.99
11:53	26.55	-0.02	375	75	14.12	6.83	1,051	-7.2	3.55	6.48
11:58	26.56	0.01	375	75	14.08	6.84	1,080	-18.6	3.05	5.42
12:03	26.58	0.02	375	75	14.15	6.85	1,123	-27.7	2.57	4.3
12:08	26.59	0.01	375	75	14.07	6.84	1,152	-32.4	2.51	3.64
12:13	26.6	0.01	375	75	14.13	6.84	1,181	-36.1	2.32	2.27

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
SRF133-FS133F-23	12:20	June 18, 2023	Duplicate	SRF133-FS133FZ-23
Method	**Bottle**		**Preservative**	
List 4: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-33H	Swanson River Facility SRFTS1-33	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		66
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.02 ft ags	21.74 ft btoc	42.29 ft btoc	20.55 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	33.3 ft btoc	3.4935 gal	10.4805 gal	17.4675 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	09:53	10:25	0.26 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:00	22.19	0.45	385	55	9.98	5.93	167	88	5.11	9.88
10:06	21.96	-0.23	330	55	10.61	5.99	164	79.2	4.7	8.69
10:11	21.9	-0.06	275	55	10.87	6	165	75.8	4.4	7.62

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF133-FS133H-23	10:19	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 4: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Pump started at 25psi, but too much drawdown, so backed it off to about 20psi. Water level coming back up. Flow rate ~55mL/min.

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-33S	Swanson River Facility SRFTS1-33	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		65
Well Condition		**Field Team**		**PID Readings**
Needs Maintenance Other See other form		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.35 ft ags	23.18 ft btoc	47.2 ft btoc	24.02 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	38.2 ft btoc	4.0834 gal	12.2502 gal	20.417 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	18:13	19:10	0.61 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
18:39	24.15	0.97	1,000	38.46	11.4	6.98	172	28.4	4.2	13.32
18:44	24.45	0.3	325	65	11.18	7.02	171	10.2	4.21	11.16
18:49	24.63	0.18	325	65	10.74	7.04	171	-1.6	3.63	10.44
18:54	24.98	0.35	325	65	10.03	7.05	169	-7	3.19	9.74
18:59	25.29	0.31	325	65	9.87	7.05	168	-7	3.55	7.31

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF133-FS133S-0723	19:03	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 4: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

1827 water finally entering flowcell. 1830, breakthrough. Turned down pump- too much drawdown. Turned back up to ~50mL/min.

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS1-33W	Swanson River Facility SRFTS1-33	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Overcast		62
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.9 ft ags	21.73 ft btoc	30.2 ft btoc	8.47 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	22.75 ft btoc	1.4399 gal	4.3197 gal	7.1995 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	16:41	17:25	1.22 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
16:49	21.76	0.03	1,600	200	9.11	6.65	208	134.2	11.04	7.8
16:54	21.78	0.02	1,000	200	7.53	6.74	197	132.7	10	7.93
16:59	21.78	0	1,000	200	7.01	6.77	194	131.4	9.82	5.43
17:04	21.78	0	1,000	200	6.89	6.76	194	129.7	9.74	4.19

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF133-FS133W-0723	17:10	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Flowthrough flowcell at 1646.

Site Photos



Photo Name

Purging well

Photo Direction

SouthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-33JJ	Swanson River Facility SRFTS1-33	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		57
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.15 ft ags	10.85 ft btoc	22.85 ft btoc	12 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	13 ft btoc	2.04 gal	6.12 gal	10.2 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	15:30	16:42	2.18 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
15:35	11.32	0.47	750	150	11.82	6.68	440	81.4	8.14	28.74
15:40	11.4	0.08	750	150	9.58	6.63	487	75.2	6.35	33.31
15:45	11.66	0.26	750	150	8.07	6.64	527	48.2	4.22	48.21
15:50	11.5	-0.16	750	150	8.6	6.68	542	36.2	2.16	29.49
15:55	11.5	0	750	150	8.8	6.69	561	25.2	1.78	19.64
16:00	11.45	-0.05	750	150	8.61	6.7	562	11.4	1.56	13.83
16:05	11.48	0.03	750	150	8.26	6.72	561	-0.6	1.48	12.14
16:10	11.48	0	1,000	200	8.05	6.72	559	-7.7	1.46	11.17
16:15	11.51	0.03	1,000	200	7.93	6.73	558	-12.8	1.44	10.87
16:20	11.54	0.03	1,000	200	7.59	6.75	551	-17	1.44	9.42

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
SRF133-TS133JJ-0723	16:20	June 17, 2023	Duplicate, MS/MSD	SRF133-TS133JJ-0Z-23

Method	**Bottle**	**Preservative**
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass	HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-33O2	Swanson River Facility SRFTS1-33	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		66
Well Condition		**Field Team**		**PID Readings**
Fair		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.9 ft ags	8.17 ft btoc	22.6 ft btoc	14.43 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	13 ft btoc	2.4531 gal	7.3593 gal	12.2655 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	09:48	10:38	1.59 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
09:53	8.74	0.57	1,500	300	9.92	6.44	361	66.4	6.13	58.17
09:59	8.69	-0.05	1,000	166.67	9.42	6.5	336	45.7	4.63	32.24
10:04	8.68	-0.01	500	100	9.7	6.51	334	37.1	3.94	25.44
10:09	8.64	-0.04	500	100	9.93	6.52	330	27.9	3.55	27.58
10:14	8.63	-0.01	750	150	9.87	6.52	324	21.9	3.06	29.34
10:19	8.64	0.01	500	100	9.93	6.51	319	14.4	2.89	30.68
10:24	8.64	0	650	130	10.09	6.53	317	4.9	2.69	31.4
10:28	8.64	0	600	150	10.11	6.53	315	-1.2	2.6	33.83

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF133-TS133O2-0723	10:30	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 4: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

TS1-33O2

Photo Direction

Down

Photo Notes

Sampling set up

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Well ID	**Site**	**Client**
TS1-33Q	Swanson River Facility SRFTS1-33	Hilcorp

Location Information				
Event Date		**Weather**		**Ambient Temperature (°F)**
June 18, 2023		Sunny ☀		65
Well Condition		**Field Team**		**PID Readings**
Needs Maintenance Well destroyed		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	0 ft ags	ft btoc	ft btoc	ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
	0 ft btoc	0 gal	0 gal	0 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Peristaltic Pump			gal
Stability was reached by:				

Stability Readings										
Reading Time	**Depth to Water (ft btoc)**	**Draw Down (ft)**	**Volume Purged (mL)**	**Flow Rate (mL/min)**	**Temperature (℃)** ±3%	**pH** ±0.1	**Conductivity (µS/cm)** ±3%	**ORP (mV)** ±10mV	**DO (mg/L)** ±10%	**Turbidity (NTU)** ±10% or ±1 NTU

Comments

Well destroyed, unable to sample or repair with current equipment/materials

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS1-33UR	Swanson River Facility SRFTS1-33	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		65
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.91 ft ags	7.41 ft btoc	15.38 ft btoc	7.97 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	8.5 ft btoc	1.3549 gal	4.0647 gal	6.7745 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	17:42	18:23	1.06 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
17:47	7.7	0.29	1,500	300	13.19	6.28	242	30.3	3.92	26.83
17:52	7.68	-0.02	500	100	13.12	6.27	236	29.1	3.12	18.56
17:57	7.65	-0.03	500	100	13.73	6.28	237	30.9	2.43	17.18
18:02	7.56	-0.09	500	100	14.34	6.28	238	29.3	1.97	15.29
18:07	7.58	0.02	500	100	14.51	6.28	237	30.5	1.75	13.23
18:12	7.6	0.02	500	100	14.35	6.28	235	34.5	1.57	12.55

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF133-TS133UR-0723	18:13	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 4: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS2-15B	Swanson River Facility SRFTS2-15	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.2 ft ags	9.24 ft btoc	35.2 ft btoc	25.96 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	26.2 ft btoc	4.4132 gal	13.2396 gal	22.066 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	10:10	11:14	1.51 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:24	10.8	1.56	2,500	178.57	10.75	5.5	186	82.1	7.01	102.6
10:30	10.85	0.05	275	45.83	11.79	5.38	191	75.7	6.97	65.15
10:35	10.83	-0.02	425	85	12.78	5.5	199	72.3	6.95	60.78
10:40	10.92	0.09	750	150	2.38	5.85	236	67.3	7.08	40.66
10:44	10.96	0.04	350	87.5	12.4	5.96	287	57.8	6.98	33.44
10:50	10.97	0.01	350	58.33	12.18	6.14	334	45.8	7.13	23.22
10:55	11	0.03	350	70	12.16	6.23	360	36.8	6.55	21.82
10:58	11.01	0.01	350	116.67	12.15	6.25	370	33.3	6.51	20.02
11:01	11.01	0	350	116.67	12.23	6.21	384	28.3	6.27	17.67

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF215-FS215B-0723	11:05	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

70 to 75 mL min flow rate. 1.25 gal of purge and decon water treated onsite with GAC system

Site Photos



Photo Name

Well before cutting down

Photo Direction

East

Photo Notes

Well jacked



Photo Name

After cutting pvc down

Photo Direction

Down

Photo Notes

Well cut down



Photo Name

Pvc cut down

Photo Direction

East

Photo Notes

Pvc cut down 0.23'



Photo Name

Well sampling

Photo Direction

East

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS2-15O	Swanson River Facility SRFTS2-15	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		58
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.5 ft ags	7.9 ft btoc	21.32 ft btoc	13.42 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	12.33 ft btoc	2.2814 gal	6.8442 gal	11.407 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	10:15	10:47	1.72 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:20	8.81	0.91	2,500	500	7.38	5.85	211	88.4	2.9	13.68
10:25	8.25	-0.56	1,000	200	8.79	6.03	245	70.5	2.97	7.34
10:30	8.15	-0.1	1,000	200	9.07	6.08	273	58.6	2.88	6.24
10:35	8.25	0.1	1,000	200	8.16	6.16	272	48.4	2.84	4.51
10:40	8.25	0	1,000	200	8.71	6.16	280	40.8	2.97	2.82

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF215-TS215O-0723	10:42	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

TP2-15O

Photo Direction

Down

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS2-15P	Swanson River Facility SRFTS2-15	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Partly Overcast		60
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.3 ft ags	7.65 ft btoc	27.65 ft btoc	20 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	18.65 ft btoc	3.4 gal	10.2 gal	17 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	10:06	10:50	0.76 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:10	8.8	1.15	1,000	250	9.5	6.13	132	136.9	9	7.67
10:20	8.61	-0.19	700	70	10.63	6.31	130	115.2	7.91	5.02
10:27	8.61	0	490	70	10.39	6.31	130	113.5	7.92	2.42
10:32	8.61	0	350	70	10.59	6.31	130	111.3	7.65	2.87
10:37	8.62	0.01	350	70	10.34	6.3	130	110.6	7.63	0.95

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF215-TS215P-0723	10:39	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Lowered pump pressure to 12 at 1010 since drawdown was too high. DTW didn't recover, but did stabilize after turning down the pump.

Site Photos



Photo Name

Well during sampling

Photo Direction

NorthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS2-15R	Swanson River Facility SRFTS2-15	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 17, 2023		Sunny ☀		59
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.27 ft ags	9.91 ft btoc	25.41 ft btoc	15.5 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	15.41 ft btoc	2.635 gal	7.905 gal	13.175 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 7.2 s Discharge: 4.8 s Cycle: 12 s	11:48	12:17	1.06 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
11:53	10	0.09	1,000	200	16.07	6.74	170	122.7	9.62	9.17
11:58	10.01	0.01	1,000	200	15.77	6.78	166	122.8	9.51	5.72
12:03	10.02	0.01	1,000	200	15.41	6.78	162	126.3	9.51	3.42
12:08	10.02	0	1,000	200	15.4	6.75	163	130.5	9.32	2.41

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF215-TS215R-0723	12:09	June 17, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS3-4A	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		72
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.75 ft ags	12.26 ft btoc	37.41 ft btoc	25.15 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	28 ft btoc	4.2755 gal	12.8265 gal	21.3775 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	15:55	17:00	1.45 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
16:00	12.49	0.23	300	60	19.56	6.74	231	119.1	20.11	27.67
16:05	13.1	0.61	500	100	12.25	6.69	312	86.5	3.46	16.19
16:10	13.32	0.22	700	140	10.61	6.79	298	73.3	3.26	15.16
16:15	13.52	0.2	500	100	10.05	6.86	297	62.6	3.23	13.52
16:20	13.64	0.12	1,000	200	9.62	6.92	301	54	3.31	14.61
16:25	13.58	-0.06	1,000	200	10.2	6.97	317	47.9	2.4	13.37
16:30	13.48	-0.1	500	100	11.31	7.09	332	36.9	2.72	9.61
16:35	13.45	-0.03	300	60	11.33	7.07	339	33.9	2.04	9.02
16:40	13.68	0.23	700	140	10.55	7.09	337	30.3	1.93	9.75

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF34-FS34A-0723	16:42	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS3-4B	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		75
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.3 ft ags	7.97 ft btoc	30.85 ft btoc	22.88 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	21.9 ft btoc	3.8896 gal	11.6688 gal	19.448 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	17:51	18:48	0.76 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
17:58	8.23	0.26	800	114.29	11.64	6.85	638	30.1	2.25	20.29
18:03	8.41	0.18	450	90	11.57	7.08	617	12.9	1.07	17.33
18:08	8.45	0.04	500	100	12.09	7.17	633	-4.7	0.67	9.62
18:13	8.21	-0.24	250	50	14.33	7.2	676	-29.6	0.83	10.55
18:18	8.18	-0.03	260	52	15.03	7.2	692	-39	0.86	12.3
18:23	8.21	0.03	350	70	15.26	7.19	698	-48.1	0.88	13.88
18:28	8.21	0	280	56	14.9	7.22	704	-79.1	0.81	11.76

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
SRF34-FS34B-23	18:32	June 18, 2023	Duplicate	SRF34-FS34BZ-23
Method	**Bottle**			**Preservative**
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass			HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C

Comments

Site Photos



Photo Name

Filling sample jars

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS3-4F	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.75 ft ags	11.38 ft btoc	25.9 ft btoc	14.52 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	16.9 ft btoc	2.4684 gal	7.4052 gal	12.342 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	17:59	18:36	0.66 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
18:05	11.9	0.52	500	83.33	18.45	6.78	182	49.5	4.95	16.58
18:10	11.85	-0.05	500	100	17.52	6.69	214	44.3	4.24	13.74
18:15	11.8	-0.05	500	100	16.6	6.68	243	42.3	2.81	9.2
18:20	11.85	0.05	500	100	16.45	6.67	252	41.3	2.56	5.73
18:25	11.8	-0.05	500	100	16.59	6.69	259	40.4	1.67	3.53

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF34-FS34F-0723	18:26	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-4CC	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		68
Well Condition		**Field Team**		**PID Readings**
Good		Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.9 ft ags	11.33 ft btoc	20.81 ft btoc	9.48 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	12.4 ft btoc	1.6116 gal	4.8348 gal	8.058 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	10:03	10:53	0.27 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:26	11.48	0.15	450	19.57	17.17	5.92	366	102	3.76	13.41
10:31	11.55	0.07	365	73	16.13	6.01	360	98.5	5.98	11.34
10:36	11.57	0.02	220	44	16.24	5.98	365	98.2	5.81	10.84

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF34-TS34CC-23	10:44	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | List 5: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

Sampling setup

Photo Direction

NorthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-4D	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		58
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.17 ft ags	13.44 ft btoc	ft btoc	ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
	ft btoc	gal	gal	gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
				gal
Stability was reached by:				

Product

Product Range

13.44 - 13.45 ft btoc

Thickness of Product

0.01 ft

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU

Comments

Not sampled due to product in well

Site Photos



Photo Name

Oily residue on probe

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-4MM	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.1 ft ags	6.14 ft btoc	21 ft btoc	14.86 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	12 ft btoc	2.5262 gal	7.5786 gal	12.631 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	09:13	09:57	1.22 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
09:30	6.45	0.31	2,500	147.06	8.25	4.48	120	113.6	3.73	15.6
09:33	6.57	0.12	450	150	7.7	4.5	119	101.7	2.52	8.39
09:36	6.57	0	500	166.67	7.36	4.47	116	94.4	1.71	5.96
09:41	6.55	-0.02	650	130	7.38	4.48	115	91.3	1.43	4.59
09:44	6.57	0.02	500	166.67	7.59	4.54	117	90.8	1.41	3.59

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF34-TS34MM-23	09:50	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Steady flowrate at 150-175 mL/min. 1.30 gal of purge and decon water were GACd

Site Photos



Photo Name

GW sampling at TS3-4MM

Photo Direction

South

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-4OO	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		71
Well Condition		**Field Team**		**PID Readings**
Needs Maintenance Well casing frost jacked		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.55 ft ags	4.51 ft btoc	20.9 ft btoc	16.39 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	12 ft btoc	2.7863 gal	8.3589 gal	13.9315 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	10:36	11:27	1.76 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
11:03	4.63	0.12	4,000	148.15	6.18	5.28	108.4	108.7	12.76	39.93
11:06	4.65	0.02	525	175	5.37	4.89	80.1	92.6	10.17	31.92
11:09	4.65	0	550	183.33	5.3	4.89	25	91.2	10.06	29.13
11:12	4.65	0	500	166.67	5.2	4.9	23	89.4	9.81	33.57
11:15	4.65	0	550	183.33	5.22	4.94	23	88.2	9.87	39.68
11:18	4.65	0	550	183.33	5.3	4.97	23	88	9.62	39.97

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF34-TS34OO-23	11:20	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Purged for 24 minutes to clear turbidity before connecting to flow-thru cell. Steady flowrate at 175-200 mL/min. 2.0 gal of purge and decon water GACd

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-4P	Swanson River Facility SRFTS3-4	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.17 ft ags	7.73 ft btoc	25.53 ft btoc	17.8 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	16.53 ft btoc	3.026 gal	9.078 gal	15.13 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	12:34	13:06	1 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:44	8.3	0.57	500	50	9.15	5.85	616	88.1	7.41	12.61
12:48	8.3	0	280	70	9.61	5.77	621	73	4.13	11.09
12:51	8.33	0.03	210	70	9.65	5.7	627	63.2	4.43	6.08
12:54	8.33	0	210	70	9.48	5.72	625	57.2	4.4	4.54

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF34-TS34P-23	13:00	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | List 5: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

1 gal of purge and decon water GACd. Flowrate 60-70 mL/min

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS3-9B	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Overcast		56
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.4 ft ags	11.25 ft btoc	22.49 ft btoc	11.24 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	13.5 ft btoc	1.9108 gal	5.7324 gal	9.554 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 8 s Discharge: 4 s Cycle: 12 s	18:13	18:38	1.19 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
18:18	11.42	0.17	1,000	200	8	5.98	130	78.8	5.73	3.13
18:23	11.44	0.02	1,250	250	7.09	6.03	126	76.8	4.09	1.57
18:27	11.44	0	1,250	312.5	6.85	6.35	126	73.7	4.26	0.87
18:33	11.44	0	1,000	166.67	6.66	6.4	128	71.5	5.69	1.94

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-FS39B-23	18:34	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

FS3-9B sampling

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS3-9E	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		65
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.31 ft ags	8.32 ft btoc	22 ft btoc	13.68 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	13 ft btoc	2.3256 gal	6.9768 gal	11.628 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Peristaltic Pump	09:51	10:49	2.23 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:08	8.95	0.63	3,500	205.88	8.95	5.25	502	79	1.96	52.14
10:11	8.95	0	450	150	8.76	4.98	495	52.1	1.01	43.99
10:16	8.95	0	750	150	8.53	5.09	490	37.1	0.75	41.44
10:19	8.95	0	450	150	8.56	5.16	488	28.6	0.7	37.26
10:22	8.95	0	450	150	8.55	5.28	488	8.2	0.66	33.26
10:26	8.95	0	600	150	8.61	5.4	488	-6.8	0.71	25.47
10:29	8.95	0	450	150	8.64	5.47	488	-14.4	0.75	23.56
10:32	8.95	0	450	150	8.41	5.54	489	-21.2	0.83	23.47
10:35	8.95	0	450	150	8.46	5.52	489	-28.2	0.83	20.92
10:38	8.95	0	450	150	8.56	5.67	490	-32.5	0.94	21.74
10:41	8.95	0	450	150	8.55	5.7	490	-34.5	0.86	23

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-FS39E-23	10:45	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL VOAs | 2 x 250 mL Amber Glass		HCl 0-6 C | 0-6 C	

Comments

Peristaltic pump and hydrasleeve used due to product coating the well casing. Small qty of product also noted on gw probe during inital gauging. Globules in purge water. Purged 0.75 gal before connecting to flow- thru cell to clear turbidity. 2.3 gal GACd

Site Photos



Photo Name

HydraSleeving at FS3-9E

Photo Direction

SouthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
FS3-9G	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Overcast		61
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.81 ft ags	8.68 ft btoc	24.92 ft btoc	16.24 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	15.49 ft btoc	2.7608 gal	8.2824 gal	13.804 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	16:27	16:56	1.1 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
16:37	9	0.32	780	78	6.98	6.37	463	-4.2	1.01	3.51
16:40	9	0	780	260	6.45	6.1	462	-4.3	0.82	3.44
16:43	9	0	780	260	6.34	6.19	476	-15.5	0.86	4.04
16:46	9	0	780	260	6.32	6.24	481	-16.8	0.77	2.71
16:49	9	0	780	260	6.23	6.26	484	-16.6	0.69	2.51

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-FS39G-23	16:50	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

1.2 gal of purge water and decon water treated with GAC system. Stable pump rate at 280 mL/min.

Site Photos



Photo Name

Gw sampling

Photo Direction

South

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9AA	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		61
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.25 ft ags	13.75 ft btoc	33.75 ft btoc	20 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	24.75 ft btoc	3.4 gal	10.2 gal	17 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	14:17	14:48	0.38 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
14:27	13.98	0.23	360	36	10.11	7.04	144	-55.9	2.53	19.17
14:30	14	0.02	360	120	10	6.49	142	-54.3	1.28	19.6
14:33	14	0	360	120	9.84	6.48	141	-52.4	1.06	17.76
14:36	14	0	360	120	9.85	6.49	142	-51.8	0.88	18.1

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-TS39AA-23	14:40	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Steady flow rate 120mL/min. 0.6 gal of purge and decon water treated with GAC

Site Photos



Photo Name

GW sampling

Photo Direction

South

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9BB	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		60
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.14 ft ags	14.93 ft btoc	27.22 ft btoc	12.29 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	18.22 ft btoc	2.0893 gal	6.2679 gal	10.4465 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	12:58	13:41	0.8 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
13:16	15.55	0.62	1,350	75	13.66	6.62	220	-58.6	2.08	10.67
13:19	15.57	0.02	225	75	12.92	6.47	218	-58.5	1.81	6.26
13:22	15.62	0.05	225	75	12.39	6.43	0.287	-59	1.57	6.22
13:25	15.67	0.05	225	75	12.12	6.44	219	-57.2	1.44	6.39
13:28	15.66	-0.01	225	75	12.07	6.45	222	-55	1.42	4.68

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-TS39BB-23	13:35	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | List 5: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

Gw sampling

Photo Direction

NorthWest

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9CR	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		55
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer, Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.37 ft ags	16.05 ft btoc	26.92 ft btoc	10.87 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	18 ft btoc	1.8479 gal	5.5437 gal	9.2395 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	11:45	12:36	0.84 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:10	16.1	0.05	600	24	12.67	6.6	1,113	16.2	5.03	18.74
12:15	16.21	0.11	475	95	10.77	6.63	1,095	-11.3	4.16	17.32
12:20	16.2	-0.01	600	120	9.01	6.68	1,082	-25.5	1.14	6.4
12:25	16.25	0.05	750	150	8.44	6.74	1,085	-38.9	0.75	5.65
12:30	16.25	0	750	150	8.15	6.78	1,085	-44.6	0.54	5.22

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-TS39CR-23	12:33	June 20, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | List 5: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9DD	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 18, 2023		Sunny ☀		70
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.6 ft ags	6.12 ft btoc	27.22 ft btoc	21.1 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	18.22 ft btoc	3.587 gal	10.761 gal	17.935 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	17:20	18:03	0.59 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
17:28	7.8	1.68	800	100	10.02	6.23	126	53.9	3.67	20.74
17:33	7.98	0.18	325	65	10.24	6.28	125	51.6	3.26	18.69
17:36	8.07	0.09	195	65	11.35	6.4	127	49.6	3.25	16.98
17:41	8.18	0.11	325	65	13.61	6.61	133	46.5	3	5.08
17:44	8.25	0.07	195	65	13.91	6.67	135	45.8	2.89	11.47
17:47	8.38	0.13	195	65	14.02	6.72	137	45.7	2.73	10.53
17:50	8.45	0.07	195	65	13.76	6.74	140	45.9	2.7	9.87

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-TS39DD-23	17:55	June 18, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Drawdown continued with minimal flowrate (65 mL/min). 0.7 gal of purge and decon water GACd.

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9F	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		55
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer, Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.1 ft ags	15.91 ft btoc	30.81 ft btoc	14.9 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	22 ft btoc	-164.5923 gal	-493.7769 gal	-822.9615 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	17:18	18:09	0.59 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
17:30	16.5	0.59	550	45.83	11.98	6.36	687	65.4	4.21	21.68
17:35	16.3	-0.2	175	35	11.55	6.52	654	21.3	4.57	17.44
17:40	16.3	0	175	35	12.14	6.61	652	6.5	4.9	17.65
17:45	16.44	0.14	325	65	11.89	6.66	653	-21.7	3.62	15.6
17:50	16.5	0.06	375	75	10.8	6.67	638	-32.4	3.6	14.06
17:55	16.5	0	300	60	10.52	6.69	631	-36.2	2.37	12.61
17:58			325	108.33	10.5	6.71	629	-38.7	3.17	13.28

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-TS39F-23	18:04	June 20, 2023		
Method	**Bottle**		**Preservative**	
List 3: VOCs SW8260D | List 3: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9T	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		55
Well Condition		**Field Team**		**PID Readings**
Good		Karina Packer, Brad Ramsay		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.83 ft ags	14 ft btoc	31.2 ft btoc	17.2 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	22.2 ft btoc	2.924 gal	8.772 gal	14.62 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	10:07	10:44	0.54 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:13	14.06	0.06	500	83.33	7.56	6.23	362	69.4	7.44	4.51
10:18	14.06	0	375	75	6.7	6.38	342	64.2	3.81	4.03
10:24	14.05	-0.01	425	70.83	6.11	6.49	329	57.9	1.87	1.95
10:29	14.06	0.01	360	72	6.01	6.52	324	53.1	1.35	3.58
10:34	14.06	0	400	80	5.74	6.51	317	52.3	1.49	0.1

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-TS39T-23	10:38	June 20, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | List 5: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Site Photos



Photo Name

Treating purge water with the GAC filter.

Photo Direction

Close-up

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9U	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Overcast		65
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.12 ft ags	13.51 ft btoc	29.71 ft btoc	16.2 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	20.71 ft btoc	2.754 gal	8.262 gal	13.77 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	17:34	18:32	2.6 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
17:44	14.05	0.54	2,000	200	7.94	6.28	0.134	11.3	1.1	13.92
17:47	14.05	0	465	155	7.73	6.21	86	10	0.97	11.85
17:50	14.09	0.04	465	155	7.15	6.18	86	5	0.74	10.94
17:53	14.06	-0.03	465	155	7.02	6.19	93	-2	0.61	10.07
17:56	14.14	0.08	465	155	6.98	6.21	99	-6.9	0.58	10.95
18:00	14.12	-0.02	465	116.25	6.86	6.24	105	-12.2	0.48	10.53
18:04	14.25	0.13	465	116.25	6.71	6.27	113	-17.5	0.43	10.5
18:07	14.23	-0.02	365	121.67	6.7	6.3	123	-22.4	0.36	10.22
18:10	14.2	-0.03	365	121.67	6.65	6.33	128	-26.7	0.34	8.8
18:13	14.2	0	465	155	6.86	6.36	133	-30.1	0.51	8.91

18:16	14.2	0	465	155	6.84	6.39	141	-34.3	0.34	9.45
18:19	14.2	0	465	155	6.8	6.41	146	-37.4	0.3	9.63
18:21	14.2	0	465	232.5	6.8	6.43	146	-38.6	0.31	10.25
18:24	14.2	0	465	155	6.81	6.44	149	-39.7	0.32	9.44

Sample Information

Sample ID	Sample Time	Sample Date	QC Type	
SRF39-TS39U-23	18:30	June 19, 2023		
Method	**Bottle**			**Preservative**
List 5: VOCs SW8260D | List 5: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass			HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C

Comments

2.75 gal of purge and decon water treated with GAC system. Stable draw down at 155 mL/ min.

Site Photos



Photo Name

Gw samlling

Photo Direction

East

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
TS3-9V	Swanson River Facility SRFTS3-9	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 19, 2023		Sunny ☀		66
Well Condition		**Field Team**		**PID Readings**
Fair		Jacob Bougere, Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	1.9 ft ags	6.63 ft btoc	24.83 ft btoc	18.2 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	15.8 ft btoc	3.094 gal	9.282 gal	15.47 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	11:29	12:01	0.58 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
11:41	6.65	0.02	1,000	83.33	7.37	6.05	443	-25.1	3.36	5.99
11:44	6.65	0	300	100	6.84	5.8	440	-27.6	1.62	5.32
11:47	6.65	0	300	100	6.76	5.82	440	-29.2	1.26	2.78
11:50	6.65	0	300	100	6.62	5.85	440	-30.5	1.06	1.83
11:53	6.65	0	300	100	6.55	5.87	440	-31.4	0.97	0.4

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
SRF39-TS39V-23	11:55	June 19, 2023		
Method	**Bottle**		**Preservative**	
List 5: VOCs SW8260D | List 5: PAHs SW8270D SIM	3 x 40mL amber vials | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Stable flowrate at 100 mL/min. 0.65 gal of purge and decon water GACd.

Site Photos



Photo Name

GW sampling

Photo Direction

South

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
MW-01	Swanson River Unit 23B-3	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		55
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.2 ft ags	15.1 ft btoc	23.45 ft btoc	8.35 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	16.1 ft btoc	1.4195 gal	4.2585 gal	7.0975 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	14:22	15:14	2.46 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
14:37	15.13	0.03	3,000	200	6.71	6.17	372	92	52.29	82.79
14:41	15.13	0	1,200	300	6.35	6.53	366	76.4	8.43	60.6
14:46	15.13	0	1,500	300	6.36	6.6	368	64	5.74	41.72
14:49	15.13	0	900	300	6.32	6.63	365	56.8	4.32	30.27
14:52	15.13	0	900	300	6.35	6.65	364	52.8	3.44	26.63
14:55	15.13	0	900	300	6.39	6.66	364	50.6	3	23.54
14:58	15.13	0	900	300	6.53	6.68	365	46.5	2.4	21.81

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
23B3-MW01-23	15:00	June 20, 2023	Duplicate	23B3-MW01Z-23
Method	**Bottle**		**Preservative**	
Petroleum VOCs SW8260D | DRO+RRO AK102+3 | PAHs SW8270D	3 x 40mL amber vials | 2 x 250mL amber glass | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | HCl pH<2/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Purged 0.5 gal to clear turbidity before connecting to flow-thru cell. Stable flowrate at 300 mL/min. 3.3 gal of purge and decon water GACd. Dedicated bladder tubing tied and left in well.

Site Photos



Photo Name

Sampling at 23B-03 MW01

Photo Direction

South

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
MW-02	Swanson River Unit 23B-3	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		56
Well Condition		**Field Team**		**PID Readings**
Good		Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.2 ft ags	15.2 ft btoc	21.7 ft btoc	6.5 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	16.2 ft btoc	1.105 gal	3.315 gal	5.525 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	14:30	16:18	7.5 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
15:58	15.25	0.05	20,000	227.27	6.92	6.49	109	49.6	11.83	26.79
16:01	15.25	0	645	215	6.73	6.5	107	49.5	10.32	23.09
16:04	15.25	0	645	215	6.67	6.5	106	48.7	9.61	21.86
16:07	15.25	0	645	215	6.63	6.48	105	49.1	9.3	21.02

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
23B3-MW02-23	16:10	June 20, 2023		
Method	**Bottle**		**Preservative**	
Petroleum VOCs SW8260D | DRO+RRO AK102+3 | PAHs SW8270D	3 x 40mL amber vials | 2 x 250mL amber glass | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | HCl pH<2/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

YSI malfunctioned swicted to unit with sn 11j102416

Site Photos



Photo Name

Very turbid gw. Over 1100 ntu.

Photo Direction

Close-up

Photo Notes

Well may not have been developed.

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
MW-03	Swanson River Unit 23B-3	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		59
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.2 ft ags	17.11 ft btoc	21.91 ft btoc	4.8 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	18.15 ft btoc	0.816 gal	2.448 gal	4.08 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	16:36	17:14	2.64 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
16:50	17.11	0	4,830	345	5.92	6.24	90	51.8	41.06	63.31
16:53	17.11	0	1,035	345	5.41	6.29	88	53.6	14.85	46.1
16:56	17.11	0	1,035	345	5.21	6.45	88	55.5	10.98	33.43
16:59	17.11	0	1,035	345	5.48	6.5	89	53.3	10.24	32.12
17:02	17.11	0	1,035	345	5.18	6.55	87	52.7	9.75	27.41
17:05	17.11	0	1,035	345	5.2	6.56	88	52.6	9.64	23.54

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
23B3-MW03-23	17:10	June 20, 2023		
Method	**Bottle**		**Preservative**	
Petroleum VOCs SW8260D | DRO+RRO AK102+3 | PAHs SW8270D	3 x 40mL amber vials | 2 x 250mL amber glass | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | HCl pH<2/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Stable flowrate at 345 mL/min. Purged 0.75 gal to clear turbidity before connecting to flow-thru cell. Dedicated bladder tubing tied and left in well. 2.75 gal of purge and decon water GACd.

Site Photos



Photo Name

GW sampling at 23B-03 MW03

Photo Direction

NorthEast

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
MW-01	Swanson River Unit 312-09	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		55
Well Condition		**Field Team**		**PID Readings**
Good		Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.91 ft ags	16.09 ft btoc	23.1 ft btoc	7.01 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	17.1 ft btoc	1.1917 gal	3.5751 gal	5.9585 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	11:48	12:42	3.5 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
12:15	16.15	0.06	7,000	259.26	5.78	5.93	213	84.6	5.9	29.28
12:18	16.15	0	675	225	5.56	5.28	199	81.7	4.64	25.18
12:21	16.15	0	675	225	5.37	5.25	183	79.7	4.7	22.51
12:24	16.14	-0.01	675	225	5.23	5.28	172	78.1	4.78	15.66
12:27	16.15	0.01	675	225	5.13	5.3	165	76.7	4.88	14.51
12:30	16.15	0	675	225	5.16	5.33	157	75.4	4.94	12.47

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
231209-MW01-23	12:30	June 20, 2023		
Method	**Bottle**		**Preservative**	
Petroleum VOCs SW8260D | DRO+RRO AK102+3 | PAHs SW8270D	3 x 40mL amber vials | 2 x 250mL amber glass | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | HCl pH<2/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Stable with 225mL min pump rate. 3.6 gal of purge and decon water treated with gac system

Site Photos



Photo Name

312-09 MW-01

Photo Direction

North

Photo Notes

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
MW-02	Swanson River Unit 312-09	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		52
Well Condition		**Field Team**		**PID Readings**
Good		Kyle Therrien		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	2.82 ft ags	19.36 ft btoc	22.5 ft btoc	3.14 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	20.36 ft btoc	0.5338 gal	1.6014 gal	2.669 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	10:16	11:02	2.28 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (°C) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
10:31	19.41	0.05	4,500	300	4.76	5.35	67	85	11.58	20.41
10:35	19.41	0	825	206.25	4.46	4.66	62	76.5	11.13	13.36
10:40	19.41	0	825	165	4.32	4.72	60	71.9	10.95	9.52
10:43	19.42	0.01	825	275	4.56	4.79	60	70.2	10.85	6.51
10:46	19.42	0	825	275	4.45	4.83	60	69.6	10.6	4.84
10:49	19.42	0	825	275	4.45	4.86	60	69.5	10.69	8.25

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
31209-MW02-23	11:00	June 20, 2023		
Method	**Bottle**		**Preservative**	
Petroleum VOCs SW8260D | DRO+RRO AK102+3 | PAHs SW8270D	3 x 40mL amber vials | 2 x 250mL amber glass | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | HCl pH<2/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Steady flow rate at 275 mL min. 2.6 gal of purge and decon water treated with gac system

Site Photos

Groundwater Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information

Well ID	Site	Client
MW-03	Swanson River Unit 312-09	Hilcorp

Location Information

Event Date		Weather		Ambient Temperature (°F)
June 20, 2023		Rain		55
Well Condition		**Field Team**		**PID Readings**
Good		Jacob Bougere		Ambient: 0 ppm Breathing Space: 0 ppm Down Well: 0 ppm
Well Diameter	**Well Stickup Height**	**Current Depth to Water**	**Total Well Depth**	**Height of Water Column**
2 in	3.2 ft ags	18.25 ft btoc	22.97 ft btoc	4.72 ft
Tubing Type	**Pump Depth**	**Volume of Water in Well**	**Minimum Purge Volume**	**Maximum Purge Volume**
Teflon-lined Poly	19.25 ft btoc	0.8024 gal	2.4072 gal	4.012 gal
Parameter Reading Equipment	**Pump Type**	**Pump Start Time**	**Pump End Time**	**Total Volume Purged**
YSI, Turbidimeter	Bladder Pump Recharge: 10 s Discharge: 5 s Cycle: 15 s	11:18	12:22	2.75 gal
Stability was reached by: **Stable Parameters**				

Stability Readings

Reading Time	Depth to Water (ft btoc)	Draw Down (ft)	Volume Purged (mL)	Flow Rate (mL/min)	Temperature (℃) ±3%	pH ±0.1	Conductivity (µS/cm) ±3%	ORP (mV) ±10mV	DO (mg/L) ±10%	Turbidity (NTU) ±10% or ±1 NTU
11:41	18.27	0.02	6,000	260.87	5.41	6.06	102	126.5	37	141.9
11:46	18.26	-0.01	1,350	270	4.82	6.24	93	125.4	14.15	112.7
11:49	18.27	0.01	810	270	4.77	6.25	92	124.8	13.86	91.2
11:52	18.27	0	810	270	4.71	6.25	91	123.7	13.25	70.82
11:55	18.27	0	810	270	4.7	6.26	91	123.9	12.88	68.83

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	
31209-MW03-23	12:00	June 20, 2023	MS/MSD	
Method	**Bottle**		**Preservative**	
Petroleum VOCs SW8260D | DRO+RRO AK102+3 | PAHs SW8270D	3 x 40mL amber vials | 2 x 250mL amber glass | 2 x 250mL amber glass		HCl pH<2/ZHS/Chill 0-6 deg C | HCl pH<2/Chill 0-6 deg C | Chill 0-6 deg C	

Comments

Purged 1.5 gal to clear turbidity before connecting to flow-thru cell. Steady flowrate at 270 mL/min. 3.0 gal of purge and decon water GACd. Dedicated bladder tubing tied and left. Removed old submersible tubing.

Site Photos



Photo Name

GW sampling at 312-09 MW03

Photo Direction

North

Photo Notes

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Surface Water Sampling

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information		
Location ID	**Site**	**Client**
SRF14-SW1	Swanson River Facility SRFTS1-4	Hilcorp

Location Information		
Event Date	**Weather**	**Ambient Temperature (°F)**
June 20, 2023	Rain	55
Site Description	**Field Team**	
Pond/Static	Karina Packer, Brad Ramsay	

Stability Readings								
Reading Time	**Color**	**Odor**	**Temperature (°C)** ±3%	**pH** ±0.1	**Conductivity (µS/cm)** ±3%	**ORP (mV)** ±10mV	**DO (mg/L)** ±10%	**Turbidity (NTU)** ±10% or ±1 NTU
15:26	Clear	None	10.81	6.06	461	79	5.37	1.96

Sample Information				
Sample ID	**Sample Time**	**Sample Date**	**QC Type**	**Duplicate Sample ID**
SRF14-SW1-23	15:30	June 20, 2023	Duplicate, MS/MSD	SRF14-SW1Z-23
Method	**Bottle**		**Preservative**	
Glycols SW8015M / LL VOCs SW8260D SIM	6 x 40mL amber vials		HCl pH<2/ZHS/Chill 0-6 deg C	
Sample Comments	Sample collected from near culvert inlet/outlet on flare pit side of road near well FS1-4I. Lots of orange biological ferric precipitation.			

Comments

Sample collected from near culvert inlet/outlet on flare pit side of road near well TS1-4I. Lots of orange biological ferric precipitation.

Site Photos



Photo Name

SW1-4 collecting parameters with YSI probe

Photo Direction

NorthWest

Photo Notes

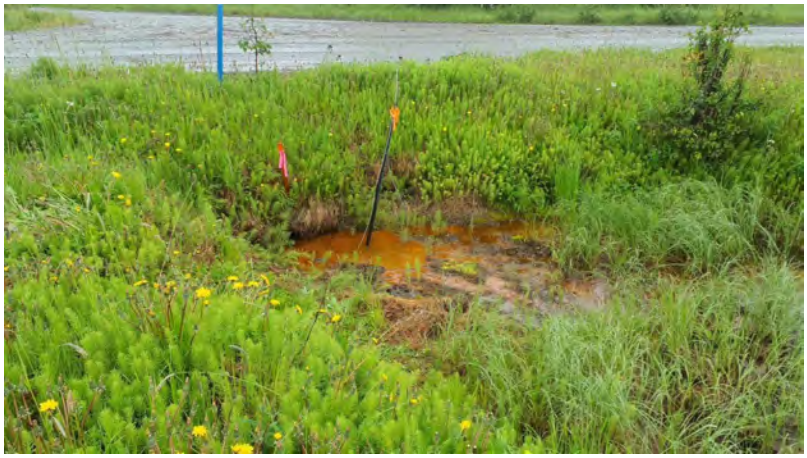


Photo Name

Closeup of sample location just to the right of the culvert looking towards the road.

Photo Direction

NorthWest

Photo Notes



Photo Name

Overview of pond looking West towards the road. Sample collected just below stake.

Photo Direction

West

Photo Notes



Photo Name

Overview of pond looking south

Photo Direction

South

Photo Notes

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai GWM 2023

Project Information

Date	Client	Site
June 17, 2023 8:11 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Partly Overcast ⛅	54	Brad Ramsay	MiniRAE PID, Turbidimeter

PID

Serial Number	Calibration Gas Type	Calibration Gas Lot #	Calibration Gas Concentration (ppm)	Zero/Fresh Air Reading (ppm)		Span Reading (ppm)	
910685	Isobutylene	22-9343	100	0	Zero reading is within range	100.1	Span calibration reading is within range
Notes:							

Turbidimeter

Serial Number	Low Standard Lot #	Low Standard Concentration (NTU)	Mid Standard Lot #	Mid Standard Concentration (NTU)	High Standard Lot #	High Standard Concentration (NTU)

20180324	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0.02	Low turbidity calibration reading is within range	10	Mid turbidity calibration reading is within range	1,000	High turbidity calibration reading is within range
Notes:						
Serial Number	**Low Standard Lot #**	**Low Standard Concentration (NTU)**	**Mid Standard Lot #**	**Mid Standard Concentration (NTU)**	**High Standard Lot #**	**High Standard Concentration (NTU)**
202007903	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0.02	Low turbidity calibration reading is within range	10	Mid turbidity calibration reading is within range	1,000	High turbidity calibration reading is within range
Notes:						
Serial Number	**Low Standard Lot #**	**Low Standard Concentration (NTU)**	**Mid Standard Lot #**	**Mid Standard Concentration (NTU)**	**High Standard Lot #**	**High Standard Concentration (NTU)**
201407081	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0.02	Low turbidity calibration reading is within range	10	Mid turbidity calibration reading is within range	1,000	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling 2023

Project Information

Date	Client	Site
June 17, 2023 8:15 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Partly Overcast ⛅	54	Jacob Bougere, Nicole Mattice, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
20.48	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240

Serial Number	pH 4 Reading		pH 7 Reading		pH 10 Reading		Conductivity Reading (µS/cm)		ORP Reading (mV)	
15E103098	3.49	pH 4 calibration reading is out of range and requires recalibration	6.9	pH 7 calibration reading is out of range and requires recalibration	10.37	pH 10 calibration reading is out of range and requires recalibration	1,505	Conductivity calibration reading is within range	239.3	ORP calibration reading is within range

Notes:

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling 2023

Project Information

Date	Client	Site
June 17, 2023 8:15 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Partly Overcast	54	Jacob Bougere, Nicole Mattice, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
20.48	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240

Serial Number	pH 4 Reading		pH 7 Reading		pH 10 Reading		Conductivity Reading (µS/cm)		ORP Reading (mV)	
15E103098	4	pH 4 calibration reading is within range	7.04	pH 7 calibration reading is within range	10.13	pH 10 calibration reading is within range	1,505	Conductivity calibration reading is within range	239.3	ORP calibration reading is within range

Notes:

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling 2023

Project Information

Date	Client	Site
June 17, 2023 8:18 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Partly Overcast	56	Jacob Bougere, Nicole Mattice, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
20.41	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240

Serial Number	pH 4 Reading		pH 7 Reading		pH 10 Reading		Conductivity Reading (µS/cm)		ORP Reading (mV)	
11J102416	4	pH 4 calibration reading is within range	7.1	pH 7 calibration reading is within range	10.25	pH 10 calibration reading is out of range and requires recalibration	1,401	Conductivity calibration reading is within range	240.1	ORP calibration reading is within range

Notes:

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling 2023

Project Information

Date	Client	Site
June 17, 2023 8:18 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Partly Overcast	56	Jacob Bougere, Nicole Mattice, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
20.41	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240

Serial Number	pH 4 Reading		pH 7 Reading		pH 10 Reading		Conductivity Reading (µS/cm)		ORP Reading (mV)	
11J102416	3.99	pH 4 calibration reading is within range	7.02	pH 7 calibration reading is within range	10.12	pH 10 calibration reading is within range	1,401	Conductivity calibration reading is within range	240.1	ORP calibration reading is within range

Notes:

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling 2023

Project Information

Date	Client	Site
June 17, 2023 8:19 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Partly Overcast	56	Jacob Bougere, Nicole Mattice, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
19.85	22H5R	4	23C5S	7.02	22K3T	10.06	23A100569	1,413	7939	240

Serial Number	pH 4 Reading		pH 7 Reading		pH 10 Reading		Conductivity Reading (µS/cm)		ORP Reading (mV)	
10D100478	4	pH 4 calibration reading is within range	7.03	pH 7 calibration reading is within range	10.16	pH 10 calibration reading is within range	1,476	Conductivity calibration reading is within range	241.5	ORP calibration reading is within range

Notes:

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai gw

Project Information		
Date	**Client**	**Site**
June 18, 2023 8:01 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Sunny ☀	68	Jacob Bougere, Kyle Therrien	Turbidimeter

Turbidimeter

Serial Number	Low Standard Lot #	Low Standard Concentration (NTU)	Mid Standard Lot #	Mid Standard Concentration (NTU)	High Standard Lot #	High Standard Concentration (NTU)
201810324	220751	0.02	220843	10.02	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0.01	Low turbidity calibration reading is within range	10.02	Mid turbidity calibration reading is within range	1,000	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai gw

Project Information		
Date	**Client**	**Site**
June 18, 2023 8:06 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Sunny ☀	68	Karina Packer, Brad Ramsay	Turbidimeter

Turbidimeter

Serial Number	Low Standard Lot #	Low Standard Concentration (NTU)	Mid Standard Lot #	Mid Standard Concentration (NTU)	High Standard Lot #	High Standard Concentration (NTU)
202007903	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0.01	Low turbidity calibration reading is within range	9.89	Mid turbidity calibration reading is within range	1,002	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling

Project Information

Date	Client	Site
June 18, 2023 8:09 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Sunny ☀	65	Jacob Bougere, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
20.21	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240
Serial Number	**pH 4 Reading**		**pH 7 Reading**		**pH 10 Reading**		**Conductivity Reading (µS/cm)**		**ORP Reading (mV)**	
Drive 1	4	pH 4 calibration reading is within range	7.02	pH 7 calibration reading is within range	10.09	pH 10 calibration reading is within range	1,490	Conductivity calibration reading is within range	241	ORP calibration reading is within range

Notes: Recalibrated pH

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai gw

Project Information		
Date	**Client**	**Site**
June 18, 2023 8:10 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Sunny ☀	68	Karina Packer, Brad Ramsay	Turbidimeter

Turbidimeter

Serial Number	Low Standard Lot #	Low Standard Concentration (NTU)	Mid Standard Lot #	Mid Standard Concentration (NTU)	High Standard Lot #	High Standard Concentration (NTU)
201407081	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0.01	Low turbidity calibration reading is within range	9.66	Mid turbidity calibration reading is within range	1,001	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling

Project Information

Date	Client	Site
June 18, 2023 8:12 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Sunny ☀	66	Jacob Bougere, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
20.2	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240

Serial Number	pH 4 Reading		pH 7 Reading		pH 10 Reading		Conductivity Reading (µS/cm)		ORP Reading (mV)	
Drive 2	4.08	pH 4 calibration reading is within range	7	pH 7 calibration reading is within range	10.1	pH 10 calibration reading is within range	1,365	Conductivity calibration reading is within range	238	ORP calibration reading is within range

Notes:

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF GW Sampling

Project Information

Date	Client	Site
June 18, 2023 8:15 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Sunny ☀	66	Jacob Bougere, Karina Packer, Brad Ramsay, Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
20.2	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240
Serial Number	**pH 4 Reading**		**pH 7 Reading**		**pH 10 Reading**		**Conductivity Reading (µS/cm)**		**ORP Reading (mV)**	
Woods	4	pH 4 calibration reading is within range	6.92	pH 7 calibration reading is within range	10.04	pH 10 calibration reading is within range	1,347	Conductivity calibration reading is within range	239	ORP calibration reading is within range

Notes: Recalibrated pH

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai GWM 2023

Project Information		
Date	**Client**	**Site**
June 18, 2023 8:22 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Sunny ☀	65	Brad Ramsay	MiniRAE PID

PID							
Serial Number	**Calibration Gas Type**	**Calibration Gas Lot #**	**Calibration Gas Concentration (ppm)**	**Zero/Fresh Air Reading (ppm)**		**Span Reading (ppm)**	
910685	Isobutylene	22-9343	100	0	Zero reading is within range	100	Span calibration reading is within range
Notes:							

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: SRF gwm

Project Information		
Date	**Client**	**Site**
June 19, 2023 8:23 AM	Hilcorp	Srf

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Sunny ☀	68	Kyle Therrien	Turbidimeter

Turbidimeter						
Serial Number	**Low Standard Lot #**	**Low Standard Concentration (NTU)**	**Mid Standard Lot #**	**Mid Standard Concentration (NTU)**	**High Standard Lot #**	**High Standard Concentration (NTU)**
201810324	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0.02	Low turbidity calibration reading is within range	10.09	Mid turbidity calibration reading is within range	1,011	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai GWM 2023

Project Information

Date	Client	Site
June 19, 2023 8:26 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Sunny ☀	71	Karina Packer, Brad Ramsay	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
21	22H5R	4	23C2S	7.02	22K3T	10.05	23A100569	1,413	7939	240
Serial Number	**pH 4 Reading**		**pH 7 Reading**		**pH 10 Reading**		**Conductivity Reading (µS/cm)**		**ORP Reading (mV)**	
Drive1	4.02	pH 4 calibration reading is within range	6.98	pH 7 calibration reading is within range	10.03	pH 10 calibration reading is within range	1,413	Conductivity calibration reading is within range	239.2	ORP calibration reading is within range

Notes: Recalibrated Cond

Solution Temp (℃)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
1	22H5R	4	23C2S	7.02	22K3T	10.05	23A100569	1,413	7939	240
Serial Number	**pH 4 Reading**		**pH 7 Reading**		**pH 10 Reading**		**Conductivity Reading (µS/cm)**		**ORP Reading (mV)**	
Drive2	4.03	pH 4 calibration reading is within range	7.01	pH 7 calibration reading is within range	10.08	pH 10 calibration reading is within range	1,475	Conductivity calibration reading is within range	240.3	ORP calibration reading is within range
Notes:										
Solution Temp (℃)	**pH 4 Standard Lot #**	**pH 4 Standard Conc.**	**pH 7 Standard Lot #**	**pH 7 Standard Conc.**	**pH 10 Standard Lot #**	**pH 10 Standard Conc.**	**Conductivity Standard Lot #**	**Conductivity Standard Conc. (µS/cm)**	**ORP Standard Lot #**	**ORP Standard Conc. (mV)**
21	22H5R	4	23C2S	7.02	22K3T	10.05	23A100569	1,413	7939	240
Serial Number	**pH 4 Reading**		**pH 7 Reading**		**pH 10 Reading**		**Conductivity Reading (µS/cm)**		**ORP Reading (mV)**	
Woods	3.99	pH 4 calibration reading is within range	7.04	pH 7 calibration reading is within range	10.07	pH 10 calibration reading is within range	1,545	Conductivity calibration reading is within range	240.6	ORP calibration reading is within range
Notes: Recalibrated pH										

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Hilcorp GWM 2023

Project Information

Date	Client	Site
June 19, 2023 8:30 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Sunny ☀	70	Kyle Therrien	Turbidimeter

Turbidimeter

Serial Number	Low Standard Lot #	Low Standard Concentration (NTU)	Mid Standard Lot #	Mid Standard Concentration (NTU)	High Standard Lot #	High Standard Concentration (NTU)
201407081	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0	Low turbidity calibration reading is within range	10.98	Mid turbidity calibration reading is within range	1,020	High turbidity calibration reading is within range

Notes: Recalbrated due to low standard result of 0.15.

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Hilcorp GWM 2023

Project Information

Date	Client	Site
June 19, 2023 8:38 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Sunny ☀	68	Kyle Therrien	Turbidimeter

Turbidimeter

Serial Number	Low Standard Lot #	Low Standard Concentration (NTU)	Mid Standard Lot #	Mid Standard Concentration (NTU)	High Standard Lot #	High Standard Concentration (NTU)
202007903	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0	Low turbidity calibration reading is within range	10.2	Mid turbidity calibration reading is within range	1,001	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai GWM 2023

Project Information		
Date	**Client**	**Site**
June 20, 2023 8:11 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Rain ☔	68	Kyle Therrien	Turbidimeter

Turbidimeter

Serial Number	Low Standard Lot #	Low Standard Concentration (NTU)	Mid Standard Lot #	Mid Standard Concentration (NTU)	High Standard Lot #	High Standard Concentration (NTU)
201810324	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0	Low turbidity calibration reading is within range	9.9	Mid turbidity calibration reading is within range	952.3	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai GWM 2023

Project Information		
Date	**Client**	**Site**
June 20, 2023 8:15 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Rain ☂	69	Kyle Therrien	Turbidimeter

Turbidimeter						
Serial Number	**Low Standard Lot #**	**Low Standard Concentration (NTU)**	**Mid Standard Lot #**	**Mid Standard Concentration (NTU)**	**High Standard Lot #**	**High Standard Concentration (NTU)**
202007903	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0	Low turbidity calibration reading is within range	9.83	Mid turbidity calibration reading is within range	994.4	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai GWM 2023

Project Information		
Date	**Client**	**Site**
June 20, 2023 8:19 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Rain ☂	68	Kyle Therrien	Turbidimeter

Turbidimeter						
Serial Number	**Low Standard Lot #**	**Low Standard Concentration (NTU)**	**Mid Standard Lot #**	**Mid Standard Concentration (NTU)**	**High Standard Lot #**	**High Standard Concentration (NTU)**
201407081	220751	0.02	220843	10	220844	1,000
	Low Turbidity Reading (NTU)		**Mid Turbidity Reading (NTU)**		**High Turbidity Reading (NTU)**	
	0	Low turbidity calibration reading is within range	9.77	Mid turbidity calibration reading is within range	998.2	High turbidity calibration reading is within range
Notes:						

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Hilcorp Kenai Groundwater Monitoring Event 2023

Project Information

Date	Client	Site
June 20, 2023 8:21 AM	Hilcorp	SRF

Daily Log

Weather	Ambient Temperature (°F)	Field Team	Instruments to be checked/calibrated
Rain ☂	54	Jacob Bougere	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
19.01	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240

Serial Number	pH 4 Reading		pH 7 Reading		pH 10 Reading		Conductivity Reading (µS/cm)		ORP Reading (mV)	
Woods	4.02	pH 4 calibration reading is within range	7.03	pH 7 calibration reading is within range	9.96	pH 10 calibration reading is within range	1,281	Conductivity calibration reading is within range	239.1	ORP calibration reading is within range

Notes:

Solution Temp (℃)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
19.09	22H5R	4	23C2S	7.02	22K3T	10	23A100569	1,413	7939	240
Serial Number	**pH 4 Reading**		**pH 7 Reading**		**pH 10 Reading**		**Conductivity Reading (µS/cm)**		**ORP Reading (mV)**	
Drive 1	4.07	pH 4 calibration reading is within range	7.01	pH 7 calibration reading is within range	10.02	pH 10 calibration reading is within range	1,364	Conductivity calibration reading is within range	236.1	ORP calibration reading is within range
Notes:										

ALEUT FEDERAL, LLC

Daily Calibration Log

Project Name: Kenai GWM 2023

Project Information		
Date	**Client**	**Site**
June 20, 2023 8:24 AM	Hilcorp	SRF

Daily Log			
Weather	**Ambient Temperature (°F)**	**Field Team**	**Instruments to be checked/calibrated**
Rain ☂	68	Kyle Therrien	YSI Multimeter

YSI

Solution Temp (°C)	pH 4 Standard Lot #	pH 4 Standard Conc.	pH 7 Standard Lot #	pH 7 Standard Conc.	pH 10 Standard Lot #	pH 10 Standard Conc.	Conductivity Standard Lot #	Conductivity Standard Conc. (µS/cm)	ORP Standard Lot #	ORP Standard Conc. (mV)
19.05	22H5R	4	23C2S	7.02	22K3T	10.06	23A100569	1,413	7939	240
Serial Number	**pH 4 Reading**		**pH 7 Reading**		**pH 10 Reading**		**Conductivity Reading (µS/cm)**		**ORP Reading (mV)**	
11J102416	4.07	pH 4 calibration reading is within range	7.11	pH 7 calibration reading is within range	10.09	pH 10 calibration reading is within range	1,307	Conductivity calibration reading is within range	240.4	ORP calibration reading is within range

Notes:

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Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
SRFTS1-4	Hilcorp
Inspection Date	**Field Team**
June 17, 2023 2:20 PM	Nicole Mattice

Site Overview Photos

Site Observations

Surface water bodies on, near, or surrounding the site, Buildings on site, Structures, Containment Area/Relief Pit, Flare Pit

Surface Water

Southwest of flare pit.



Photo Name

Reference photo. Surface water southwest of flare pit.

Photo Direction

North

Photo Notes



Photo Name

Closeup of available surface water.

Photo Direction

Close-up

Photo Notes



Photo Name

Culvert drainage north of site and east of flare pit.

Photo Direction

South

Photo Notes

SW Observations

Muddy

SW Vegetation

Healthy



Photo Name

Vegetated triangle north of ts building and east of flare pit. Contains surface water.

Photo Direction

South

Photo Notes

Buildings

Ts building.



Photo Name

Ts building overview from northwest end of pad.

Photo Direction

SouthEast

Photo Notes

Building Vegetation

Healthy



Photo Name

Vegetation across road from ts building on north side.

Photo Direction

East

Photo Notes



Photo Name

Vegetation on east side of triangle of vegetation in middle of site.

Photo Direction

North

Photo Notes



Photo Name

Tree strip between ts building and plant.

Photo Direction

Photo Notes

Structures
Tanks



Photo Name

East of building.

Photo Direction

South

Photo Notes

Structure Vegetation
None

Flare Pits
Active Tilled



Photo Name

Flare pit overview.

Photo Direction

NorthEast

Photo Notes

Flare Pit Vegetation
Healthy



Photo Name

Vegetation southeast of flare pit.

Photo Direction

North

Photo Notes



Photo Name

North of flare pit.

Photo Direction

West

Photo Notes

Other Notes

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
SRFTS1-9	Hilcorp
Inspection Date	**Field Team**
June 17, 2023 3:52 PM	Nicole Mattice

Site Overview Photos



Photo Name

Overview approaching TS 1-4 from north.

Photo Direction

SouthEast

Photo Notes

Site Observations

Buildings on site, Containment Area/Relief Pit, Flare Pit

Buildings

Ts building.



Photo Name

West side of building.

Photo Direction

East

Photo Notes



Photo Name

South end of ts building.

Photo Direction

North

Photo Notes



Photo Name

North end of building.

Photo Direction

South

Photo Notes

Building Vegetation

Healthy



Photo Name

Vegetation south of building.

Photo Direction

East

Photo Notes



Photo Name

Vegetation east of building and relief pit.

Photo Direction

NorthEast

Photo Notes



Photo Name

Vegetation northeast of building.

Photo Direction

NorthWest

Photo Notes

Flare Pits
Active Vegetation, Tilled



Photo Name

Flare pit northofbuilding.

Photo Direction

North

Photo Notes

Flare Pit Vegetation
Healthy



Photo Name

Vegetation along north and east perimeter of site.

Photo Direction

North

Photo Notes

Other Notes

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
SRFTS1-27	Hilcorp
Inspection Date	**Field Team**
June 17, 2023 11:50 AM	Nicole Mattice

Site Overview Photos



Photo Name

Overview from SW end of pad.

Photo Direction

NorthEast

Photo Notes

Site Observations

Buildings on site, Containment Area/Relief Pit, Flare Pit

Buildings

Ts building.



Photo Name

Ts builing from souyhrrn edge of pad.

Photo Direction

North

Photo Notes



Photo Name

Ts building overview.

Photo Direction

SouthWest

Photo Notes



Photo Name

Building overview from northwest road entrance.

Photo Direction

SouthEast

Photo Notes

Building Vegetation

Healthy



Photo Name

Vegetation on southern edge of site next to building.

Photo Direction

East

Photo Notes



Photo Name

Vegetation on east edge of pad next to building.

Photo Direction

Photo Notes



Photo Name

Across street at SCU pad.

Photo Direction

West

Photo Notes



Photo Name

Directly across street from building.

Photo Direction

West

Photo Notes



Photo Name

North of building.

Photo Direction

North

Photo Notes

Flare Pits
Active Dirt, Other Grass.



Photo Name

Flare pit overview.

Photo Direction

West

Photo Notes

Flare Pit Vegetation
Healthy



Photo Name

Vegetation north of flare pit.

Photo Direction

West

Photo Notes



Photo Name

Vegetation west of flare pit.

Photo Direction

South

Photo Notes

Other Notes

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
SRFTS1-33	Hilcorp
Inspection Date	**Field Team**
June 17, 2023 1:07 PM	Nicole Mattice

Site Overview Photos



Photo Name

Northernmost access to site.

Photo Direction

South

Photo Notes



Photo Name

Overview from northeast corner of pad.

Photo Direction

SouthWest

Photo Notes



Photo Name

Overview from south end of site.

Photo Direction

NorthEast

Photo Notes

Site Observations

Surface water bodies on, near, or surrounding the site, Buildings on site, Structures, Containment Area/Relief Pit, Flare Pit

Surface Water

Swanson riverjusteastofsite. Standing water in tilled areas.



Photo Name

Standimg water in flare pit.

Photo Direction

NorthWest

Photo Notes



Photo Name

Swanson River downstream flow

Photo Direction

South

Photo Notes



Photo Name

Swanson river looking upstream.

Photo Direction

North

Photo Notes

SW Observations
Clear

SW Vegetation
Healthy

Buildings

Ts building.



Photo Name

Ts builing from east end.

Photo Direction

West

Photo Notes

Building Vegetation

Healthy

Structures

Tank with stack.



Photo Name

Outsife ts building.

Photo Direction

East

Photo Notes



Photo Name

Skim pit.

Photo Direction

South

Photo Notes

Structure Vegetation

Healthy



Photo Name

Vegetation north of structure.

Photo Direction

East

Photo Notes



Photo Name

Vegetation east of structure.

Photo Direction

East

Photo Notes



Photo Name

Vegetation east of skim pit.

Photo Direction

East

Photo Notes

Flare Pits

Closed Tilled



Photo Name

Flare pit overview from ts building.

Photo Direction

SouthEast

Photo Notes



Photo Name

Flare pit overview from east end.

Photo Direction

NorthWest

Photo Notes

Flare Pit Vegetation

Healthy



Photo Name

Vegetation north of flare pit.

Photo Direction

East

Photo Notes



Photo Name

Vegetation south of flare pit.

Photo Direction

East

Photo Notes



Photo Name

Vegetation east of flare pit.

Photo Direction

North

Photo Notes

Other Notes

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
SRFTS2-15	Hilcorp
Inspection Date	**Field Team**
June 17, 2023 9:49 AM	Nicole Mattice

Site Overview Photos



Photo Name

Site overview.

Photo Direction

NorthEast

Photo Notes



Photo Name

Well heads in lot across street from site.

Photo Direction

West

Photo Notes



Photo Name

Boiler tanks in lot across street from site,

Photo Direction

NorthWest

Photo Notes



Photo Name

Overview from N road entrance.

Photo Direction

SouthWest

Photo Notes



Photo Name

Flare pit and well head/ boiler tank lot across road from building.

Photo Direction

SouthEast

Photo Notes



Photo Name

Outside flare pit.

Photo Direction

Down

Photo Notes

Site Observations
Buildings on site, Containment Area/Relief Pit, Flare Pit

Buildings
TS building and associated buildings (i.e., valve house).



Photo Name

Entrance to building.

Photo Direction

South

Photo Notes

Building Vegetation
Healthy



Photo Name

Vegetation E of biulding.

Photo Direction

North

Photo Notes



Photo Name

Vegetation N of building.

Photo Direction

West

Photo Notes



Photo Name

Vegetation on N edge of site near building.

Photo Direction

East

Photo Notes

Flare Pits

Active Dirt, Other Some grass.



Photo Name

TS 2-15 flare pit.

Photo Direction

East

Photo Notes

Flare Pit Vegetation

Healthy, Other Tilled outside of flare pit.



Photo Name

Vegetation along north side of site and west.

Photo Direction

East

Photo Notes



Photo Name

Vegetation east of flare pit.

Photo Direction

South

Photo Notes



Photo Name

Standing water in tilled areas.

Photo Direction

Down

Photo Notes

Other Notes

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
SRFTS3-4	Hilcorp
Inspection Date	**Field Team**
June 17, 2023 4:53 PM	Nicole Mattice

Site Overview Photos



Photo Name

Overview from north end of site.

Photo Direction

SouthWest

Photo Notes

Site Observations

Buildings on site, Containment Area/Relief Pit, Flare Pit

Buildings

Ts building.



Photo Name

Ts building from north end.

Photo Direction

South

Photo Notes



Photo Name

In front of building.

Photo Direction

SouthEast

Photo Notes



Photo Name

Southwest end of building.

Photo Direction

NorthEast

Photo Notes



Photo Name

Southeast end of building.

Photo Direction

NorthWest

Photo Notes

Building Vegetation

Healthy



Photo Name

Some vegetation cleared north of site.

Photo Direction

East

Photo Notes



Photo Name

Vegetation south of building.

Photo Direction

East

Photo Notes



Photo Name

New clearing southof building.

Photo Direction

South

Photo Notes



Photo Name

Vegetation east of building.

Photo Direction

North

Photo Notes

Flare Pits

Active Vegetation, Tilled



Photo Name

Flare pit east of building.

Photo Direction

East

Photo Notes

Flare Pit Vegetation

Healthy



Photo Name

North of flare pit.

Photo Direction

NorthWest

Photo Notes



Photo Name

Vegetation south of flare pit.

Photo Direction

West

Photo Notes

Other Notes

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
SRFTS3-9	Hilcorp
Inspection Date	**Field Team**
June 17, 2023 4:22 PM	Nicole Mattice

Site Overview Photos



Photo Name

From entrance to pad.

Photo Direction

South

Photo Notes

Site Observations

Buildings on site, Containment Area/Relief Pit, Flare Pit

Buildings

Ts building.



Photo Name

West side of building.

Photo Direction

East

Photo Notes



Photo Name

Northeast side of building.

Photo Direction

SouthWest

Photo Notes

Building Vegetation

Healthy



Photo Name

Vegetation to west of building.

Photo Direction

SouthWest

Photo Notes



Photo Name

Vegetation southeast of building.

Photo Direction

West

Photo Notes



Photo Name

Wooded area south and downhill of site.

Photo Direction

South

Photo Notes



Photo Name

Vegetation along west of site.

Photo Direction

South

Photo Notes

Flare Pits

Active Vegetation, Tilled



Photo Name

Flare pit west of building.

Photo Direction

West

Photo Notes

Flare Pit Vegetation

Healthy



Photo Name

Vegetation north of flare pit.

Photo Direction

West

Photo Notes



Photo Name

Vegetation south and east of flare pit.

Photo Direction

East

Photo Notes

Other Notes

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
23B-3	Hilcorp
Inspection Date	**Field Team**
June 20, 2023 4:53 PM	Kyle Therrien

Site Overview Photos



Photo Name

Pad entrance

Photo Direction

West

Photo Notes



Photo Name

Pad area

Photo Direction

East

Photo Notes



Photo Name

Pad area

Photo Direction

SouthEast

Photo Notes



Photo Name

Pad area

Photo Direction

South

Photo Notes



Photo Name

Pad area

Photo Direction

SouthWest

Photo Notes



Photo Name

Pad area from east side

Photo Direction

West

Photo Notes



Photo Name

North side of pad from south sidd of pad

Photo Direction

North

Photo Notes

Site Observations

Berm

Berms on Site

Along some sides of the site



Photo Name

West pad berm

Photo Direction

SouthWest

Photo Notes



Photo Name

SW corner of pad berm

Photo Direction

South

Photo Notes



Photo Name

SE corner of pad berm

Photo Direction

SouthEast

Photo Notes



Photo Name

East berm on pad

Photo Direction

East

Photo Notes



Photo Name

Berm on south side of pad

Photo Direction

South

Photo Notes

Berm Vegetation

Healthy, New Growth/Short



Photo Name

Vegetation south of pad.

Photo Direction

South

Photo Notes



Photo Name

Vegetation east of pad.

Photo Direction

East

Photo Notes



Photo Name

Vegetation north of pad.

Photo Direction

North

Photo Notes



Photo Name

Vegetation west of pad.

Photo Direction

West

Photo Notes

Other Notes

North side of pad lacks a berm. New growth along edges of gravel pad.

Visual Site Inspection

Project Name: Hilcorp Kenai Groundwater Monitoring 2023 Event

Project Information	
Site	**Client**
312-09	Hilcorp
Inspection Date	**Field Team**
June 20, 2023 6:20 PM	Jacob Bougere, Kyle Therrien

Site Overview Photos

Site Observations

Berm

Berms on Site

Along entire perimeter



Photo Name

East pad berm

Photo Direction

East

Photo Notes



Photo Name

South pad berm

Photo Direction

South

Photo Notes



Photo Name

North pad berm

Photo Direction

North

Photo Notes



Photo Name

West pad berm

Photo Direction

West

Photo Notes

Berm Vegetation
Healthy



Photo Name

Vegetation on western side of berm

Photo Direction

West

Photo Notes



Photo Name

Vegetation on south sideof pad

Photo Direction

South

Photo Notes



Photo Name

Vegetation on east sideof pad

Photo Direction

East

Photo Notes



Photo Name

Vegetation on north sideof pad

Photo Direction

North

Photo Notes



Photo Name

Cleared and regrown Area south of pad

Photo Direction

West

Photo Notes



Photo Name

Cleared and regrown Area south of pad

Photo Direction

West

Photo Notes

Other Notes

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Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 17, 2023 5:19 PM	Nicole Mattice

Waste Log

Waste Type

Oily waste bags or sorbent socks

Bags of Oily Waste: 5



Socks from SRF sites TS 1-4, 1-9, 1-33, 3-4, and 3-9.

Relinquished to: Main office

Recipient Company: Hilcorp

Site: SRF

Date and Time Relinquished: June 17, 2023 5:36 PM

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 17, 2023 5:38 PM	Nicole Mattice

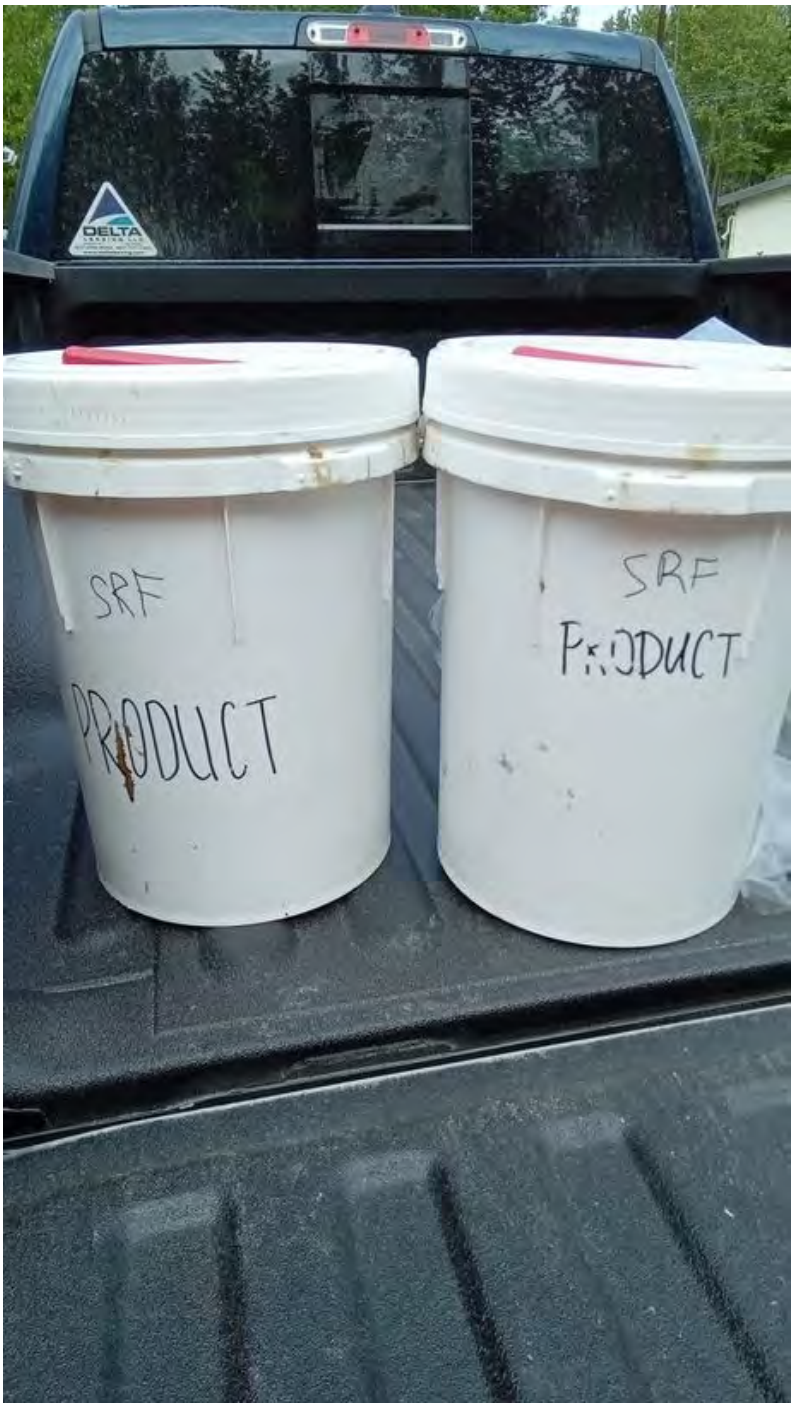
Waste Log

Waste Type

Product

Product Container Type: 5-gal bucket

Total Volume: 6 gallons



2 buckets of product.

Relinquished to: Main Office

Recipient Company: HILCORP

Site: SRF

Date and Time Relinquished: June 17, 2023 5:39 PM

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 17, 2023 5:40 PM	Nicole Mattice

Waste Log

Waste Type

IDW in trash bags

IDW/Trash Bag Count: 1 bags

Disposal location: SRF Dumpster

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 17, 2023 4:15 PM	Jacob Bougere, Kyle Therrien

Waste Log

Waste Type

Liquid IDW

Liquid IDW Container: Other 55 gal open-top steel drum

Total Volume: 3.25 gallons

See GW sampling form photo for TS1-4EE

Relinquished to:

Recipient Company: Hilcorp

Site: TS1-4 MW TS1-4EE

Date and Time Relinquished: June 17, 2023 4:15 AM

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 18, 2023 2:20 PM	Karina Packer

Waste Log

Waste Type

Liquid IDW

Liquid IDW Container: Other 55 gal drum

Total Volume: 1 gallons

Relinquished to: N/A

Recipient Company: Hilcorp

Site: TS1-4

Date and Time Relinquished: June 18, 2023 2:20 PM

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 20, 2023 7:24 PM	Jacob Bougere, Karina Packer, Brad Ramsay, Kyle Therrien

Waste Log

Waste Type

Oily waste bags or sorbent socks

Bags of Oily Waste: 1



Relinquished to:

Recipient Company: Hilcorp

Site: SRF TS3-4 and TS3-9

Date and Time Relinquished: June 20, 2023 7:30 PM

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 20, 2023 7:31 PM	Jacob Bougere, Nicole Mattice, Karina Packer, Brad Ramsay, Kyle Therrien

Waste Log

Waste Type

IDW in trash bags

IDW/Trash Bag Count: 3 bags

Disposal location: SRF Dumpster

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 21, 2023 12:34 PM	Nicole Mattice

Waste Log

Waste Type

IDW in trash bags

IDW/Trash Bag Count: 1 bags

Disposal location: SRF Dumpster

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 21, 2023 10:00 AM	Brad Ramsay, Kyle Therrien

Waste Log

Waste Type

Liquid IDW

Liquid IDW Container: Other 55-gallon drum of purge water

Total Volume: 4.5 gallons



Drum of purged gw from TS1-4

Relinquished to: Hilcorp

Recipient Company: Hilcop

Site: TS1-4

Date and Time Relinquished: June 21, 2023 10:05 AM

Waste Tracking Log

Project Name: Kenai Groundwater Monitoring 2023 Event

Disposal Date	Field Team
June 30, 2023 9:48 AM	Jacob Bougere, Kyle Therrien

Waste Log

Waste Type

Spent GAC

Spent GAC Container: 5-gal bucket

Total Volume: 10 gallons



Two 5 gal buckets of spent GAC relinquished to Hilcorp at Main Office.

Relinquished to: Shea Mullen

Recipient Company: Hilcorp

Site:

Date and Time Relinquished: June 30, 2023 10:01 AM

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APPENDIX D

LOGBOOK NOTES

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ARS ALEUT REMEDIATION
BOOK 1/1
6/12/23 - 6/24/23

Rite in the Rain.
ALL-WEATHER
ENVIRONMENTAL
№ 550F

HILCORP SRF
TANK SETTINGS
GWM PROGRAM
2023

No.550F-Environmental-Yellow- 4.75"x7.5"
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ISBN 978-1-932149-6C 0

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— DEFYING MOTHER NATURE —

ALL-WEATHER
ENVIRONMENTAL FIELD BOOK
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Project HILCORP SWANSON RIVER FIELD
TANK SETTINGS GROUNDWATER
MONITORING PROGRAM

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US Pat No. 6,863,940
5-22

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149 Sampling Guidelines (Solids)
150 Approximate Volume of Water in Casing or Hole, Ground Water Monitoring Well
151 PVC Pipe Casing Tables
152 Soil Classification
153 Soil Classification
154 Maximum Concentration of Contaminants for the Toxicity Characteristic
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156 Conversions (Length, Weight, Volume, Temp, etc ..)

CONTENTS

PAGE	REFERENCE	DATE

Location SRF TANK SETTINGS Date 6/12/23

Project / Client HILCORP

MODIFIED LEVEL D PPE

0815 - CREW MEET AT OFFICE PARKING LOT TO PICK UP RENTAL VEHICLES + PACK @ CONNEX

0930 - VEHICLES PACKED + CONDUCT VEHICLE INSP's + SAFETY TAILGATE (SEE FORMS)

1015 - MOBILIZE FROM ANC TO SRF. (NICOLE MATTICE + JACOB BOURGERE)

1245 - LUNCH BREAK. PULL OVER @ GWIN'S LODGE.

1315 - CONTINUE TO SRF

1435 - ARRIVE SRF MAIN BLDG + CHECK IN + GET MW KEYS
PLANT BLDG MOVED NEXT TO MAIN OFFICE.

1500 - ARRIVE LODGING + UNPACK (COTTONWOOD BUNKHOUSE)

1630 - UNPACK COMPLETE + PREPARE TO GUAGE ES MW's. SEE ELECTRIC SHOP LOGBOOK.

2145 - RETURN TO BUNKHOUSE. PREP GEL ICE + EQUIPMENT FOR SAMPLING

2300 - EQUIPMENT PREP COMPLETED

EOD

Rite in the Rain

Location SRF TANK SETTING Date 6/13/23

Project / Client HILCORP 2023 GWM EVENT

MODIFIED LEVEL D PPE

0800 - BEGIN SAMPLING EQUIPMENT PREP FOR SRF ELECTRIC SHOP WORK. SEE HARVEST LOGBOOK. NICOLE MATTICE + JACOB BOUGERE.
BRAD RAMSAY, KARINA PACKER, KYLE THERRIEN PREPARE FOR MOBILIZATION FROM ANC TO SRF - PACK + RUN ERRANDS.

1730 - BR, KP, KT MOBILIZES TO SRF FROM ANC BY VEHICLE.

2300 - BR, KP, KT ARRIVE TO SRF LODGING + UNPACK. EOD

Location SRF TS Date 6/14/23

Project / Client HILCORP GWM PROGRAM

MODIFIED LEVEL D PPE

0630 - MORNING MEETING W/ ENTIRE CREW.
NICOLE MATTICE (NM)
BRAD RAMSAY (BR)
JACOB BOUGERE (JB)
KARINA PACKER (KP)
KYLE THERRIEN (KT)
UNLOAD VEHICLES. PREPARE TO GAUGE SRF.

0945 - BR, KP, KT BEGIN HILCORP SAFETY ORIENTATION.

1045 - SAFETY TAILGATE W/ CREW + WORK PERMIT APPROVAL.
BR, KP, KT BEGIN GAUGING SRF. SEE GAUGING FORMS.
JB BEGIN SAMPLING AT ELECTRIC SHOP. SEE HARVEST LOGBOOK.
NM BEGIN INCIDENT REPORTING FOR ANKLE INJURY ON 6/8.

1300 - NM DRIVE TO TOWN FOR SUPPLIES.

1730 - NM RETURN TO SRF + SIGNED IN AT MAIN BUILDING.

2000 - BR, KP, + KT RETURN TO LODGING. COMPLETED GAUGING AT SITES

Rite in the Rain

Location _____ Date _____

Project / Client _____

TS 1-4, TS 1-27, TS 1-33, TS 2-15
EOD

Location SRF TS Date 6/15/23

Project / Client Hilcrp

MODIFIED LEVEL D PPE

0830 - BR, KP, KT, JB SAFETY MEETING. PACK VEHICLES FOR GAUGING AT SRF TS 1-9 + 3-4. WORK PERMIT APPROVED. SEE FORMS.

0905 - NM DEPART SRF TO DELIVER ELECTRIC SHOP COOLER.

1145 - NM RETURN TO SRF + SIGN IN AT MAIN BLDG.
BR, JB, KP, KT COMPLETE GAUGING AT SITES TS 1-9 + 3-4 (SEE FORMS).
LUNCH.

1230 - MAIN OFFICE FOR CREW TO SIGN OUT SRF (BR, JB, KP, KT, NM) + DEPART FOR BEAVER CREEK UNIT GAUGING (SEE RCA LOGBOOK).

2100 - RETURN SRF SIGN IN MAIN OFFICE.
EOD



Rite in the Rain

Location SRF Date 6/17/23

Project / Client HILLCORP

MODIFIED LEVEL D PPE

0730 - SAFETY TAILGATE W/ TEAM (NM, JB, KP, KT, BR).

0800 - PACK VEHICLES. PREPARE SAMPLING EQUIPMENT.

0910 - NM ARRIVE MAIN OFFICE TO GET WORK PERMIT APPROVED.

0920 - KT + JB HEAD TO TS 2-15 TO BEGIN SRF SAMPLING ACTIVITIES. SEE SAMPLING FORMS

0930 - NM, KP, BR TO TS 2-15. SEE SAMPLING FORMS.

0945 - NM BEGIN VISUAL ASSESSMENT FOR SRF. SEE FORMS.

1130 - BR, KT, JB COMPLETE TS2-15 + MOVE TO NEXT SITES (NM) TS1-27. WELL FS2-15B PVC WAS CUT DOWN.

1240 - KP ARRIVE TS1-27. SAMPLING AT TS 2-15 COMPLETE. SAMPLED WELLS: TS215P, TS215O, TS215R, FS215B (SEE SAMPLING FORMS FOR SAMPLE TIMES + METHODS).

1300 - NM COMPLETE TS1-27 VISUAL ASSESSMENT. MOVE TO NEXT SITE

Location Date

Project / Client

~~KT + JB COMPLETE WELL AT TS1-27 + HEAD TO NEXT SITE.~~ (NM)

1315 - NM ARRIVE TS1-33 + BEGIN VISUAL ASSESSMENT. ~~KT + JB ARRIVE TS1-4.~~ (NM)

1355 - NM COMPLETE TS1-33 VISUAL ASSESSMENT. ~~KP + BR~~ (NM) COMPLETE SITE TS1-27 SAMPLING. WELLS INCLUDED: TS127G, TS127L, TS127K, FS127G, + TS127M. SEE SAMPLING FORMS.

1420 - NM ARRIVE TS1-4.

1445 - JB + KT ARRIVE TS1-4 } TO BEGIN GW SAMPLING
BR ARRIVE TS1-33
KP ARRIVE TS1-33

1515 - PROCURED 55-GAL DRUM FOR PURGE WATER POTENTIALLY CONTAMINATED W/ ETHYLENE GLYCOL AT TS1-4 WELLS.

1540 - NM COMPLETE VISUAL ASSESSMENT AT TS1-4. HEAD TO TS1-9.

1615 - NM COMPLETE TS1-9 VISUAL ASSESSMENT. HEAD TO TS3-9.

Rite in the Rain

Location _____ Date _____

Project / Client _____

1045 - NM COMPLETE TS3-9 VISUAL ASSESSMENT. HEAD TO 3-4.

1715 - NM COMPLETE TS3-4 VISUAL ASSESSMENT.

1745 - NM ARRIVE HOA TO RELINQUISH PRODUCT + OILY WASTE TO HAK 6-GAL (2 5-GAL DOT-APPR. SCREW-TOP LIDS BUCKETS) + 5 OILY WASTE BAGS. SEE WASTE TRACKING LOG. +1 BAG IDW.

1800 - NM ARRIVE LODGING + PACK SAMPLE KITS.

1900 - KT + JB ARRIVE LODGING + COMPLETE SAMPLING FOR DAY. AT SRF TS1-4 : TS1-4EE, FS1-4H, + FS1-4E. SCE SAMPLE FORMS.

1930 - BR + KP RETURN LODGING. COMPLETED WELLS FS133W, FS133S, TS133JJ, TS133WR, + TS133G2 (NM)

1945 - NM CLOSE OUT WORK PERMIT. EOD

Location SRF Date 6/18/23

Project / Client HILCORP

MODIFIED LEVEL D PPE

0730 - SAFETY TAILGATE : NM, KT, KP, BR, JB.
PACK TRUCKS + PREPARE FOR DAY.

0800 completed safety meeting.

0845 Crew depared equipment for GW sampling, loaded trucks and departed to GW sample

0850 KT & JB & NM completed safety tailgate at Hilcorp office

0900 KT & JB began sampling at TS3-4

1325 KT & JB completed sampling wells TS3-4P, TS3-4OO and TS3-4MM. Departed for TS1-9 to sample TS1-9HH and TS1-9LL.

1640 KT & JB departed TS1-9 For housing to get samples on Frozen gel ice.

1652 KT & JB departed For TS3-9 to sample wells

1825 KT ~~completed~~ & JB completed sampling TS3-9DD. Departed for SCU 23B & SCU 312-09

Rite in the Rain

Location SRF Date 6/18/23

Project / Client Hilcorp

1825 cont. to locate wells. Gauged & inspected SCU 312-09 MW01 Unable to complete gauging & inspection at MW-02 & 03 due to Moose.

1905 Arrived at SCU 23-03 to gauge & inspect All wells.

1933 Completed gauge & inspection of all three new MW's at SCU 23-03. Departed for lodging

1940 Picked up 5 gal jug of Water From Temp office / H00

1945 Arrived at housing unloaded equipment, charged electronics, and prepared for 6/19 Field work.

2000 KT discussed w/ KP and BR about their progress at TS1-4. KT confirmed the following wells were sampled by KP & BR: TS1-4GR, TS1-4F, FS1-4I, FS1-33F, FS1-33H, TS1-3302,

Location Date 6/18/23

Project / Client

2000 Cont. BR & KP also sampled the following wells at TS3-4: FS3-4A, FS3-4E FS3-4F.

See Electronic forms for all GW Sampling ~~arty~~ KT gauging forms

1030 - PREPARED SAMPLE LABELS + ATTACHED TO ALL SAMPLE JARS COLLECTED TODAY.

2330 - EOD

Rite in the Rain

Location SRF TS Date 6/19/23

Project / Client HILCORP

MODIFIED LEVEL D PPE

0800 - SAFETY TAILGATE
- NM, KP, KT, JB, BR

0820 - PACK + PREPARE FOR SAMPLING ACTIVITIES TODAY.

0830 - NM ARRIVE MAIN OFFICE FOR WORK PERMIT APPROVAL + RADIO FOR FLARE PIT WELL ACTIVITIES.

0850 - NM RETURN LODGING TO PREPARE SAMPLE COOLERS FOR SHIPMENT.

0900 - KP, KT, JB, BR CONTINUE COLLECTING SRF TS GW SAMPLES.

1100 - BR FIX GW SAMPLE FORMS AT LODGING

1230 - BR CONTINUE SAMPLING

1500 - NM SIGN OUT SRF MAIN OFFICE TO SHIP COOLERS.

1600 - ARRIVE KENAI HANGAR, DELIVER 4 SAMPLE COOLERS (SRF-1, BANGLADESH, CHILE, DJIBOUTI, EGYPT).

1630 - DEPART FOR SRF RETURN.

1800 - ARRIVE SRF + SIGN IN.
CHECK-IN W/ BR - FINISHED 1-9, KP - FINISHED FOR DAY AT 3-9, KT+JB - MAINTENANCE ACTIVITIES AT FLARE PIT WELL AT 3-4.

Location Date

Project / Client

1935 - KP, BR ARRIVE LODGING + UNPACK

1950 - KT, JB ARRIVE LODGING + UNPACK

2000 - BEGIN DOWNLOADING FIELD FORMS + GENERATING SAMPLE SUMMARY. SITES TS1-9 + TS3-4 SAMPLING COMPLETED. CONTINUED SAMPLING AT TS3-9. SEE SAMPLE FORMS.

2030 - DINNER / BREAK BEFORE CREW LABELS SAMPLE JARS.

2225 - CREW LABELS ALL SAMPLE JARS COLLECTED TODAY.

2300 - LABELING COMPLETE. EOD

Rite in the Rain

Location SRF TS Date 6/20/23

Project / Client HILCORP

MODIFIED LEVEL D PPE

0730 - SAFETY TAILGATE - NM, KP, BR, KP, KT.

0800 - BEGIN PREPARING FOR SAMPLING + SAMPLE PACKING.

0900 - NM GET WORK PERMIT APPROVED AT MAIN OFFICE.

0920 - CREW DEPART FOR THE DAY'S SAMPLING ACTIVITIES. KP + BR TO TS3-9 TO COLLECT REMAINING SAMPLES. KT + JB TO SCU312-09 + SCU238-03 TO CONDUCT SAMPLING ACTIVITES NM AT LODGING TO PACK + SHIP 6/19 SAMPLES.

1115 - NM SIGN OUT MAIN OFFICE + DEPART SRF HANGAR TO DROP OFF SAMPLE SHIPMENT AT KENAI HANGAR.

1215 - ARRIVE KENAI HANGAR + DROP OFF 2 COOLERS OF SAMPLES COLLECTED ON 6/19 (FISI + GUATEMALA). RETURN TO SRF.

1340 - NM RETURN SRF + SIGN IN MAIN OFFICE.
FIND CREW; JB + KT HEADING TO SITE SCU238-03. BR + KP SAMPLING AT TS3-9

Location _____ Date _____

Project / Client _____

SAMPLING AT SCU 312-09 COMPLETED + SEE SAMPLING FORMS.

1630 - KP + BR RETURN FROM SURFACE WATER SAMPLING TS1-4 LOCATION. HEAD TO TS 3-9 TO COMPLETE SAMPLING AT SITE.

1830 - KT + JB COMPLETE SCU SAMPLING + VISUAL SITE ASSESSMENTS. ~~RELINQUISH SS OILY WASTE TO HAK OPERATORS.~~ NM

NM ~~RELINQUISH~~ LABELED TS1-4 NON-HAZ LIQUID IDW (ETHYLENE GLYCOL IMPACTED) ~~TO HAK OPERATORS~~ NM

~~1900~~ NM DRUM TO RELINQUISH TO HAK OPERATORS

1900 - KP + BR RETURN TO LODGING. COMPLETED TS3-9 SITE SAMPLING + REPLACED ~~OILY WAT~~ NM SORBENT SOCK.

1920 - NM TO MAIN OFFICE FOR WORK PERMIT CLOSE. RETURN WELL KEYS

1945 - ~~BR~~ NM JB + KT DISPOSE IDW BAGS + RELINQUISH OILY WASTE BAG TO HAK OPERATORS.
BR COMPILE SAMPLE SUMMARY.

Rite in the Rain

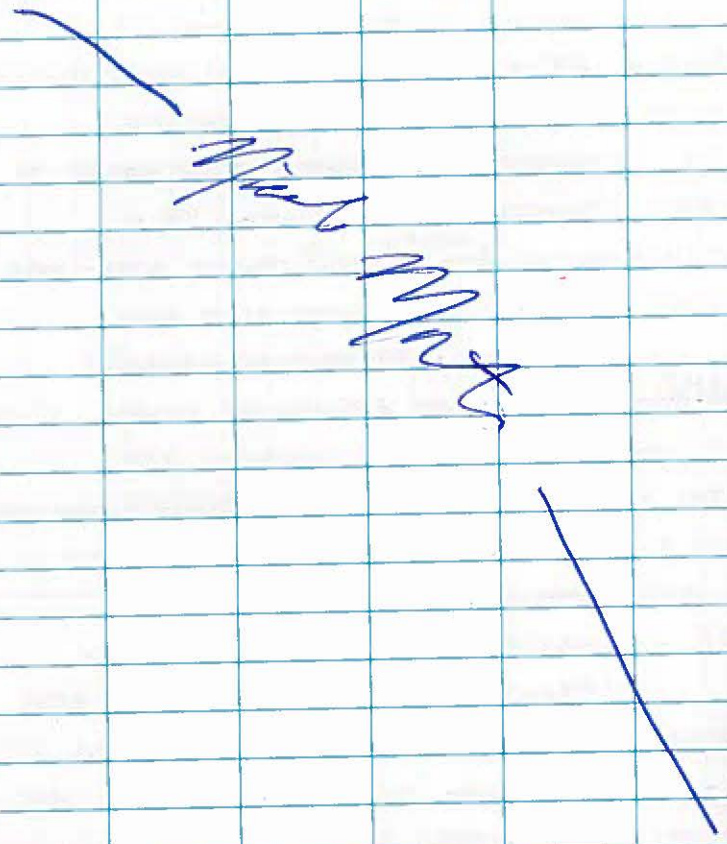
Location _____ Date _____

Project / Client _____

(CONT'D) – KP, JB, KT BREAK ; NM PLAN FOR NEXT DAY.

2000 – KP, BR, JB, KT LABEL SAMPLE JARS.

2045 – LABELING ACTIVITIES COMPLETE. EOD.



Location SRF Date 6/21/23

Project / Client HILCORP

MODIFIED LEVEL D PPE

0830 – SAFETY MEETING W/ TEAM. (NM, JB, KT, KP, BR)

0845 – PREPARE FOR DEPARTURE. NM SAMPLE PACK, JB COOLER + GLASSWARE INVENTORY, KT + BR ASSESS SURVEYING NEEDS AT EACH SITE.

1015 – KT + BR RETURN LODGINGS FROM SURVEY ASSESS + HELP PACK. NM COMPLETE SAMPLE PACKING + HELP CREW PREPARE FOR DEPART. KT + BR RELINQUISH TSI-4 DRUM (SEE WASTE TRACKING LOG).

1100 – TRUCKS, SUPPLIES, + EQ LOADED. CREW PREPARING PERSONAL BELONGINGS FOR DEPARTURE.

1240 – CREW SIGNS OUT SRF + DEPART FOR LODGING IN KENAI. NM TO AIRPORT TO ~~COLLECT~~ SHIP COLLECTED SAMPLES.

1345 – CREW ARRIVES LODGING IN KENAI. NM ARRIVE KENAI HANGAR TO DROP OFF SAMPLE COOLERS +

Rite in the Rain.

Location _____ Date _____

Project / Client _____

SAMPLING EQ TO BE REPLACED.

1415 - CREW DEPARTS LODGING UNTIL IT IS READY TO BE CHECKED INTO. NM ARRIVE + UNLOAD.

1430 - CREW BREAKS FOR LUNCH. KP DEPART FOR REST DAY.

1600 - NM, JB, KT, BR RETURN TO LODGING. UNPACK / UNLOAD / ORGANIZE.

1800 - KT DEPART FOR REST DAY.

1830 - JB DEPART FOR REST DAY.

2015 - NM COMPLETE DAILY. BR TO RETURN TO SAF.

EOD

Location SRF Date 6/23/23

Project / Client Hilcorp

0800 Safety tailgate w/ crew: Kyle Therrien and Brad Ramsay.

0810 KT & BR loaded truck with survey gear. 400

0825 KT & BR departed for ~~HOP~~ FI office to complete safety form.

0848 KT & BR completed safety form and departed to site 23B to begin survey.

0852 Arrived at 23B and began survey. installed 3' rebar next to 23B03-MW01 to establish control at site. Height to base antenna: 1.346m control point named CP 23B03

0910 static base data collection started

0921 completed horizontal survey of all three wells at 23B03 Departed for TS2-15.

0936 Arrived at TS2-15 and began

Rite in the Rain

Location SRF Date 6/23/23

Project / Client Hilcap

0936	Cont. - level loop Survey
1110	Completed level loop survey at TS2-15.
1115	began level loop survey at TS1-27
1210	Completed level loop survey at TS1-27 and departed for TS1-33.
1225	Arrived at TS1-33. Set temp bench mark adjacent to Aluminum tower base SE 2' between concrete block. TBM named - TS1-33 TBM2. RTK X,Y, Z location collected.
1300	Began level loop From CP-217 to TS1-33TBM2.
1325	Began level loop From TS1-33 TBM2 to all wells at TS1-33
1450	Completed MW level loop and departed For Housing to upload electronic level loop Files
1600	KT completed hotel reservation change. Then departed for

Location Date

Project / Client

1600	Cont. TS1-4 to conduct level loop survey.
1820	Completed level loop survey. Add a TBM - TS1-4 TBM1. RTK location collected. Also surveyed RTK location of TS1-4 SW1
1830	picked up well keys From office.
1850	Arrived at TS1-9 to start level survey
2020	Completed level loop survey obtained RTK shot of new TBM => TS1-9-TBM3
2030	Departed TS1-9 For 23B-03
2033	Arrived at 23B-03. Stopped RTK base data collection at 2040.
2045	KT & BR Began level loop survey of wells at 23B-03
2113	Completed level survey of 23B-03. Returned to office to close out task Safety/ work doc. @ 2123

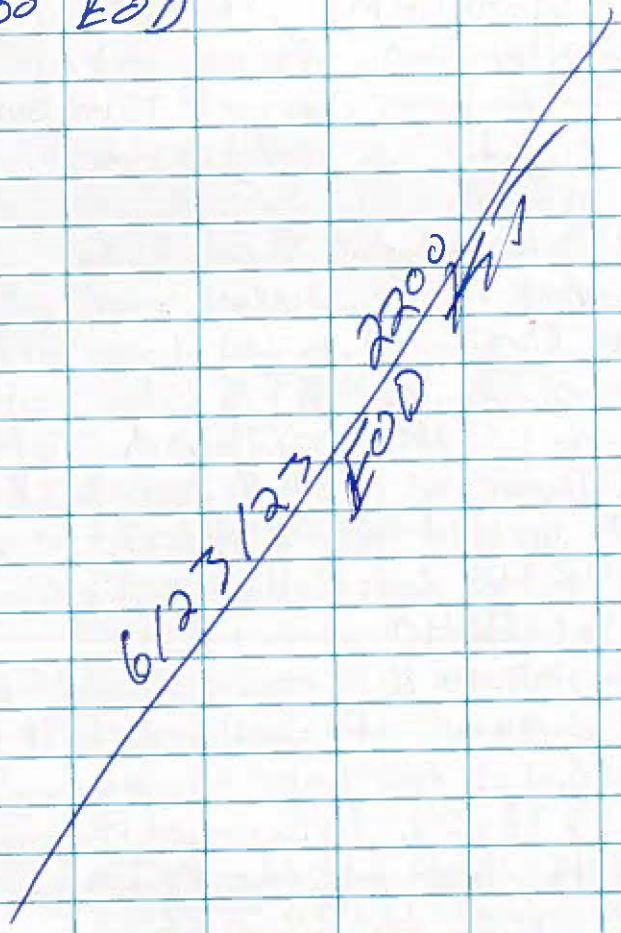
Rite in the Rain

Location SRF Date 6/23/23

Project / Client Hilcorp

2130 Arrived at housing, charged eletronics, wrote daily reports and uploaded pictures and level loop files

2200 EOD



Location SRF Date 6/24/23

Project / Client Hilcorp

0800 KT packed survey equipment and loaded truck.

0815 KT & BR have safety tailgate and discuss work day plan.

0830 KT & BR depart housing for office to complete PTW/JSA Form.

0854 KT & BR depart office for 312-09 to set TBM for RTK & level loop survey.

0902 Arrived at 312-09 and set up new TBM => 312-09-TBM1 @ 1.136 m to GS16 Tripod Base started 0915

0925 KT & BR depart for TS3-9

0930 Arrived at TS3-9 and began level survey

1155 completed level loop survey at TS3-9. Departed For housing

1205 Arrived at housing. Uploaded level loop electronic Form

1230 Departed housing for TS3-4

Rite in the Rain

Location SRF Date 6/24/23

Project / Client Hilcorp

1235	Arrived at TS3-4 and began level loop survey
1517	Completed TS3-4 level loop. Departed for TS3-9 to retrieve hand saw
1523	Arrived at TS3-9 picked up saw
1525	Departed TS3-9 For TS1-9 to improve vertical accuracy of new TBM installed 6/23/23
1547	Completed leveling at TS1-9 and departed For TS3-4 to pick up items left behind
1553	Arrived at housing and began packing for demob to Kenai
1720	KT & BR departed housing for 312-09.
1730	Arrived at 312-09. stopped base collection on TBM after completing the RTK survey of all wells onsite.
1745	KT & BR conducted level loop survey

Location Date

Project / Client

1800	KT & BR departed For housing
1810	Arrived at housing and packed truck
1830	KT & BR closed out permit to work and departed For Kenai Aspen Hotel.
1930	Arrived at Hotel and unloaded truck
2000	Completed move in to hotel and took ~~30~~ KT break For dinner
2145	KT & BR Arrived at crew housing to drop supplies and discuss survey plan w/ Field lead.
2200	Departed Crew housing For Hotel.
2215	Arrived at hotel EOD

6/24/23 EOD 2215 KT

Rite in the Rain

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APPENDIX E

CHEMICAL DATA QUALITY REPORT

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ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
Aleut	Aleut Remediation, LLC
BENG	Brice Engineering
CoC	chain-of-custody
DL	detection limit
DQO	data quality objective
DQR	data quality report
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
Hilcorp	Hilcorp Alaska, LLC
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
MB	method blank
mm	millimeter
MS	matrix spike
MSD	matrix spike duplicate
ND	non-detect
QA	quality assurance
QC	quality control
RPD	relative percent difference
RRO	residual range organics
SDG	sample delivery group
SGS	SGS North America, Inc. in Anchorage, AK
SOP	standard operating procedure
SRF	Swanson River Field
TB	trip blank
TS	Tank Setting

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1. INTRODUCTION

This data quality report (DQR) summarizes the findings of the validation of laboratory data collected during groundwater and surface water monitoring performed by Aleut Remediation, LLC (Aleut) on behalf of Hilcorp Alaska, LLC (Hilcorp) at Swanson River Field (SRF), Kenai Peninsula, Alaska in June 2023. Aleut reviewed and validated these data for compliance with quality assurance (QA)/quality control (QC) measures implemented to fulfill data quality objectives (DQOs) in the Final 2021 Groundwater Monitoring Program Work Plan (BENG 2021) and the Final 2023 Work Plan Addendum (Aleut 2023).

This DQR includes the following supporting documentation:

- Attachment E-1: Sample summary
- Attachment E-2: Data summary tables
- Attachment E-3: Qualified results summary table
- Attachment E-4: Alaska Department of Environmental Conservation (ADEC) Laboratory Data Review Checklists

The laboratory reports are included for reference in Appendix G.

2. DATA VALIDATION PROCEDURES

The Stage 2A data validation was performed by an experienced chemist independent of the analytical laboratory and included a completeness check of the electronic data to verify that data packages and electronic files included all of the requested information. Project data were reviewed on an analytical-batch basis by assessing QC samples and associated field sample results. Laboratory reporting and data validation were consistent with the ADEC Technical Memorandum Guidelines for Data Reporting (ADEC 2022).

Analytical results outside QC parameters are discussed in Section 3.0 and in the associated ADEC Laboratory Data Review Checklist completed for each sample delivery group (SDG) (Attachment E-4). Analytical DQOs were considered met when the quality of the sample data met precision, accuracy, representativeness, completeness, comparability, and sensitivity requirements. Laboratory data were evaluated using the QC criteria in the 2021 Work Plan (Brice Engineering [BENG] 2021) and its Addendum (Aleut 2023), the ADEC Guidelines for Data Reporting (ADEC 2022), specific method guidance, and laboratory control limits for precision and accuracy.

The following information was reviewed as part of the Stage 2A data validation:

- Sample handling and chain-of-custody (CoC)
- Sample preservation and holding time compliance
- Field QC samples, including trip blanks (TBs) and field duplicates
- Sample reporting limits, including limits of detection (LOD) and limits of quantitation (LOQ), compared to project requirements
- Method blanks (MBs)
- Laboratory control sample (LCS) and LCS duplicate (LCSD) recoveries
- Surrogate spike recoveries
- Matrix spike (MS) and MS duplicate (MSD) recoveries
- Precision, including relative percent difference (RPD) values for duplicate analyses
- Laboratory case narrative and laboratory qualifiers

The data validation identified results requiring qualification based on the definitions provided in Table E-1.

Table E-1 Validation Qualifiers

QUALIFIER	DESCRIPTION
J (±)	Analyte result is an estimated value biased high/low/indeterminate.
B	Analyte result is considered a high estimated value due to contamination present in an associated blank (e.g., MB or TB).
H	Analyte result is considered an estimated value, biased low, due to a holding time exceedance.
R	Analyte result is rejected and considered not usable.

Notes:
For definitions, see the Acronyms and Abbreviations section.

Qualification was not required in the following circumstances:

- Analyte detected in the associated blank with no detection in the associated sample(s).
- LCS/LCSD, MS/MSD, or surrogate recovery exceeded upper control limits with no detection in the associated sample(s).
- Surrogate or MS recoveries outside QC limits and the sample was diluted by a factor of 5 or greater.
- MS recoveries outside QC limits and the concentration of spike added was less than the parent sample concentration.

Data were considered for rejection if any of the following occurred:

- LCS recovery is less than 10% and the associated sample result is non-detect (ND).
- Result is ND and missed holding time greater than two times the method-specified holding time.
- Surrogate recovery is less than 10 percent and the associated sample result is ND (dilution factor less than 5).

3. DATA VALIDATION SUMMARY

SGS North America, Inc. (SGS) in Anchorage, Alaska, was the primary laboratory for this project and held current ADEC laboratory approval and U.S. Department of Defense Environmental Laboratory Accreditation Program certifications for the requested methods at the time of analysis. Samples were prepared and analyzed in accordance with the analytical methods in Test Methods for Evaluating Solid Waste SW-846 (U.S. Environmental Protection Agency [EPA] 2020), ADEC Underground Storage Tanks Procedures Manual (ADEC 2017), and laboratory standard operating procedures. Three samples were transferred to BIO-CHEM Laboratories in Grand Rapids, Michigan, for ethylene glycol analysis. BIO-CHEM is not an ADEC Contaminated Sites Program-approved laboratory.

The following sections summarize the findings of the data validation, including non-conformances of data that required results to be qualified. Qualified results are considered estimated; whenever possible, the direction of potential bias was assigned and effects, if any, on usability are discussed herein. Detected results greater than or equal to the detection limit (DL) and below the LOQ were qualified as estimated, "J", bias indeterminate. Results that were not qualified are considered valid and usable based on the QA/QC criteria that were reviewed.

3.1 Field Sampling Quality Control

Fifty primary groundwater samples, six field duplicate samples, five MS/MSD sets, and six aqueous trip blanks were shipped to Anchorage and hand-delivered to SGS for analysis. Samples were included in the following SDGs: 1232801, 1232892, 1232967, 1232975, 1232976, and 1232977. Table E-2 summarizes the numbers of samples, QC samples, and analytical methods for the project. The project-required frequencies of one field duplicate for every 10 or fewer project samples, and one MS/MSD set for every 20 or fewer project samples, per method, matrix, and analyte were met. In addition, one trip blank was submitted and analyzed for each cooler containing volatile samples.

Table E-2 Field Quality Control Sample Summary

ANALYTICAL METHOD	PRIMARY	FIELD DUPLICATE	MS/MSD	TRIP BLANK
AK102	6	1	1	0
AK103	6	1	1	0
SW8015	3	2	1	0
SW8260	56	7	4	4
SW8260 SIM	1	1	1	1
SW8270 SIM	56	7	4	0

Notes:
For definitions, see the Acronyms and Abbreviations section.

3.2 Sample Condition Upon Receipt

The laboratory cooler receipt form, the CoC form, and the report case narrative were reviewed to assess sample documentation and handling procedures that may affect the integrity of the samples and the quality of the resulting data. The CoC was appropriately signed and dated by field and laboratory personnel, and custody seals were noted as present and intact at the time of cooler receipt.

All samples were received intact and chilled with gel ice. All coolers arrived within the required temperature range of 0 to 6 degrees Celsius (°C), except cooler “Guatemala” in SDG 1232892, which was received with the temperature blank measured at 6.3°C. All results in the associated samples results were qualified as estimated, “J-”, for potential low bias. Samples were chilled from the time of sample collection until shipment and placed in a refrigerator for storage upon receipt at the laboratory. It is unlikely that the slight exceedance of the cooler temperature during shipment significantly affected the sample results.

Samples were received properly preserved and in appropriate sample containers, with the following exceptions. In SDG 1232801, the volatile sample vials for SRF133-TS133JJ-23 arrived at the lab with a pH greater than 2 and sample analysis was more than 7 days from the time of collection. In addition, there was headspace greater than 6 millimeter (mm) present in all three vials submitted to the lab for volatile analysis for sample SRF127-TS127K-23. All SW8260D results in samples SRF133-TS133JJ-23 and SRF127-TS127K-23 were qualified as estimated, “J-”,

for potential low bias. Data quality and usability were minimally affected; all results were either significantly above or below the ADEC Table C groundwater cleanup levels.

Qualified results are summarized in Attachment E-3.

3.3 Holding Time Compliance

All samples were extracted and analyzed within method-specified holding times. There were several cases where samples were re-extracted and/or reanalyzed outside of holding time, and the laboratory case narratives indicated that the results confirmed the original analysis. When the reanalysis confirmed the original results, only the in-hold results were reported and available for review. Results affected by QC failures in the initial (in-hold) analyses were qualified as required by the specific data quality issue and discussed in the appropriate sections of this DQR and the ADEC Laboratory Data Review Checklists (Attachment E-4).

3.4 Precision

Precision was assessed by evaluating the RPD between primary and duplicate field samples, LCS/LCSD samples, MS/MSD samples, and laboratory duplicates (as applicable).

3.4.1 Field Duplicate Precision

Eight field duplicate samples were submitted and analyzed for 57 primary samples as part of this project. RPDs were calculated when both results in each pair were greater than the LOD. Calculated RPDs were below the project-required precision criteria of 30% for aqueous samples, except for several duplicate results included in SDG 1232801. The following duplicate pairs did not meet precision criteria and were qualified as estimated, "J", bias indeterminate.

- SW8270D SIM results for 1-methylnaphthalene (RPD = 38%) and 2-methylnaphthalene (39%) in duplicate pair SRF133-FS133F-23/SRF133-FS133FZ-23
- SW8270D SIM results for benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, benzo[k]fluoranthene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3-cd]pyrene in duplicate pair SRF34-FS34B-23/SRF34-FS34BZ-23, where one result was detected at concentrations above the LOQ and the other result was ND
- SW8270D SIM results for 1-methylnaphthalene, 2-methylnaphthalene, and fluorene in duplicate pair SRF133-TS133JJ-23/SRF133-TS133JJZ-23, where one result was detected at a concentration above the LOQ and one result was ND or below the LOD
- SW8260D result for 1,3,5-trimethylbenzene (RPD = 32.8%) in duplicate pair SRF14-TS14GR-23/SRF14-TS14GRZ-23

Qualified results were either above or significantly below the ADEC Table C cleanup levels, and data usability was not affected. In all cases, the higher of the two results will be selected as the primary reported result. Qualified results are listed in Attachment E-3.

3.4.2 Laboratory Control Sample Duplicate

LCS/LCSD RPDs met acceptance criteria, or associated sample results were ND and did not require qualification, except as follows. Detected results associated with high LCS/LCSD RPDs were qualified as estimated, "J", bias indeterminate:

- SDG 1232801 – SW8270D SIM benzo(a)pyrene result for sample SRF14-TS14F-23
- SDG 1232967 – SW8260D SIM 1,4-dioxane results for samples SRF14-SW1-23 and SRF14-SW1Z-23

Qualified results were below the ADEC Table C groundwater cleanup levels, and data usability was not affected. Qualified results are listed in Attachment E-3.

3.4.3 Matrix Spike Duplicate

In most cases, MS/MSD RPDs met acceptance criteria, or associated samples results were ND and did not require qualification. Detected results associated with high MS/MSD RPDs in SDG 1232967 were qualified as estimated, "J", bias indeterminate for SW8260D SIM results for 1,4-dioxane in sample SRF14-SW1-23 and its duplicate SRF14-SW1Z-23. Qualified results were below the ADEC Table C groundwater cleanup level, and data usability was not affected. Qualified results are listed in Attachment E-3.

3.5 Accuracy

Accuracy was assessed by reviewing blank results, LCS/LCSD recoveries, MS/MSD recoveries, and surrogate recoveries.

3.5.1 Blank Sample Analysis

No target analytes were detected above the LOQ in any method blanks; however, multiple analytes were detected in the method blanks at concentrations greater than or equal to the DL and below the LOQ. As blank contamination indicates a potential high bias, associated sample results that were ND were not affected. Associated results that were less than 5 times the amount found in the method blank were qualified as estimated, "B", for potential high bias.

The following sample results were qualified due to method blank contamination:

- SDG 1232801:

- SW8270D SIM analyte 1-methylnaphthalene in samples SRF133-TS133JJ-23, SRF14-FS14I-23, SRF34-FS34A-23, SRF34-TS34MM-23, SRF34-TS34OO-23, and SRF39-TS39DD-23;
- SW8270D SIM analyte 2-methylnaphthalene in samples SRF133-FS133F-23, SRF133-TS133JJ-23, SRF14-FS14I-23, SRF19-TS19HH-23, SRF34-TS34MM-23, SRF34-TS34OO-23, and SRF39-TS39DD-23;
- SW8270D SIM analyte phenanthrene in samples SRF127-FS127C-23, SRF133-FS133W-23, SRF215-FS215B-23, SRF215-TS215P-23, SRF133-TS133JJ-23, SRF19-TS19HH-23, SRF19-TS19U-23, SRF19-TS19UZ-23, SRF34-TS34MM-23, SRF34-TS34OO-23, SRF34-FS34B-23, SRF34-FS34BZ-23, and SRF39-TS39DD-23

- SDG 1232892:
  - SW8270D SIM analyte 1-methylnaphthalene in samples SRF19-FS19I-23, SRF19-FS19M-23, SRF39-TS39AA-23, and SRF39-TS39BB-23;
  - SW8270D SIM analyte 2-methylnaphthalene in samples SRF19-FS19I-23, SRF19-FS19M-23, SRF19-TS19D-23, SRF39-FS39B-23, SRF39-FS39G-23, SRF39-TS39AA-23;
  - SW8270D SIM analyte fluoranthene in sample SRF39-FS39E-23; and
  - SW8270D SIM analyte phenanthrene in samples SRF19-FS19D-23, SRF19-FS19I-23, SRF19-FS19M-23, and SRF39-FS39E-23
- SDG 1232975
  - SW8270D SIM analytes 1-methylnaphthalene and 2-methylnaphthalene in samples 23B3-MW01-23, 23B3-MW02-23, and 23B3-MW03-23
- SDG 1232976
  - SW8270D SIM analytes fluoranthene and pyrene in sample SRF39-TS39F-23
- SDG 1232977
  - SW8270D SIM analytes 1-methylnaphthalene and 2-methylnaphthalene in samples 31209-MW01-23, 31209-MW02-23, and 31209-MW03-23;
  - SW8270D SIM analyte fluoranthene in sample 31209-MW03-23; and
  - SW8270D SIM analyte phenanthrene in samples 31209-MW02-23, and 31209-MW03-23

As blank contamination indicates a potential high bias and all qualified results were below the ADEC Table C groundwater cleanup levels, there was no effect on data quality or usability. Analytical results and validation qualifiers are included in the data summary tables in Attachment E-2. Qualified results and reasons for qualification are summarized in Attachment E-3.

3.5.2 Laboratory Control Sample Recoveries

LCS/LCSD recoveries were within control limits, with some exceptions. The following LCS and/or LCSD recoveries were outside control criteria and required qualification of sample results. Direction of bias was indicated when applicable.

- SDG 1232801 – Results for SW8270D SIM analytes benzo(a)anthracene and chrysene in samples SRF127-FS127C-23, SRF133-FS133W-23, SRF133-TS133JJZ-23, SRF215-FS215B-23, SRF215-TS215P-23, and SRF215-TS215R-23
- SDG 1232967 – SW8260D SIM results for 1,4-dioxane in samples SRF14-SW1-23 and SRF14-SW1Z-23
- SDG 1232975 – AK102 diesel range organics (DRO) results in samples 23B3-MW01-23, 23B3-MW01Z-23, 23B3-MW02-23, and 23B3-MW03-23
- SDG 1232977 – AK102 DRO results in samples 31209-MW01-23, 31209-MW02-23, and 31209-MW03-23

Qualified results either exceeded or were significantly below the ADEC Table C groundwater cleanup levels, and data usability was not affected. Analytical results and validation qualifiers are included in the data summary tables in Attachment E-2. Qualified results and reasons for qualification are summarized in Attachment E-3.

3.5.3 Matrix Spike Recoveries

MS/MSD recoveries met acceptance criteria, with some exceptions. The following MS and/or MSD recoveries were outside control limits and required qualification of sample results. Direction of bias was indicated when applicable.

- SDG 1232801
  - SW8260D results for 1,2,4-trimethylbenzene, ethylbenzene, m,p-xylenes, n-butylbenzene, o-xylene, tert-butylbenzene, toluene, and total xylenes results in sample SRF133-TS133JJ-23 and its field duplicate, SRF133-TS133JJZ-23
  - SW8260D results for 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, isopropylbenzene, ethylbenzene, m,p-Xylenes, naphthalene, o-xylene, and total xylenes in sample SRF14-TS14EE-23
- SDG 1232892
  - SW8260D results for analytes 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, isopropylbenzene, ethylbenzene, m,p-xylenes, n-butylbenzene, o-xylene, sec-butylbenzene, tert-butylbenzene, toluene, and total xylenes in sample SRF19-FS19I-23
- SDG 1232967

- SW8260D SIM results for 1,4-dioxane in sample SRF14-SW1-23 and its duplicate SRF14-SW1Z-23

- SDG 1232977
  - AK102 DRO result in sample 31209-MW03-23
  - SW8270D SIM results for benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd) pyrene in sample 31209-MW03-23

All affected results were either significantly above or below the ADEC Table C groundwater cleanup levels, and data usability was not affected. Analytical results and validation qualifiers are included in the data summary tables in Attachment E-2. Qualified results and reasons for qualification are summarized in Attachment E-3.

3.5.4 Surrogate Recoveries

Surrogate recoveries met acceptance criteria, except as noted below. Result qualification was not required when surrogate recoveries failed high and associated results were ND or when the sample was diluted by a factor of 5 or greater. The following sample results associated with failed surrogate recoveries and dilution factors less than 5 required qualification. Direction of bias was indicated when applicable.

- SDG 1232801
  - SW8260D result for benzene in sample SRF133-TS133O2-23
  - SW8270D SIM results for 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene for sample SRF14-FS14H-23; 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene in sample SRF19-TS19UZ-23; and 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene in sample SRF133-FS133H-23

- SDG 1232975
  - SW8270D SIM results for 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene in samples 23B3-MW01-23 and 23B3-MW01Z-23

- SDG 1232977
  - AK102/AK103 results for DRO and residual range organics (RRO) in samples 31209-MW-01 and 31209-MW-02
  - SW8270D SIM results for acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene in sample 31209-MW01-23

As indicated above, in SDG 1232977, AK102 surrogate 5a-androstane and AK103 surrogate n-triacontane-d62 were not recovered in sample 31209-MW-01 (-.87% and 0%, respectively), and were recovered low in sample 31209-MW-02 (27.3% and 33.4%, respectively). The lack of surrogate recovery in these samples was attributed to laboratory error, and the case narrative indicates that both samples were re-extracted and reanalyzed outside of holding time with results that confirmed the original analysis (only the in-hold results were reported and available for review). Professional judgment as used to qualify DRO and RRO results in sample 31209-MW-01 as estimated for potential low bias, rather than considered unusable.

Analytical results and validation qualifiers are included in the data summary tables in Attachment E-2. Qualified results and reasons for qualification are summarized in Attachment E-3.

3.5.5 Trip Blanks

No target analytes were detected in the trip blanks.

3.6 Representativeness

Representativeness is a qualitative parameter used to assess whether sample results are representative of true site conditions. Representativeness relative to analytical measurements is influenced primarily by the application of consistent sampling and analytical methodology. Samples were collected following established procedures, including low-flow methodology, and samples were analyzed using standard methods. All groundwater samples were collected after the stabilization of water quality parameters in accordance with standard operating procedures (SOPs) in the 2023 Work Plan Addendum (Aleut 2023), except TS1-33Q which was destroyed and could not be sampled.

3.7 Comparability

Comparability is a qualitative indicator of the confidence with which one dataset can be compared to another. Project data set comparability is considered acceptable based on the following:

- Project samples were analyzed using standard methods, and results were reported in standard units in accordance with the Work Plan (BENG 2021) and its Addendum (Aleut 2023) and consistent with prior sampling events.
- Laboratory analyses were performed in accordance with the analytical methods and laboratory QA/QC procedures. The same laboratory was used as in prior sampling events.

- Sample collection, documentation, and handling were performed in accordance with the approved Work Plan (BENG 2021) and Addendum (Aleut 2023).
- Field instruments were operated within their calibrated range according to established procedures based on approved methodology. Calibration logs indicate that field instrument calibrations were verified and acceptable each day prior to use.

3.8 Completeness

Completeness is a measure of the amount of valid data obtained compared with the amount that was expected to be obtained under correct, normal conditions. No results were rejected or were otherwise determined to be unusable and analytical completeness was 100%. However, well TS1-33Q was destroyed and could not be sampled as planned. There are historical results available for this location, and the absence of data from the current sampling event is not considered a data gap. Installation of a replacement well is recommended.

The overall completeness for this project is 99%. The calculated completeness for each site is 100%, except for tank setting (TS) 1-33 for which completeness was calculated at 93%. Calculated percent completeness in all cases meets the minimum goal of 85% in ADEC's Underground Storage Tank Procedures Manual (ADEC 2017) and is considered acceptable for this project.

3.9 Sensitivity

Sensitivity describes the lowest concentration that the analytical method can reliably quantify and is evaluated by verifying that detected results and sample reporting limits meet the regulatory criteria. SGS reported ND results at the LOD, and detected results below the LOQ and greater than or equal to the DL are flagged as estimated ("J"). BIO-CHEM did not report the LOD, and ND results were reported for ethylene glycol at the LOQ.

For ND results, the LOD and LOQ were compared to the 18 Alaska Administrative Code (AAC) 75 Table C groundwater cleanup levels (ADEC 2023) to determine if the sensitivity was adequate to meet the DQOs. All LODs and LOQs for ND sample results, and LOQs for detected results, were below the ADEC Table C cleanup levels. Project requirements for analytical sensitivity were met.

4. OVERALL DATA QUALITY AND USABILITY ASSESSMENT

In general, the overall quality of the project data was acceptable. No data were rejected, and completeness met project objectives. All project data are considered acceptable for use within the limitations discussed within this DQR and as indicated by any validation qualifiers that were applied to the results. Analytical results and validation qualifiers are included in the data

summary tables for each site in Attachment E-2. A summary table of qualified results, validation qualifiers, and reasons for qualification is included in Attachment E-3. Additional details regarding validation findings are described in the ADEC Laboratory Data Checklists in Attachment E-4.

5. REFERENCES

ADEC (Alaska Department of Environmental Conservation). 2023 (October). Oil and Other Hazardous Substances Pollution Control. 18 AAC 75.

ADEC. 2022 (August). Guidelines for Data Reporting. Technical Memorandum 22-001.

ADEC. 2017 (March). Underground Storage Tanks Procedures Manual. Division of Spill Prevention and Response. Contaminated Sites Program.

Aleut (Aleut Remediation, LLC). 2023 (June). Hilcorp Beaver Creek Unit Pad 4, Cannery Loop Unit Pad 3, and Kenai Gas Field Groundwater Monitoring Program Work Plan Addendum. Prepared for Hilcorp Alaska.

BENG (Brice Engineering). 2021 (June). 2021 Groundwater Monitoring Program Work Plan, Kenai Peninsula Sites, Alaska, Beaver Creek Unit, Cannery Loop Unit, and Kenai Gas Field Contaminated Sites. Prepared for Hilcorp Alaska.

EPA (U.S. Environmental Protection Agency) 2020 (June). Test Methods for Evaluating Solid Waste. SW846, Third Edition, Final Updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), Update VI (2018), and Update VII (2020).

ATTACHMENT E-1
SAMPLE SUMMARY

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ATTACHMENT E-1
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
SAMPLE SUMMARY TABLE

								METHOD	AK102	AK103	SW8015B	SW8260D	SW8260D SIM	SW8270D SIM
Well ID	**Sample ID**	**Lab Sample ID**	**Collection Date/Time**	**Sampler**	**Matrix**	**QC Type**	**SDG**	**Lab**						
SRF TS 1-4														
FS1-4E	SRF14-FS14E-23	1232801008	06/17/2023 18:40	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
FS1-4H	SRF14-FS14H-23	1232801007	06/17/2023 17:30	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
FS1-4I	SRF14-FS14I-23	1232801034	06/18/2023 14:33	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
SW-1	SRF14-SW1-23	1232967001	06/20/2023 15:30	KP,BR	WS	PRIMARY, MS/MSD	1232967	SGSA	-	-	X	-	X	-
SW-1	SRF14-SW1Z-23	1232967004	06/20/2023 14:30	KP,BR	WS	DUP OF SW-1	1232967	SGSA	-	-	X	-	X	-
TB	SRF-TB01	1232801041	06/18/2023 08:00		WQ	TRIP BLANK	1232801	SGSA	-	-	-	X	-	-
TB	SRF-TB04	1232967005	06/20/2023 08:00		WQ	TRIP BLANK	1232967	SGSA	-	-	-	-	X	-
TS1-4EE	SRF14-TS14EE-23	1232801004	06/17/2023 16:00	JB,KT	WG	PRIMARY, MS/MSD	1232801	SGSA	-	-	X	X	-	X
TS1-4F	SRF14-TS14F-23	1232801035	06/18/2023 16:31	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-4GR	SRF14-TS14GR-23	1232801022	06/18/2023 12:45	KP	WG	PRIMARY	1232801	SGSA	-	-	X	X	-	X
TS1-4GR	SRF14-TS14GRZ-23	1232801042	06/18/2023 11:45	KP	WG	DUP OF TS1-4GR	1232801	SGSA	-	-	X	X	-	X
SRF TS 1-9														
FS1-9D	SRF19-FS19D-23	1232892001	06/19/2023 14:36	BR	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
FS1-9I	SRF19-FS19I-23	1232892002	06/19/2023 13:15	BR	WG	PRIMARY, MS/MSD	1232892	SGSA	-	-	-	X	-	X
FS1-9M	SRF19-FS19M-23	1232892005	06/19/2023 11:05	KP	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
FS1-9N	SRF19-FS19N-23	1232892006	06/19/2023 12:40	KP	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
FS1-9N	SRF19-FS19NZ-23	1232892007	06/19/2023 11:40	KP	WG	DUP OF FS1-9N	1232892	SGSA	-	-	-	X	-	X
TS1-9A	SRF19-TS19A-23	1232892008	06/19/2023 16:34	KP	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TS1-9B	SRF19-TS19B-23	1232892009	06/19/2023 18:35	BR	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TS1-9C	SRF19-TS19C-23	1232892010	06/19/2023 16:26	BR	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TS1-9D	SRF19-TS19D-23	1232892011	06/19/2023 14:45	KP	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TS1-9HH	SRF19-TS19HH-23	1232801025	06/18/2023 14:45	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-9U	SRF19-TS19U-23	1232801023	06/18/2023 16:10	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-9U	SRF19-TS19UZ-23	1232801024	06/18/2023 15:10	JB,KT	WG	DUP OF TS1-9U	1232801	SGSA	-	-	-	X	-	X
SRF TS 1-27														
FS1-27C	SRF127-FS127C-23	1232801002	06/17/2023 12:40	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TB	SRF-TB01	1232801041	06/18/2023 08:00		WQ	TRIP BLANK	1232801	SGSA	-	-	-	X	-	-
TS1-27G	SRF127-TS127G-23	1232801010	06/17/2023 13:14	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-27K	SRF127-TS127K-23	1232801016	06/17/2023 14:02	KP	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-27L	SRF127-TS127L-23	1232801011	06/17/2023 15:01	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-27M	SRF127-TS127M-23	1232801003	06/17/2023 14:00	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
SRF TS 1-33														
FS1-33F	SRF133-FS133F-23	1232801036	06/18/2023 12:20	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
FS1-33F	SRF133-FS133FZ-23	1232801037	06/18/2023 11:20	BR	WG	DUP OF FS1-33F	1232801	SGSA	-	-	-	X	-	X
FS1-33H	SRF133-FS133H-23	1232801038	06/18/2023 10:19	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X

ATTACHMENT E-1
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
SAMPLE SUMMARY TABLE

SRF TS 1-33 (CONTINUED)															
FS1-33S	SRF133-FS133S-23	1232801013	06/17/2023 19:03	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
FS1-33W	SRF133-FS133W-23	1232801012	06/17/2023 17:10	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-33JJ	SRF133-TS133JJ-23	1232801017	06/17/2023 16:20	KP	WG	PRIMARY, MS/MSD	1232801	SGSA	-	-	-	X	-	X
TS1-33JJ	SRF133-TS133JJZ-23	1232801020	06/17/2023 15:20	KP	WG	DUP OF TS1-33JJ	1232801	SGSA	-	-	-	X	-	X
TS1-33O2	SRF133-TS133O2-23	1232801026	06/18/2023 10:30	KP	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS1-33UR	SRF133-TS133UR-23	1232801021	06/17/2023 18:13	KP	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
SRF TS 2-15															
FS2-15B	SRF215-FS215B-23	1232801001	06/17/2023 11:05	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS2-15O	SRF215-TS215O-23	1232801014	06/17/2023 10:42	KP	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS2-15P	SRF215-TS215P-23	1232801009	06/17/2023 10:39	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS2-15R	SRF215-TS215R-23	1232801015	06/17/2023 12:09	KP	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
SRF TS 3-4															
FS3-4A	SRF34-FS34A-23	1232801027	06/18/2023 16:42	KP	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
FS3-4B	SRF34-FS34B-23	1232801039	06/18/2023 18:32	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
FS3-4B	SRF34-FS34BZ-23	1232801040	06/18/2023 17:32	BR	WG	DUP OF FS3-4B	1232801	SGSA	-	-	-	X	-	X
FS3-4F	SRF34-FS34F-23	1232801028	06/18/2023 18:26	KP	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS3-4CC	SRF34-TS34CC-23	1232801029	06/19/2023 10:44	BR	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS3-4MM	SRF34-TS34MM-23	1232801030	06/18/2023 09:50	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS3-4OO	SRF34-TS34OO-23	1232801031	06/18/2023 11:20	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS3-4P	SRF34-TS34P-23	1232801032	06/18/2023 13:00	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
SRF TS 3-9															
FS3-9B	SRF19-FS39B-23	1232892012	06/19/2023 18:34	KP	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
FS3-9E	SRF19-FS39E-23	1232892013	06/19/2023 10:45	JB,KT	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
FS3-9G	SRF19-FS39G-23	1232892014	06/19/2023 16:50	JB,KT	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TB	SRF-TB02	1232892019	06/19/2023 08:00		WQ	TRIP BLANK	1232892	SGSA	-	-	-	X	-	-
TB	SRF-TB03	1232976004	06/20/2023 08:00		WQ	TRIP BLANK	1232976	SGSA	-	-	-	X	-	-
TS3-9AA	SRF19-TS39AA-23	1232892015	06/19/2023 14:40	JB,KT	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TS3-9BB	SRF19-TS39BB-23	1232892016	06/19/2023 13:35	JB,KT	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TS3-9CR	SRF39-TS39CR-23	1232976001	06/20/2023 12:33	KP,BR	WG	PRIMARY	1232976	SGSA	-	-	-	X	-	X
TS3-9DD	SRF39-TS39DD-23	1232801033	06/18/2023 17:55	JB,KT	WG	PRIMARY	1232801	SGSA	-	-	-	X	-	X
TS3-9F	SRF39-TS39F-23	1232976002	06/20/2023 18:04	KP,BR	WG	PRIMARY	1232976	SGSA	-	-	-	X	-	X
TS3-9T	SRF39-TS39T-23	1232976003	06/20/2023 10:38	BR,KP	WG	PRIMARY	1232976	SGSA	-	-	-	X	-	X
TS3-9U	SRF19-TS39U-23	1232892017	06/19/2023 18:30	JB,KT	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X
TS3-9V	SRF19-TS39V-23	1232892018	06/19/2023 11:55	JB,KT	WG	PRIMARY	1232892	SGSA	-	-	-	X	-	X

ATTACHMENT E-1
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
SAMPLE SUMMARY TABLE

SCU 23B-03														
MW-01	23B3-MW01-23	1232975001	06/20/2023 15:00	JB	WG	PRIMARY	1232975	SGSA	X	X		X	-	X
MW-01	23B3-MW01Z-23	1232975002	06/20/2023 14:00	JB	WG	DUP OF MW-01	1232975	SGSA	X	X		X	-	X
MW-02	23B3-MW02-23	1232975003	06/20/2023 16:10	KT	WG	PRIMARY	1232975	SGSA	X	X		X	-	X
MW-03	23B3-MW03-23	1232975004	06/20/2023 17:10	JB	WG	PRIMARY	1232975	SGSA	X	X		X	-	X
SCU 312-09														
MW-01	31209-MW01-23	1232977001	06/20/2023 12:30	KT	WG	PRIMARY	1232977	SGSA	X	X		X	-	X
MW-02	31209-MW02-23	1232977002	06/20/2023 11:00	KT	WG	PRIMARY	1232977	SGSA	X	X		X	-	X
MW-03	31209-MW03-23	1232977003	06/20/2023 12:00	JB	WG	PRIMARY, MS/MSD	1232977	SGSA	X	X		X	-	X
TB	TRIP BLANK	1232977006	06/20/2023 00:00		WQ	TRIP BLANK	1232977	SGSA	-	-		X	-	-

Notes:
All samples submitted for a standard (10 day) TAT.

DUP - duplicate
ID - identification
MS/MSD - matrix spike/matrix spike duplicate
NA - not applicable
QC - quality control
SDG - sample delivery group
SGSA - SGS Anchorage
SRF - Swanson River Field
TAT - turn around time
WG - groundwater
WQ - water QC
WS - surface water

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ATTACHMENT E-2
DATA SUMMARY TABLES

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ATTACHMENT E2-1
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD TANK SETTING 1-4
DATA SUMMARY TABLE

			Sample ID	SRF14-FS14E-23	SRF14-FS14H-23	SRF14-FS14I-23	SRF14-TS14EE-23	SRF14-TS14F-23	SRF14-TS14GR-23	SRF14-TS14GRZ-23	SRF14-SW1-23	SRF14-SW1Z-23
			Location	FS1-4E	FS1-4H	FS1-4I	TS1-4EE	TS1-4F	TS1-4GR	TS1-4GR	SW-1	SW-1
			SDG	1232801	1232801	1232801	1232801	1232801	1232801	1232801	1232967	1232967
			Collection Date	06/17/2023 18:40	06/17/2023 17:30	06/18/2023 14:33	06/17/2023 16:00	06/18/2023 16:31	06/18/2023 12:45	06/18/2023 11:45	06/20/2023 15:30	06/20/2023 14:30
			Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Surface Water	Surface Water
			QC Type	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	DUP OF TS1-4GR	PRIMARY	DUP OF SW-1
Method	**Analyte**	**Cleanup Level[1]**	**Units**									
SW8015B	Ethylene glycol	40000	µg/L	-	-	-	ND [10000]	-	**55000 [10000]**	**65000 [10000]**	ND [10000]	ND [10000]
SW8260D	1,2,4-Trimethylbenzene	56	µg/L	**106 [0.500]**	1.02 [0.500]	ND [0.500]	ND [0.500] J-	**5820 [25.0]**	**711 [5.00]**	**528 [5.00]**	-	-
SW8260D	1,3,5-Trimethylbenzene	60	µg/L	36.3 [0.500]	1.82 [0.500]	ND [0.500]	ND [0.500] J-	**4100 [25.0]**	**390 [5.00] J**	**280 [5.00] J**	-	-
SW8260D	Benzene	4.6	µg/L	**30.8 [0.200]**	**5.09 [0.200]**	ND [0.200]	ND [0.200] J-	**15.0 [10.0] J**	**19.0 [0.200]**	**17.0 [0.200]**	-	-
SW8260D	Ethylbenzene	15	µg/L	**75.2 [0.500]**	0.972 [0.500] J	ND [0.500]	ND [0.500] J-	**149 [25.0]**	**146 [0.500]**	**132 [0.500]**	-	-
SW8260D	Isopropylbenzene	450	µg/L	17.0 [0.500]	1.40 [0.500]	ND [0.500]	ND [0.500] J-	**1300 [25.0]**	109 [0.500]	95.3 [0.500]	-	-
SW8260D	m&p-Xylene	NA	µg/L	175 [1.00]	0.969 [1.00] J	ND [1.00]	ND [1.00] J-	331 [50.0]	322 [1.00]	298 [1.00]	-	-
SW8260D	Naphthalene	1.7	µg/L	**116 [0.500]**	0.460 [0.500] J	ND [0.500]	ND [0.500] J-	**90.3 [25.0]**	**117 [0.500]**	**111 [0.500]**	-	-
SW8260D	n-Butylbenzene	1000	µg/L	-	-	-	-	ND [25.0]	-	-	-	-
SW8260D	o-Xylene	NA	µg/L	0.829 [0.500] J	ND [0.500]	ND [0.500]	ND [0.500] J-	739 [25.0]	58.1 [0.500]	58.4 [0.500]	-	-
SW8260D	sec-Butylbenzene	2000	µg/L	-	-	-	-	15.5 [25.0] J	-	-	-	-
SW8260D	tert-Butylbenzene	690	µg/L	-	-	-	-	ND [25.0]	-	-	-	-
SW8260D	Toluene	1100	µg/L	-	-	-	-	ND [25.0]	-	-	-	-
SW8260D	Xylenes	190	µg/L	176 [1.50]	ND [1.50]	ND [1.50]	ND [1.50] J-	**1070 [75.0]**	**380 [1.50]**	**356 [1.50]**	-	-
SW8260D SIM	1,4-Dioxane	4.6	µg/L	-	-	-	-	-	-	-	3.13 [0.200] J	3.61 [0.200] J
SW8270D SIM-LV	1-Methylnaphthalene	11	µg/L	**12.6 [0.500]**	0.200 [0.0245] J-	0.0185 [0.0245] J,B	ND [0.0255]	**15.1 [0.250]**	**44.2 [0.240]**	**33.1 [0.278]**	-	-
SW8270D SIM-LV	2-Methylnaphthalene	36	µg/L	8.87 [0.500]	0.0628 [0.0245] J-	0.0234 [0.0245] J,B	ND [0.0255]	16.6 [0.250]	**54.0 [0.240]**	**40.7 [0.278]**	-	-
SW8270D SIM-LV	Acenaphthene	530	µg/L	-	-	-	-	0.190 [0.0250]	-	-	-	-
SW8270D SIM-LV	Acenaphthylene	260	µg/L	-	-	-	-	ND [0.0250]	-	-	-	-
SW8270D SIM-LV	Anthracene	1800	µg/L	-	-	-	-	ND [0.0250]	-	-	-	-
SW8270D SIM-LV	Benzo(a)anthracene	0.3	µg/L	-	-	-	-	0.0636 [0.0250]	-	-	-	-
SW8270D SIM-LV	Benzo(a)pyrene	0.25	µg/L	-	-	-	-	0.0205 [0.0100] J	-	-	-	-
SW8270D SIM-LV	Benzo(b)fluoranthene	2.5	µg/L	-	-	-	-	0.0342 [0.0250] J	-	-	-	-
SW8270D SIM-LV	Benzo(g,h,i)perylene	600	µg/L	-	-	-	-	0.0203 [0.0250] J	-	-	-	-
SW8270D SIM-LV	Benzo(k)fluoranthene	25	µg/L	-	-	-	-	ND [0.0250]	-	-	-	-
SW8270D SIM-LV	Chrysene	250	µg/L	-	-	-	-	0.0940 [0.0250]	-	-	-	-
SW8270D SIM-LV	Dibenz(a,h)anthracene	0.25	µg/L	-	-	-	-	ND [0.0100]	-	-	-	-
SW8270D SIM-LV	Fluoranthene	800	µg/L	-	-	-	-	0.0663 [0.0250]	-	-	-	-
SW8270D SIM-LV	Fluorene	290	µg/L	-	-	-	-	0.704 [0.0250]	-	-	-	-
SW8270D SIM-LV	Indeno(1,2,3-cd)pyrene	2.5	µg/L	-	-	-	-	ND [0.0250]	-	-	-	-
SW8270D SIM-LV	Naphthalene	1.7	µg/L	**34.0 [1.00]**	0.134 [0.0490] J-	0.0347 [0.0490] J	ND [0.0510]	**49.6 [0.500]**	**71.9 [0.481]**	**53.7 [0.555]**	-	-
SW8270D SIM-LV	Phenanthrene	170	µg/L	-	-	-	-	1.19 [0.0500]	-	-	-	-
SW8270D SIM-LV	Pyrene	120	µg/L	-	-	-	-	0.107 [0.0250]	-	-	-	-

Notes:
[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)
Bold red indicates that the result exceeds the cleanup level.
Blue highlighting indicates that the result exceeds 20% of the cleanup level.
The LOQ is shown in brackets for ethylene glycol results.

Definitions:
[ ] - value in brackets is the LOD
µg/L - micrograms per liter
B - estimated; analyte was detected in an associated blank
DUP - field duplicate
J(±) - estimated result biased high/low/indeterminate

LOD - limit of detection
LOQ - limit of quantitation
NA - not available
ND - not detected
SRF - Swanson River Field

ATTACHMENT E2-2
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD TANK SETTING 1-9
DATA SUMMARY TABLE

			Sample ID	SRF19-FS19D-23	SRF19-FS19I-23	SRF19-FS19M-23	SRF19-FS19N-23	SRF19-FS19NZ-23	SRF19-TS19A-23	SRF19-TS19B-23	SRF19-TS19C-23	SRF19-TS19D-23	SRF19-TS19HH-23	SRF19-TS19U-23	SRF19-TS19UZ-23
			Location	FS1-9D	FS1-9I	FS1-9M	FS1-9N	FS1-9N	TS1-9A	TS1-9B	TS1-9C	TS1-9D	TS1-9HH	TS1-9U	TS1-9U
			SDG	1232892	1232892	1232892	1232892	1232892	1232892	1232892	1232892	1232892	1232801	1232801	1232801
			Collection Date	06/19/2023 14:36	06/19/2023 13:15	06/19/2023 11:05	06/19/2023 12:40	06/19/2023 11:40	06/19/2023 16:34	06/19/2023 18:35	06/19/2023 16:26	06/19/2023 14:45	06/18/2023 14:45	06/18/2023 16:10	06/18/2023 15:10
			Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			QC Type	PRIMARY	PRIMARY	PRIMARY	PRIMARY	DUP OF FS1-9N	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	DUP OF TS1-9U
Method	**Analyte**	**Level[1]**	**Units**												
SW8260D	1,2,4-Trimethylbenzene	56	µg/L	2.91 [0.500]	ND [0.500] J-	ND [0.500]	2.23 [0.500]	2.31 [0.500]	**168 [0.500]**	**804 [2.50]**	**543 [10.0]**	**60.3 [0.500]**	0.509 [0.500] J	15.7 [0.500]	16.9 [0.500]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L	1.16 [0.500]	ND [0.500] J-	ND [0.500]	ND [0.500]	ND [0.500]	**85.8 [0.500]**	**721 [2.50]**	**458 [10.0]**	39.6 [0.500]	2.80 [0.500]	10.9 [0.500]	11.5 [0.500]
SW8260D	Benzene	4.6	µg/L	0.688 [0.200]	ND [0.200] J-	ND [0.200]	0.684 [0.200]	0.684 [0.200]	**4.78 [0.200]**	**104 [0.200]**	0.596 [0.200]	0.599 [0.200]	0.227 [0.200] J	0.450 [0.200]	0.458 [0.200]
SW8260D	Ethylbenzene	15	µg/L	1.15 [0.500]	ND [0.500] J-	ND [0.500]	ND [0.500]	ND [0.500]	**93.3 [0.500]**	**217 [2.50]**	**34.5 [0.500]**	12.7 [0.500]	ND [0.500]	4.42 [0.500]	4.59 [0.500]
SW8260D	Isopropylbenzene	450	µg/L	0.790 [0.500] J	ND [0.500] J-	ND [0.500]	0.695 [0.500] J	0.692 [0.500] J	38.2 [0.500]	73.7 [0.500]	30.5 [0.500]	6.11 [0.500]	2.66 [0.500]	3.25 [0.500]	3.31 [0.500]
SW8260D	m&p-Xylene	NA	µg/L	2.12 [1.00]	ND [1.00] J-	ND [1.00]	1.38 [1.00] J	1.35 [1.00] J	508 [10.0]	934 [5.00]	299 [20.0]	47.1 [1.00]	ND [1.00]	7.33 [1.00]	6.95 [1.00]
SW8260D	Naphthalene	1.7	µg/L	1.05 [0.500]	ND [0.500]	ND [0.500]	1.27 [0.500]	1.20 [0.500]	**38.9 [0.500]**	**74.3 [0.500]**	**42.9 [0.500]**	**3.95 [0.500]**	ND [0.500]	**4.28 [0.500]**	**4.30 [0.500]**
SW8260D	n-Butylbenzene	1000	µg/L	ND [0.500]	ND [0.500] J-	ND [0.500]	-	-	ND [0.500]	ND [0.500]	-	-	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	o-Xylene	NA	µg/L	2.41 [0.500]	ND [0.500] J-	ND [0.500]	ND [0.500]	ND [0.500]	173 [5.00]	621 [2.50]	3450 [10.0]	10.2 [0.500]	ND [0.500]	0.827 [0.500] J	0.830 [0.500] J
SW8260D	sec-Butylbenzene	2000	µg/L	ND [0.500]	ND [0.500] J-	ND [0.500]	-	-	8.51 [0.500]	4.76 [0.500]	-	-	1.83 [0.500]	1.16 [0.500]	1.21 [0.500]
SW8260D	tert-Butylbenzene	690	µg/L	ND [0.500]	ND [0.500] J-	ND [0.500]	-	-	1.52 [0.500]	8.20 [0.500]	-	-	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Toluene	1100	µg/L	ND [0.500]	ND [0.500] J-	ND [0.500]	-	-	1.49 [0.500]	5.42 [0.500]	-	-	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Xylenes	190	µg/L	4.53 [1.50]	ND [1.50] J-	ND [1.50]	1.38 [1.50] J	1.35 [1.50] J	**681 [15.0]**	**1560 [7.50]**	**3750 [30.0]**	57.3 [1.50]	ND [1.50]	8.16 [1.50]	7.78 [1.50]
SW8270D SIM	1-Methylnaphthalene	11	µg/L	0.376 [0.0236]	0.0170 [0.0236] J,B	0.0251 [0.0255] J,B	0.258 [0.0261]	0.229 [0.0255]	**12.1 [0.123]**	9.61 [0.0255]	**17.8 [0.120] J-**	0.0865 [0.0250] J-	0.153 [0.0272]	1.82 [0.0261]	1.39 [0.0250] J-
SW8270D SIM	2-Methylnaphthalene	36	µg/L	0.317 [0.0236]	0.0213 [0.0236] J,B	0.0284 [0.0255] J,B	0.205 [0.0261]	0.178 [0.0255]	11.3 [0.123]	9.41 [0.0255]	20.2 [0.120] J-	0.0298 [0.0250] J,B	0.0885 [0.0272] B	1.82 [0.0261]	1.42 [0.0250] J-
SW8270D SIM	Acenaphthene	530	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	0.281 [0.0245]	0.230 [0.0255]	-	-	ND [0.0272]	0.0762 [0.0261]	0.0634 [0.0250] J-
SW8270D SIM	Acenaphthylene	260	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	ND [0.0245]	ND [0.0255]	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250] J-
SW8270D SIM	Anthracene	1800	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	0.0308 [0.0245] J	0.0213 [0.0255] J	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250] J-
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	ND [0.0245]	ND [0.0255]	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L	ND [0.00945]	ND [0.00945]	ND [0.0102]	-	-	ND [0.00980]	ND [0.0102]	-	-	ND [0.0109]	ND [0.0104]	ND [0.0100]
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	ND [0.0245]	ND [0.0255]	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	ND [0.0245]	ND [0.0255]	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	ND [0.0245]	ND [0.0255]	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]
SW8270D SIM	Chrysene	250	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	0.0175 [0.0245] J	0.0158 [0.0255] J	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L	ND [0.00945]	ND [0.00945]	ND [0.0102]	-	-	ND [0.00980]	ND [0.0102]	-	-	ND [0.0109]	ND [0.0104]	ND [0.0100]
SW8270D SIM	Fluoranthene	800	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	ND [0.0245]	ND [0.0255]	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]
SW8270D SIM	Fluorene	290	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	0.828 [0.0245]	0.565 [0.0255]	-	-	ND [0.0272]	0.170 [0.0261]	0.130 [0.0250] J-
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	ND [0.0245]	ND [0.0255]	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]
SW8270D SIM	Naphthalene	1.7	µg/L	0.868 [0.0471]	ND [0.0471]	0.0371 [0.0510] J	0.668 [0.0520]	0.581 [0.0510]	**17.9 [0.245]**	**31.8 [0.255]**	**18.6 [0.240] J-**	0.149 [0.0500] J-	0.0970 [0.0545] J	1.53 [0.0520]	1.18 [0.0500] J-
SW8270D SIM	Phenanthrene	170	µg/L	0.0311 [0.0471] J,B	0.0319 [0.0471] J,B	0.0344 [0.0510] J,B	-	-	0.505 [0.0490]	0.348 [0.0510]	-	-	0.0378 [0.0545] J,B	0.106 [0.0520] J,B	0.0870 [0.0500] J,B
SW8270D SIM	Pyrene	120	µg/L	ND [0.0236]	ND [0.0236]	ND [0.0255]	-	-	0.0227 [0.0245] J	0.0348 [0.0255] J	-	-	ND [0.0272]	ND [0.0261]	ND [0.0250]

Notes:
[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)
Bold red indicates that the result exceeds the cleanup level.
Blue highlighting indicates that the result exceeds 20% of the cleanup level.
[ ] - value in brackets is the LOD
µg/L - micrograms per liter

Definitions:
B - estimated; analyte was detected in an associated blank
DUP - field duplicate
J(±) - estimated result biased high/low/indeterminate
LOD - limit of detection
LOQ - limit of quantitation
NA - not available
ND - not detected
SRF - Swanson River Field

ATTACHMENT E2-3
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD TANK SETTING 1-27
DATA SUMMARY TABLE

				Sample ID	SRF127-FS127C-23	SRF127-TS127G-23	SRF127-TS127K-23	SRF127-TS127L-23	SRF127-TS127M-23
				Location	FS1-27C	TS1-27G	TS1-27K	TS1-27L	TS1-27M
				SDG	1232801	1232801	1232801	1232801	1232801
				Collection Date	06/17/2023 12:40	06/17/2023 13:14	06/17/2023 14:02	06/17/2023 15:01	06/17/2023 14:00
				Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
				QC Type	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY
Method	Analyte	Cleanup Level[1]	Units						
SW8260D	1,2,4-Trimethylbenzene	56	µg/L	ND [0.500]	38.5 [0.500]	**1130 [5.00] J-**	**281 [5.00]**	ND [0.500]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L	ND [0.500]	12.4 [0.500]	**295 [5.00] J-**	**98.8 [5.00]**	ND [0.500]
SW8260D	Benzene	4.6	µg/L	ND [0.200]	3.66 [0.200]	**25.3 [2.00] J-**	**4.70 [2.00]**	ND [0.200]
SW8260D	Ethylbenzene	15	µg/L	ND [0.500]	3.08 [0.500]	**481 [5.00] J-**	**61.6 [5.00]**	ND [0.500]
SW8260D	Isopropylbenzene	450	µg/L	ND [0.500]	15.5 [0.500]	299 [5.00] J-	36.6 [5.00]	ND [0.500]
SW8260D	m&p-Xylene	NA	µg/L	ND [1.00]	123 [1.00]	2050 [10.0] J-	157 [10.0]	ND [1.00]
SW8260D	Naphthalene	1.7	µg/L	ND [0.500]	**7.51 [0.500]**	**296 [5.00] J-**	**63.1 [5.00]**	ND [0.500]
SW8260D	n-Butylbenzene	1000	µg/L	ND [0.500]	-	-	-	-
SW8260D	o-Xylene	NA	µg/L	ND [0.500]	ND [0.500]	35.7 [5.00] J-	89.0 [5.00]	ND [0.500]
SW8260D	sec-Butylbenzene	2000	µg/L	ND [0.500]	-	-	-	-
SW8260D	tert-Butylbenzene	690	µg/L	ND [0.500]	-	10.6 [5.00] J-	-	-
SW8260D	Toluene	1100	µg/L	ND [0.500]	-	-	-	-
SW8260D	Xylenes	190	µg/L	ND [1.50]	123 [1.50]	**2080 [15.0] J-**	**246 [15.0]**	ND [1.50]
SW8270D SIM	1-Methylnaphthalene	11	µg/L	ND [0.0250]	0.240 [0.0255]	**34.9 [0.255]**	**21.5 [0.500]**	ND [0.0255]
SW8270D SIM	2-Methylnaphthalene	36	µg/L	ND [0.0250]	0.112 [0.0255]	**38.1 [0.255]**	22.5 [0.500]	ND [0.0255]
SW8270D SIM	Acenaphthene	530	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Acenaphthylene	260	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Anthracene	1800	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L	ND [0.0250] J-	-	-	-	-
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L	ND [0.0100]	-	-	-	-
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Chrysene	250	µg/L	ND [0.0250] J-	-	-	-	-
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L	ND [0.0100]	-	-	-	-
SW8270D SIM	Fluoranthene	800	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Fluorene	290	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L	ND [0.0250]	-	-	-	-
SW8270D SIM	Naphthalene	1.7	µg/L	ND [0.0500]	**3.03 [0.0510]**	**96.5 [0.510]**	**29.9 [1.00]**	ND [0.0510]
SW8270D SIM	Phenanthrene	170	µg/L	0.0355 [0.0500] J,B	-	-	-	-
SW8270D SIM	Pyrene	120	µg/L	ND [0.0250]	-	-	-	-

Notes:

[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)

Bold red indicates that the result exceeds the cleanup level.

Blue highlighting indicates that the result exceeds 20% of the cleanup level.

[ ] - value in brackets is the LOD

µg/L - micrograms per liter

B - estimated; analyte was detected in an associated blank

DUP - field duplicate

J(±) - estimated result biased high/low/indeterminate

LOD - limit of detection

LOQ - limit of quantitation

NA - not available

ND - not detected

QC - quality control

SRF - Swanson River Field

ATTACHMENT E2-4
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD TANK SETTING 1-33
DATA SUMMARY TABLE

			Sample ID	SRF133-FS133F-23	SRF133-FS133FZ-23	SRF133-FS133H-23	SRF133-FS133S-23	SRF133-FS133W-23	SRF133-TS133JJ-23	SRF133-TS133JJZ-23	SRF133-TS133O2-23	SRF133-TS133UR-23
			Location	FS1-33F	FS1-33F	FS1-33H	FS1-33S	FS1-33W	TS1-33JJ	TS1-33JJ	TS1-33O2	TS1-33UR
			SDG	1232801	1232801	1232801	1232801	1232801	1232801	1232801	1232801	1232801
			Collection Date	06/18/2023 12:20	06/18/2023 11:20	06/18/2023 10:19	06/17/2023 19:03	06/17/2023 17:10	06/17/2023 16:20	06/17/2023 15:20	06/18/2023 10:30	06/17/2023 18:13
			Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			QC Type	PRIMARY	DUP OF FS1-33F	PRIMARY	PRIMARY	PRIMARY	PRIMARY	DUP OF TS1-33JJ	PRIMARY	PRIMARY
Method	**Analyte**	**Cleanup Level[1]**	**Units**									
SW8260D	1,2,4-Trimethylbenzene	56	µg/L	ND [1.00]	ND [1.00]	3.06 [0.500]	0.343 [0.500] J	ND [0.500]	ND [0.500] J-	ND [0.500] J-	ND [0.500]	ND [0.500]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L	ND [1.00]	ND [1.00]	6.02 [0.500]	3.36 [0.500]	ND [0.500]	ND [0.500] J-	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Benzene	4.6	µg/L	**319 [0.400]**	**322 [0.400]**	**16.9 [0.200]**	0.620 [0.200]	ND [0.200]	0.711 [0.200] J-	0.836 [0.200]	**143 [0.200] J-**	**9.68 [0.200]**
SW8260D	Ethylbenzene	15	µg/L	ND [1.00]	ND [1.00]	**24.9 [0.500]**	0.818 [0.500] J	ND [0.500]	ND [0.500] J-	ND [0.500] J-	**174 [0.500]**	4.15 [0.500]
SW8260D	Isopropylbenzene	450	µg/L	ND [1.00]	ND [1.00]	7.99 [0.500]	2.64 [0.500]	ND [0.500]	ND [0.500] J-	0.720 [0.500] J	42.6 [0.500]	0.988 [0.500] J
SW8260D	m&p-Xylene	NA	µg/L	4.11 [2.00]	4.37 [2.00]	7.97 [1.00]	0.658 [1.00] J	ND [1.00]	ND [1.00] J-	ND [1.00] J-	0.876 [1.00] J	ND [1.00]
SW8260D	Naphthalene	1.7	µg/L	ND [1.00]	ND [1.00]	**3.87 [0.500]**	ND [0.500]	ND [0.500]	ND [0.500] J-	ND [0.500]	**49.4 [0.500]**	1.46 [0.500]
SW8260D	n-Butylbenzene	1000	µg/L	-	-	-	-	-	ND [0.500] J-	ND [0.500] J-	-	-
SW8260D	o-Xylene	NA	µg/L	ND [1.00]	ND [1.00]	0.369 [0.500] J	ND [0.500]	ND [0.500]	ND [0.500] J-	ND [0.500] J-	1.33 [0.500]	ND [0.500]
SW8260D	sec-Butylbenzene	2000	µg/L	-	-	-	-	-	ND [0.500] J-	0.737 [0.500] J	-	-
SW8260D	tert-Butylbenzene	690	µg/L	ND [1.00]	ND [1.00]	0.451 [0.500] J	0.385 [0.500] J	-	0.426 [0.500] J	0.520 [0.500] J	2.14 [0.500]	ND [0.500]
SW8260D	Toluene	1100	µg/L	-	-	-	-	-	ND [0.500] J-	ND [0.500] J-	-	-
SW8260D	Xylenes	190	µg/L	4.11 [3.00] J	4.37 [3.00] J	8.34 [1.50]	ND [1.50]	ND [1.50]	ND [1.50] J-	ND [1.50] J-	2.21 [1.50] J	ND [1.50]
SW8270D SIM	1-Methylnaphthalene	11	µg/L	0.105 [0.0227] J	0.154 [0.0250] J	0.416 [0.0240] J-	0.0432 [0.0255] J	ND [0.0240]	0.0758 [0.0245] J,B	0.0162 [0.0261] J	9.75 [0.0261]	0.141 [0.0240]
SW8270D SIM	2-Methylnaphthalene	36	µg/L	0.108 [0.0227] J,B	0.160 [0.0250] J	0.310 [0.0240] J-	0.0437 [0.0255] J	ND [0.0240]	0.113 [0.0245] J,B	0.0178 [0.0261] J	7.32 [0.0261]	0.0600 [0.0240]
SW8270D SIM	Acenaphthene	530	µg/L	-	-	-	-	ND [0.0240]	0.0169 [0.0245] J	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Acenaphthylene	260	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Anthracene	1800	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L	-	-	-	-	ND [0.0240] J-	ND [0.0245]	ND [0.0261] J-	ND [0.0261]	-
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L	-	-	-	-	ND [0.00960]	ND [0.00980]	ND [0.0104]	ND [0.0104]	-
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Chrysene	250	µg/L	-	-	-	-	ND [0.0240] J-	ND [0.0245]	ND [0.0261] J-	ND [0.0261]	-
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L	-	-	-	-	ND [0.00960]	ND [0.00980]	ND [0.0104]	ND [0.0104]	-
SW8270D SIM	Fluoranthene	800	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Fluorene	290	µg/L	-	-	-	-	ND [0.0240]	0.0653 [0.0245] J	ND [0.0261] J	0.315 [0.0261]	-
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	ND [0.0261]	-
SW8270D SIM	Naphthalene	1.7	µg/L	0.276 [0.0454]	0.369 [0.0500]	0.807 [0.0481] J-	0.0900 [0.0510] J	ND [0.0481]	0.0512 [0.0490] J	0.0369 [0.0520] J	**14.3 [0.261]**	0.415 [0.0481]
SW8270D SIM	Phenanthrene	170	µg/L	-	-	-	-	0.0370 [0.0481] J,B	0.0684 [0.0490] J,B	ND [0.0520]	0.114 [0.0520]	-
SW8270D SIM	Pyrene	120	µg/L	-	-	-	-	ND [0.0240]	ND [0.0245]	ND [0.0261]	0.0163 [0.0261] J	-

Notes:
[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)
Bold red indicates that the result exceeds the cleanup level.
Blue highlighting indicates that the result exceeds 20% of the cleanup level.

Definitions:
[ ] - value in brackets is the LOD
µg/L - micrograms per liter
B - estimated; analyte was detected in an associated blank
DUP - field duplicate
J(±) - estimated result biased high/low/indeterminate

LOD - limit of detection
LOQ - limit of quantitation
NA - not available
ND - not detected
SRF - Swanson River Field

ATTACHMENT E2-5
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD TANK SETTING 2-15
DATA SUMMARY TABLE

				Sample ID	SRF215-FS215B-23	SRF215-TS215O-23	SRF215-TS215P-23	SRF215-TS215R-23
				Location	FS2-15B	TS2-15O	TS2-15P	TS2-15R
				SDG	1232801	1232801	1232801	1232801
				Collection Date	06/17/2023 11:05	06/17/2023 10:42	06/17/2023 10:39	06/17/2023 12:09
				Matrix	Groundwater	Groundwater	Groundwater	Groundwater
				QC Type	PRIMARY	PRIMARY	PRIMARY	PRIMARY
Method	**Analyte**	**Level[1]**	**Units**					
SW8260D	1,2,4-Trimethylbenzene	56	µg/L	ND [0.500]	**211 [2.50]**	ND [0.500]	ND [0.500]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L	ND [0.500]	**83.5 [0.500]**	ND [0.500]	ND [0.500]
SW8260D	Benzene	4.6	µg/L	ND [0.200]	3.37 [0.200]	ND [0.200]	ND [0.200]
SW8260D	Ethylbenzene	15	µg/L	ND [0.500]	**31.1 [0.500]**	ND [0.500]	ND [0.500]
SW8260D	Isopropylbenzene	450	µg/L	ND [0.500]	-	ND [0.500]	ND [0.500]
SW8260D	m&p-Xylene	NA	µg/L	ND [1.00]	967 [5.00]	ND [1.00]	ND [1.00]
SW8260D	Naphthalene	1.7	µg/L	ND [0.500]	**27.9 [0.500]**	ND [0.500]	ND [0.500]
SW8260D	n-Butylbenzene	1000	µg/L	ND [0.500]	-	ND [0.500]	ND [0.500]
SW8260D	o-Xylene	NA	µg/L	ND [0.500]	2.16 [2.50] J	ND [0.500]	ND [0.500]
SW8260D	sec-Butylbenzene	2000	µg/L	ND [0.500]	-	ND [0.500]	ND [0.500]
SW8260D	tert-Butylbenzene	690	µg/L	ND [0.500]	-	ND [0.500]	ND [0.500]
SW8260D	Toluene	1100	µg/L	ND [0.500]	-	ND [0.500]	ND [0.500]
SW8260D	Xylenes	190	µg/L	ND [1.50]	**969 [7.50]**	ND [1.50]	ND [1.50]
SW8270D SIM	1-Methylnaphthalene	11	µg/L	ND [0.0267]	8.91 [0.0240]	ND [0.0236]	ND [0.0245]
SW8270D SIM	2-Methylnaphthalene	36	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Acenaphthene	530	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Acenaphthylene	260	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Anthracene	1800	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L	ND [0.0267] J-	-	ND [0.0236] J-	ND [0.0245] J-
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L	ND [0.0107]	-	ND [0.00945]	ND [0.00980]
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Chrysene	250	µg/L	ND [0.0267] J-	-	ND [0.0236] J-	ND [0.0245] J-
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L	ND [0.0107]	-	ND [0.00945]	ND [0.00980]
SW8270D SIM	Fluoranthene	800	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Fluorene	290	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]
SW8270D SIM	Naphthalene	1.7	µg/L	ND [0.0535]	**14.1 [0.240]**	ND [0.0471]	ND [0.0490]
SW8270D SIM	Phenanthrene	170	µg/L	0.0394 [0.0535] J,B	-	0.0362 [0.0471] J,B	ND [0.0490]
SW8270D SIM	Pyrene	120	µg/L	ND [0.0267]	-	ND [0.0236]	ND [0.0245]

Notes:

[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)

Bold red indicates that the result exceeds the cleanup level.

Blue highlighting indicates that the result exceeds 20% of the cleanup level.

[ ] - value in brackets is the LOD

µg/L - micrograms per liter

B - estimated; analyte was detected in an associated blank

DUP - field duplicate

J(±) - estimated result biased high/low/indeterminate

LOD - limit of detection

LOQ - limit of quantitation

NA - not available

ND - not detected

SRF - Swanson River Field

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ATTACHMENT E2-6
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD TANK SETTING 3-4
DATA SUMMARY TABLE

				Sample ID	SRF34-FS34A-23	SRF34-FS34B-23	SRF34-FS34BZ-23	SRF34-FS34F-23	SRF34-TS34CC-23	SRF34-TS34MM-23	SRF34-TS34OO-23	SRF34-TS34P-23
				Location	FS3-4A	FS3-4B	FS3-4B	FS3-4F	TS3-4CC	TS3-4MM	TS3-4OO	TS3-4P
				SDG	1232801	1232801	1232801	1232801	1232801	1232801	1232801	1232801
				Collection Date	06/18/2023 16:42	06/18/2023 18:32	06/18/2023 17:32	06/18/2023 18:26	06/19/2023 10:44	06/18/2023 09:50	06/18/2023 11:20	06/18/2023 13:00
				Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
				QC Type	PRIMARY	PRIMARY	DUP OF FS3-4B	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY
Method	**Analyte**	**Cleanup Level[1]**	**Units**									
SW8260D	1,2,4-Trimethylbenzene	56	µg/L		ND [0.500]	ND [0.500]	ND [0.500]	3.55 [0.500]	17.7 [0.500]	ND [0.500]	ND [0.500]	13.4 [5.00]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L		ND [0.500]	ND [0.500]	ND [0.500]	2.08 [0.500]	9.70 [0.500]	ND [0.500]	ND [0.500]	39.6 [5.00]
SW8260D	Benzene	4.6	µg/L		2.68 [0.200]	0.423 [0.200]	0.424 [0.200]	**9.14 [0.200]**	0.169 [0.200] J	ND [0.200]	ND [0.200]	**475 [2.00]**
SW8260D	Ethylbenzene	15	µg/L		ND [0.500]	ND [0.500]	ND [0.500]	3.20 [0.500]	7.51 [0.500]	ND [0.500]	ND [0.500]	**250 [5.00]**
SW8260D	Isopropylbenzene	450	µg/L		-	ND [0.500]	ND [0.500]	-	-	ND [0.500]	ND [0.500]	-
SW8260D	m&p-Xylene	NA	µg/L		ND [1.00]	ND [1.00]	ND [1.00]	2.64 [1.00]	17.9 [1.00]	ND [1.00]	ND [1.00]	168 [10.0]
SW8260D	Naphthalene	1.7	µg/L		ND [0.500]	ND [0.500]	ND [0.500]	**9.31 [0.500]**	**1.88 [0.500]**	ND [0.500]	1.11 [0.500]	**28.5 [5.00]**
SW8260D	n-Butylbenzene	1000	µg/L		-	ND [0.500]	ND [0.500]	-	-	ND [0.500]	ND [0.500]	-
SW8260D	o-Xylene	NA	µg/L		ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]	ND [5.00]
SW8260D	sec-Butylbenzene	2000	µg/L		-	ND [0.500]	ND [0.500]	-	-	ND [0.500]	ND [0.500]	-
SW8260D	tert-Butylbenzene	690	µg/L		-	ND [0.500]	ND [0.500]	-	-	ND [0.500]	ND [0.500]	-
SW8260D	Toluene	1100	µg/L		-	ND [0.500]	ND [0.500]	-	-	ND [0.500]	ND [0.500]	-
SW8260D	Xylenes	190	µg/L		ND [1.50]	ND [1.50]	ND [1.50]	2.64 [1.50] J	17.9 [1.50]	ND [1.50]	ND [1.50]	168 [15.0]
SW8270D SIM	1-Methylnaphthalene	11	µg/L		0.0265 [0.0245] J,B	ND [0.0236]	0.0200 [0.0236] J	1.55 [0.0250]	0.552 [0.0240]	0.0214 [0.0261] J,B	0.0170 [0.0255] J,B	1.34 [0.0255]
SW8270D SIM	2-Methylnaphthalene	36	µg/L		-	ND [0.0236]	0.0288 [0.0236] J	-	-	0.0236 [0.0261] J,B	0.0209 [0.0255] J,B	-
SW8270D SIM	Acenaphthene	530	µg/L		-	ND [0.0236]	ND [0.0236]	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Acenaphthylene	260	µg/L		-	ND [0.0236]	ND [0.0236]	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Anthracene	1800	µg/L		-	ND [0.0236]	ND [0.0236]	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L		-	ND [0.0236]	0.0438 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L		-	ND [0.00945] J	0.0702 [0.00945] J	-	-	ND [0.0104]	ND [0.0102]	-
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L		-	ND [0.0236] J	0.0755 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L		-	ND [0.0236] J	0.107 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L		-	ND [0.0236] J	0.0785 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Chrysene	250	µg/L		-	ND [0.0236] J	0.0482 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L		-	ND [0.00945] J	0.103 [0.00945] J	-	-	ND [0.0104]	ND [0.0102]	-
SW8270D SIM	Fluoranthene	800	µg/L		-	ND [0.0236]	0.0383 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Fluorene	290	µg/L		-	ND [0.0236]	ND [0.0236]	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L		-	ND [0.0236] J	0.108 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-
SW8270D SIM	Naphthalene	1.7	µg/L		0.0384 [0.0490] J	ND [0.0471]	0.0325 [0.0471] J	**3.10 [0.0500]**	1.10 [0.0481]	ND [0.0520]	ND [0.0510]	**11.2 [0.255]**
SW8270D SIM	Phenanthrene	170	µg/L		-	0.0337 [0.0471] J,B	0.0545 [0.0471] J,B	-	-	0.0435 [0.0520] J,B	0.0340 [0.0510] J,B	-
SW8270D SIM	Pyrene	120	µg/L		-	ND [0.0236]	0.0335 [0.0236] J	-	-	ND [0.0261]	ND [0.0255]	-

Notes:

[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)

Bold red indicates that the result exceeds the cleanup level.

Blue highlighting indicates that the result exceeds 20% of the cleanup level.

[ ] - value in brackets is the LOD

µg/L - micrograms per liter

B - estimated; analyte was detected in an associated blank

DUP - field duplicate

J(±) - estimated result biased high/low/indeterminate

LOD - limit of detection

LOQ - limit of quantitation

NA - not available

ND - not detected

SRF - Swanson River Field

ATTACHMENT E2-7
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD TANK SETTING 3-9
DATA SUMMARY TABLE

				Sample ID	SRF39-FS39B-23	SRF39-FS39E-23	SRF39-FS39G-23	SRF39-TS39AA-23	SRF39-TS39BB-23	SRF39-TS39CR-23	SRF39-TS39DD-23	SRF39-TS39F-23	SRF39-TS39T-23	SRF39-TS39U-23	SRF39-TS39V-23
				Location	FS3-9B	FS3-9E	FS3-9G	TS3-9AA	TS3-9BB	TS3-9CR	TS3-9DD	TS3-9F	TS3-9T	TS3-9U	TS3-9V
				SDG	1232892	1232892	1232892	1232892	1232892	1232976	1232801	1232976	1232976	1232892	1232892
				Collection Date	06/19/2023 18:34	06/19/2023 10:45	06/19/2023 16:50	06/19/2023 14:40	06/19/2023 13:35	06/20/2023 12:33	06/18/2023 17:55	06/20/2023 18:04	06/20/2023 10:38	06/19/2023 18:30	06/19/2023 11:55
				Matrix	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
				QC Type	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY	PRIMARY
Method	**Analyte**	**Cleanup Level[1]**	**Units**												
SW8260D	1,2,4-Trimethylbenzene	56	µg/L		ND [0.500]	**58.5 [0.500]**	0.408 [0.500] J	ND [0.500]	ND [0.500]	**83.1 [0.500]**	0.393 [0.500] J	**609 [5.00]**	6.12 [0.500]	10.5 [0.500]	16.6 [0.500]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L		ND [0.500]	54.3 [0.500]	ND [0.500]	0.442 [0.500] J	2.32 [0.500]	**147 [0.500]**	ND [0.500]	**385 [5.00]**	7.13 [0.500]	3.76 [0.500]	ND [0.500]
SW8260D	Benzene	4.6	µg/L		ND [0.200]	**142 [0.200]**	0.211 [0.200] J	0.519 [0.200]	3.34 [0.200]	**9.17 [0.200]**	ND [0.200]	**13.4 [0.200]**	1.95 [0.200]	3.50 [0.200]	**18.2 [0.200]**
SW8260D	Ethylbenzene	15	µg/L		ND [0.500]	**74.5 [0.500]**	ND [0.500]	1.64 [0.500]	**23.2 [0.500]**	2.53 [0.500]	ND [0.500]	**549 [5.00]**	**24.4 [0.500]**	6.31 [0.500]	7.22 [0.500]
SW8260D	Isopropylbenzene	450	µg/L		ND [0.500]	5.25 [0.500]	ND [0.500]	2.85 [0.500]	-	-	ND [0.500]	103 [0.500]	-	-	-
SW8260D	m&p-Xylene	NA	µg/L		ND [1.00]	176 [1.00]	ND [1.00]	ND [1.00]	ND [1.00]	84.9 [1.00]	ND [1.00]	1850 [10.0]	2.14 [1.00]	12.0 [1.00]	17.5 [1.00]
SW8260D	Naphthalene	1.7	µg/L		ND [0.500]	**27.0 [0.500]**	ND [0.500]	ND [0.500]	**1.98 [0.500]**	**3.48 [0.500]**	ND [0.500]	**127 [0.500]**	**4.12 [0.500]**	**4.07 [0.500]**	**17.5 [0.500]**
SW8260D	n-Butylbenzene	1000	µg/L		ND [0.500]	ND [0.500]	ND [0.500]	0.747 [0.500] J	-	-	ND [0.500]	ND [0.500]	-	-	-
SW8260D	o-Xylene	NA	µg/L		ND [0.500]	9.08 [0.500]	ND [0.500]	ND [0.500]	ND [0.500]	190 [0.500]	ND [0.500]	14.4 [5.00]	ND [0.500]	0.334 [0.500] J	ND [0.500]
SW8260D	sec-Butylbenzene	2000	µg/L		ND [0.500]	1.29 [0.500]	0.588 [0.500] J	3.33 [0.500]	-	-	ND [0.500]	6.51 [0.500]	-	-	-
SW8260D	tert-Butylbenzene	690	µg/L		ND [0.500]	2.89 [0.500]	0.549 [0.500] J	0.363 [0.500] J	-	-	ND [0.500]	2.94 [0.500]	-	-	-
SW8260D	Toluene	1100	µg/L		ND [0.500]	1.51 [0.500]	ND [0.500]	ND [0.500]	-	-	ND [0.500]	0.524 [0.500] J	-	-	-
SW8260D	Xylenes	190	µg/L		ND [1.50]	186 [1.50]	ND [1.50]	ND [1.50]	ND [1.50]	**275 [1.50]**	ND [1.50]	**1870 [15.0]**	2.14 [1.50] J	12.3 [1.50]	17.5 [1.50]
SW8270D SIM	1-Methylnaphthalene	11	µg/L		ND [0.0250] J-	1.34 [0.0261] J-	ND [0.0261] J-	0.0391 [0.0250] J,B	0.0531 [0.0255] J-,B	0.151 [0.0240]	0.0263 [0.0266] J,B	**25.0 [0.125]**	2.62 [0.0250]	0.489 [0.0266] J-	2.75 [0.0255] J-
SW8270D SIM	2-Methylnaphthalene	36	µg/L		0.0253 [0.0250] J,B	0.911 [0.0261] J-	0.0232 [0.0261] J,B	0.0405 [0.0250] J,B	-	-	0.0326 [0.0266] J,B	23.8 [0.125]	-	-	-
SW8270D SIM	Acenaphthene	530	µg/L		ND [0.0250] J-	0.224 [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	0.321 [0.0250]	-	-	-
SW8270D SIM	Acenaphthylene	260	µg/L		ND [0.0250] J-	ND [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	ND [0.0250]	-	-	-
SW8270D SIM	Anthracene	1800	µg/L		ND [0.0250] J-	ND [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	ND [0.0250]	-	-	-
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L		ND [0.0250] J-	0.0969 [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	0.0432 [0.0250] J	-	-	-
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L		ND [0.0100] J-	0.0533 [0.0104] J-	ND [0.0104] J-	ND [0.0100] J-	-	-	ND [0.0107]	ND [0.0100]	-	-	-
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L		ND [0.0250] J-	0.0825 [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	0.0319 [0.0250] J	-	-	-
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L		ND [0.0250] J-	0.0487 [0.0261] J	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	ND [0.0250]	-	-	-
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L		ND [0.0250] J-	0.0227 [0.0261] J	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	ND [0.0250]	-	-	-
SW8270D SIM	Chrysene	250	µg/L		ND [0.0250] J-	0.147 [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	0.0538 [0.0250]	-	-	-
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L		ND [0.0100] J-	0.0336 [0.0104] J-	ND [0.0104] J-	ND [0.0100] J-	-	-	ND [0.0107]	ND [0.0100]	-	-	-
SW8270D SIM	Fluoranthene	800	µg/L		ND [0.0250] J-	0.0859 [0.0261] J-,B	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	0.0404 [0.0250] J,B	-	-	-
SW8270D SIM	Fluorene	290	µg/L		ND [0.0250] J-	0.244 [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	0.979 [0.0250]	-	-	-
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L		ND [0.0250] J-	0.0329 [0.0261] J	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	ND [0.0250]	-	-	-
SW8270D SIM	Naphthalene	1.7	µg/L		ND [0.0500] J-	**7.42 [0.0520] J-**	0.0323 [0.0520] J	0.158 [0.0500] J-	0.719 [0.0510] J-	0.178 [0.0481]	0.0395 [0.0530] J	**49.4 [0.250]**	1.62 [0.0500]	0.816 [0.0530] J-	**6.68 [0.0510] J-**
SW8270D SIM	Phenanthrene	170	µg/L		ND [0.0500] J-	0.166 [0.0520] J-,B	ND [0.0520] J-	ND [0.0500] J-	-	-	0.0368 [0.0530] J,B	0.779 [0.0500]	-	-	-
SW8270D SIM	Pyrene	120	µg/L		ND [0.0250] J-	0.147 [0.0261] J-	ND [0.0261] J-	ND [0.0250] J-	-	-	ND [0.0266]	0.0723 [0.0250] B	-	-	-

Notes:
[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)
Bold red indicates that the result exceeds the cleanup level.
Blue highlighting indicates that the result exceeds 20% of the cleanup level.

Definitions:
[ ] - value in brackets is the LOD
µg/L - micrograms per liter
B - estimated; analyte was detected in an associated blank
DUP - field duplicate
J(±) - estimated result biased high/low/indeterminate

LOD - limit of detection
LOQ - limit of quantitation
NA - not available
ND - not detected
SRF - Swanson River Field

ATTACHMENT E2-8
2023 KENAI GROUNDWATER MONITORING PROGRAM - SOLDOTNA CREEK UNIT 23B-03
DATA SUMMARY TABLE

				Sample ID	23B3-MW01-23	23B3-MW01Z-23	23B3-MW02-23	23B3-MW03-23
				Location	MW-01	MW-01	MW-02	MW-03
				SDG	1232975	1232975	1232975	1232975
				Collection Date	06/20/2023 15:00	06/20/2023 14:00	06/20/2023 16:10	06/20/2023 17:10
				Matrix	Groundwater	Groundwater	Groundwater	Groundwater
				QC Type	PRIMARY	DUP OF MW-01	PRIMARY	PRIMARY
Method	Analyte	Cleanup Level[1]	Units					
AK102	Diesel Range Organics	1500	µg/L	**2350 [319] J-**	**2880 [319] J-**	286 [306] J	309 [313] J
AK103	Residual Range Organics	1100	µg/L	381 [266] J	719 [266] J	ND [255]	562 [261]
SW8260D	1,2,4-Trimethylbenzene	56	µg/L	**106 [0.500]**	**106 [0.500]**	ND [0.500]	ND [0.500]
SW8260D	1,2-Dibromoethane	0.075	µg/L	ND [0.0375]	ND [0.0375]	ND [0.0375]	ND [0.0375]
SW8260D	1,2-Dichloroethane	1.7	µg/L	ND [0.250]	ND [0.250]	ND [0.250]	ND [0.250]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L	**66.1 [0.500]**	**66.8 [0.500]**	ND [0.500]	ND [0.500]
SW8260D	Benzene	4.6	µg/L	1.74 [0.200]	1.72 [0.200]	ND [0.200]	ND [0.200]
SW8260D	Ethylbenzene	15	µg/L	9.43 [0.500]	9.43 [0.500]	ND [0.500]	ND [0.500]
SW8260D	Isopropylbenzene	450	µg/L	47.8 [0.500]	47.1 [0.500]	ND [0.500]	ND [0.500]
SW8260D	m&p-Xylene		µg/L	58.6 [1.00]	58.0 [1.00]	ND [1.00]	ND [1.00]
SW8260D	Methyl-tert-butyl ether	140	µg/L	ND [5.00]	ND [5.00]	ND [5.00]	ND [5.00]
SW8260D	Naphthalene	1.7	µg/L	**15.8 [0.500]**	**15.4 [0.500]**	ND [0.500]	ND [0.500]
SW8260D	n-Butylbenzene	1000	µg/L	1.34 [0.500]	1.46 [0.500]	ND [0.500]	ND [0.500]
SW8260D	o-Xylene		µg/L	1.35 [0.500]	1.39 [0.500]	ND [0.500]	ND [0.500]
SW8260D	sec-Butylbenzene	2000	µg/L	6.49 [0.500]	6.59 [0.500]	ND [0.500]	ND [0.500]
SW8260D	tert-Butylbenzene	690	µg/L	7.89 [0.500]	7.78 [0.500]	ND [0.500]	ND [0.500]
SW8260D	Toluene	1100	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Xylenes	190	µg/L	59.9 [1.50]	59.4 [1.50]	ND [1.50]	ND [1.50]
SW8270D SIM	1-Methylnaphthalene	11	µg/L	0.0263 [0.0266] J,B	ND [0.0261] J-	0.0154 [0.0250] J,B	0.0188 [0.0250] J,B
SW8270D SIM	2-Methylnaphthalene	36	µg/L	0.0229 [0.0266] J,B	ND [0.0261] J-	0.0196 [0.0250] J,B	0.0216 [0.0250] J,B
SW8270D SIM	Acenaphthene	530	µg/L	ND [0.0266] J-	ND [0.0261] J-	ND [0.0250]	ND [0.0250]
SW8270D SIM	Acenaphthylene	260	µg/L	ND [0.0266] J-	ND [0.0261] J-	ND [0.0250]	ND [0.0250]
SW8270D SIM	Anthracene	1800	µg/L	ND [0.0266] J-	ND [0.0261] J-	ND [0.0250]	ND [0.0250]
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L	ND [0.0266]	ND [0.0261]	ND [0.0250]	**0.576 [0.0250]**
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L	ND [0.0107]	ND [0.0104]	ND [0.0100]	**1.50 [0.0100]**
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L	ND [0.0266]	0.0214 [0.0261] J	ND [0.0250]	1.79 [0.0250]
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L	ND [0.0266]	0.0413 [0.0261] J	ND [0.0250]	3.12 [0.0250]
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L	ND [0.0266]	ND [0.0261]	ND [0.0250]	2.83 [0.0250]
SW8270D SIM	Chrysene	250	µg/L	ND [0.0266]	ND [0.0261]	ND [0.0250]	1.43 [0.0250]
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L	ND [0.0107] J	0.0399 [0.0104] J	ND [0.0100]	**3.52 [0.0100]**
SW8270D SIM	Fluoranthene	800	µg/L	ND [0.0266]	ND [0.0261]	ND [0.0250]	ND [0.0250]
SW8270D SIM	Fluorene	290	µg/L	0.0178 [0.0266] J	0.0225 [0.0261] J	ND [0.0250]	ND [0.0250]
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L	ND [0.0266]	0.0403 [0.0261] J	ND [0.0250]	**3.14 [0.0250]**
SW8270D SIM	Naphthalene	1.7	µg/L	0.0965 [0.0530] J	ND [0.0520] J-	ND [0.0500]	0.0369 [0.0500] J
SW8270D SIM	Phenanthrene	170	µg/L	ND [0.0530] J-	ND [0.0520] J-	ND [0.0500]	ND [0.0500]
SW8270D SIM	Pyrene	120	µg/L	ND [0.0266]	ND [0.0261]	ND [0.0250]	ND [0.0250]

ATTACHMENT E2-8
2023 KENAI GROUNDWATER MONITORING PROGRAM - SOLDOTNA CREEK UNIT 23B-03
DATA SUMMARY TABLE

Notes:

[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)

Bold red indicates that the result exceeds the cleanup level.

Blue highlighting indicates that the result exceeds 20% of the cleanup level.

[ ] - value in brackets is the LOD

µg/L - micrograms per liter

B - estimated; analyte was detected in an associated blank

DUP - field duplicate

J / J- estimated value, bias indeterminate/low

LOD - limit of detection

ND - not detected

QC - quality control

ATTACHMENT E2-9

2023 KENAI GROUNDWATER MONITORING PROGRAM - SOLDOTNA CREEK UNIT 312-09

DATA SUMMARY TABLE

				Sample ID	31209-MW01-23	31209-MW02-23	31209-MW03-23	TRIP BLANK
				Location	MW-01	MW-02	MW-03	TB
				SDG	1232977	1232977	1232977	1232977
				Collection Date	06/20/2023 12:30	06/20/2023 11:00	06/20/2023 12:00	06/20/2023 00:00
				Matrix	Groundwater	Groundwater	Groundwater	Water
				QC Type	PRIMARY	PRIMARY	PRIMARY	TRIP BLANK
Method	**Analyte**	**Cleanup Level[1]**	**Units**					
AK102	Diesel Range Organics	1500	µg/L	ND [306] J-	ND [326] J-	ND [294] J-	-
AK103	Residual Range Organics	1100	µg/L	ND [255] J-	ND [272] J-	ND [245]	-
SW8260D	1,2,4-Trimethylbenzene	56	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	1,2-Dibromoethane	0.075	µg/L	ND [0.0375]	ND [0.0375]	ND [0.0375]	ND [0.0375]
SW8260D	1,2-Dichloroethane	1.7	µg/L	ND [0.250]	ND [0.250]	ND [0.250]	ND [0.250]
SW8260D	1,3,5-Trimethylbenzene	60	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Benzene	4.6	µg/L	ND [0.200]	ND [0.200]	ND [0.200]	ND [0.200]
SW8260D	Ethylbenzene	15	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Isopropylbenzene	450	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	m&p-Xylene	NA	µg/L	ND [1.00]	ND [1.00]	ND [1.00]	ND [1.00]
SW8260D	Methyl-tert-butyl ether	140	µg/L	ND [5.00]	ND [5.00]	ND [5.00]	ND [5.00]
SW8260D	Naphthalene	1.7	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	n-Butylbenzene	1000	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	o-Xylene	NA	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	sec-Butylbenzene	2000	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	tert-Butylbenzene	690	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Toluene	1100	µg/L	ND [0.500]	ND [0.500]	ND [0.500]	ND [0.500]
SW8260D	Xylenes	190	µg/L	ND [1.50]	ND [1.50]	ND [1.50]	ND [1.50]
SW8270D SIM	1-Methylnaphthalene	11	µg/L	0.0161 [0.0261] J,B	0.0196 [0.0266] J,B	0.0174 [0.0266] J,B	-
SW8270D SIM	2-Methylnaphthalene	36	µg/L	0.0206 [0.0261] J,B	0.0249 [0.0266] J,B	0.0217 [0.0266] J,B	-
SW8270D SIM	Acenaphthene	530	µg/L	ND [0.0261] J-	ND [0.0266]	ND [0.0266]	-
SW8270D SIM	Acenaphthylene	260	µg/L	ND [0.0261] J-	ND [0.0266]	ND [0.0266]	-
SW8270D SIM	Anthracene	1800	µg/L	ND [0.0261] J-	ND [0.0266]	ND [0.0266]	-
SW8270D SIM	Benzo(a)anthracene	0.3	µg/L	0.0219 [0.0261] J	ND [0.0266]	0.0461 [0.0266] J	-
SW8270D SIM	Benzo(a)pyrene	0.25	µg/L	0.0190 [0.0104] J	ND [0.0107]	0.235 [0.0107]	-
SW8270D SIM	Benzo(b)fluoranthene	2.5	µg/L	0.0394 [0.0261] J	ND [0.0266]	0.197 [0.0266]	-
SW8270D SIM	Benzo(g,h,i)perylene	600	µg/L	0.0516 [0.0261] J	ND [0.0266]	1.84 [0.0266] J-	-
SW8270D SIM	Benzo(k)fluoranthene	25	µg/L	0.0340 [0.0261] J	ND [0.0266]	0.520 [0.0266] J-	-
SW8270D SIM	Chrysene	250	µg/L	0.0225 [0.0261] J	ND [0.0266]	0.0949 [0.0266]	-
SW8270D SIM	Dibenz(a,h)anthracene	0.25	µg/L	0.0570 [0.0104]	ND [0.0107]	**2.10 [0.0107] J-**	-
SW8270D SIM	Fluoranthene	800	µg/L	ND [0.0261]	ND [0.0266]	0.0185 [0.0266] J,B	-
SW8270D SIM	Fluorene	290	µg/L	ND [0.0261] J-	ND [0.0266]	ND [0.0266]	-
SW8270D SIM	Indeno(1,2,3-cd)pyrene	2.5	µg/L	0.0565 [0.0261]	ND [0.0266]	1.41 [0.0266] J-	-
SW8270D SIM	Naphthalene	1.7	µg/L	ND [0.0520] J-	ND [0.0530]	ND [0.0530]	-
SW8270D SIM	Phenanthrene	170	µg/L	ND [0.0520] J-	0.0478 [0.0530] J,B	0.0494 [0.0530] J,B	-
SW8270D SIM	Pyrene	120	µg/L	ND [0.0261]	ND [0.0266]	ND [0.0266]	-

ATTACHMENT E2-9
2023 KENAI GROUNDWATER MONITORING PROGRAM - SOLDOTNA CREEK UNIT 312-09
DATA SUMMARY TABLE

Notes:

[1] 18 AAC 75, Table C groundwater cleanup levels (ADEC 2023)

Bold red indicates that the result exceeds the cleanup level.

Blue highlighting indicates that the result exceeds 20% of the cleanup level.

[ ] - value in brackets is the LOD

µg/L - micrograms per liter

B - estimated; analyte was detected in an associated blank

DUP - field duplicate

J(±) - estimated result biased high/low/indeterminate

LOD - limit of detection

NA - not available

ND - not detected

QC - quality control

SCU - Soldotna Creek Unit

ATTACHMENT E-3
QUALIFIED RESULTS SUMMARY TABLE

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ATTACHMENT E-3
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
QUALIFIED RESULTS SUMMARY TABLE

SDG	SITE	SAMPLE ID	LOCATION ID	METHOD	CAS_RN	ANALYTE	RESULT	UNITS	LOD	LOQ	LAB QUALIFIER	VALIDATION QUALIFIER	REASON FOR QUALIFICATION
1232801	SRF TS 1-4	SRF14-FS14H-23	FS1-4H	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.200	µg/L	0.0245	0.0490		J-	Low surrogate recovery.
1232801	SRF TS 1-4	SRF14-FS14H-23	FS1-4H	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0628	µg/L	0.0245	0.0490		J-	Low surrogate recovery.
1232801	SRF TS 1-4	SRF14-FS14H-23	FS1-4H	SW8270D SIM-LV	86-73-7	Fluorene	0.0376	µg/L	0.0245	0.0490	J	J	Estimated value < LOQ. Low surrogate recovery.
1232801	SRF TS 1-4	SRF14-FS14H-23	FS1-4H	SW8270D SIM-LV	91-20-3	Naphthalene	0.134	µg/L	0.0490	0.0980		J-	Low surrogate recovery.
1232801	SRF TS 1-4	SRF14-FS14I-23	FS1-4I	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0185	µg/L	0.0245	0.0490	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 1-4	SRF14-FS14I-23	FS1-4I	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0234	µg/L	0.0245	0.0490	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	95-63-6	1,2,4-Trimethylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	108-67-8	1,3,5-Trimethylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	71-43-2	Benzene	ND	µg/L	0.200	0.400		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	100-41-4	Ethylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	98-82-8	Isopropylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	179601-23	m&p-Xylene	ND	µg/L	1.00	2.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	91-20-3	Naphthalene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	95-47-6	o-Xylene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14EE-23	TS1-4EE	SW8260D	1330-20-7	Xylenes	ND	µg/L	1.50	3.00		J-	Low MS/MSD recovery.
1232801	SRF TS 1-4	SRF14-TS14F-23	TS1-4F	SW8270D SIM-LV	50-32-8	Benzo(a)pyrene	0.0205	µg/L	0.0100	0.0200		J	High LCS/LCSD RPD.
1232801	SRF TS 1-4	SRF14-TS14GR-23	TS1-4GR	SW8260D	108-67-8	1,3,5-Trimethylbenzene	390	µg/L	5.00	10.0		J	FD imprecision.
1232801	SRF TS 1-4	SRF14-TS14GRZ-23	TS1-4GR	SW8260D	108-67-8	1,3,5-Trimethylbenzene	280	µg/L	5.00	10.0		J	FD imprecision.
1232801	SRF TS 1-9	SRF19-TS19HH-23	TS1-9HH	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0885	µg/L	0.0272	0.0543		B	MB contamination.
1232801	SRF TS 1-9	SRF19-TS19HH-23	TS1-9HH	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0378	µg/L	0.0545	0.109	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 1-9	SRF19-TS19U-23	TS1-9U	SW8270D SIM-LV	85-01-8	Phenanthrene	0.106	µg/L	0.0520	0.104		B	MB contamination.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	1.39	µg/L	0.0250	0.0500		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	85-01-8	Phenanthrene	0.106	µg/L	0.0520	0.104		B	MB contamination.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	1.39	µg/L	0.0250	0.0500		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	1.42	µg/L	0.0250	0.0500		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	83-32-9	Acenaphthene	0.0634	µg/L	0.0250	0.0500		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0250	0.0500		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0250	0.0500		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	86-73-7	Fluorene	0.130	µg/L	0.0250	0.0500		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	91-20-3	Naphthalene	1.18	µg/L	0.0500	0.100		J-	Low surrogate recovery.
1232801	SRF TS 1-9	SRF19-TS19UZ-23	TS1-9U	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0870	µg/L	0.0500	0.100	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 1-27	SRF127-FS127C-23	FS1-27C	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0250	0.0500		J-	Low LCSD recovery.
1232801	SRF TS 1-27	SRF127-FS127C-23	FS1-27C	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0250	0.0500		J-	Low LCSD recovery.
1232801	SRF TS 1-27	SRF127-FS127C-23	FS1-27C	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0355	µg/L	0.0500	0.100	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	95-63-6	1,2,4-Trimethylbenzene	1130	µg/L	5.00	10.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	108-67-8	1,3,5-Trimethylbenzene	295	µg/L	5.00	10.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	71-43-2	Benzene	25.3	µg/L	2.00	4.00		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	100-41-4	Ethylbenzene	481	µg/L	5.00	10.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	98-82-8	Isopropylbenzene	299	µg/L	5.00	10.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	179601-23	m&p-Xylene	2050	µg/L	10.0	20.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	91-20-3	Naphthalene	296	µg/L	5.00	10.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	95-47-6	o-Xylene	35.7	µg/L	5.00	10.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	98-06-6	tert-Butylbenzene	10.6	µg/L	5.00	10.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-27	SRF127-TS127K-23	TS1-27K	SW8260D	1330-20-7	Xylenes	2080	µg/L	15.0	30.0		J-	Headspace > 6 mm.
1232801	SRF TS 1-33	SRF133-FS133F-23	FS1-33F	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.105	µg/L	0.0227	0.0455		J	FD imprecision.
1232801	SRF TS 1-33	SRF133-FS133F-23	FS1-33F	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.108	µg/L	0.0227	0.0455		JB	FD imprecision. MB contamination.
1232801	SRF TS 1-33	SRF133-FS133FZ-23	FS1-33F	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.154	µg/L	0.0250	0.0500		J	FD imprecision.
1232801	SRF TS 1-33	SRF133-FS133FZ-23	FS1-33F	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.160	µg/L	0.0250	0.0500		J	FD imprecision.
1232801	SRF TS 1-33	SRF133-FS133H-23	FS1-33H	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.416	µg/L	0.0240	0.0481		J-	Low surrogate recovery.
1232801	SRF TS 1-33	SRF133-FS133H-23	FS1-33H	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.310	µg/L	0.0240	0.0481		J-	Low surrogate recovery.
1232801	SRF TS 1-33	SRF133-FS133H-23	FS1-33H	SW8270D SIM-LV	91-20-3	Naphthalene	0.807	µg/L	0.0481	0.0962		J-	Low surrogate recovery.
1232801	SRF TS 1-33	SRF133-FS133W-23	FS1-33W	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0240	0.0481		J-	Low LCSD recovery.

ATTACHMENT E-3
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
QUALIFIED RESULTS SUMMARY TABLE

SDG	SITE	SAMPLE ID	LOCATION ID	METHOD	CAS_RN	ANALYTE	RESULT	UNITS	LOD	LOQ	LAB QUALIFIER	VALIDATION QUALIFIER	REASON FOR QUALIFICATION
1232801	SRF TS 1-33	SRF133-FS133W-23	FS1-33W	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0240	0.0481		J-	Low LCSD recovery.
1232801	SRF TS 1-33	SRF133-FS133W-23	FS1-33W	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0370	µg/L	0.0481	0.0962	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	95-63-6	1,2,4-Trimethylbenzene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	108-67-8	1,3,5-Trimethylbenzene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	71-43-2	Benzene	0.711	µg/L	0.200	0.400		J-	pH > 2, analyzed 7+ days from collection.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	100-41-4	Ethylbenzene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	98-82-8	Isopropylbenzene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	179601-23	m&p-Xylene	ND	µg/L	1.00	2.00		J-	pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	91-20-3	Naphthalene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	104-51-8	n-Butylbenzene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	95-47-6	o-Xylene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	135-98-8	sec-Butylbenzene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	98-06-6	tert-Butylbenzene	0.426	µg/L	0.500	1.00	J	J	Estimated value < LOQ. pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	108-88-3	Toluene	ND	µg/L	0.500	1.00		J-	pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8260D	1330-20-7	Xylenes	ND	µg/L	1.50	3.00		J-	pH > 2, analyzed 7+ days from collection. Low MSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0758	µg/L	0.0245	0.0490		JB	FD imprecision. MB contamination.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.113	µg/L	0.0245	0.0490		JB	FD imprecision. MB contamination.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8270D SIM-LV	86-73-7	Fluorene	0.0653	µg/L	0.0245	0.0490		J	FD imprecision.
1232801	SRF TS 1-33	SRF133-TS133JJ-23	TS1-33JJ	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0684	µg/L	0.0490	0.0980	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	95-63-6	1,2,4-Trimethylbenzene	ND	µg/L	0.500	1.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	100-41-4	Ethylbenzene	ND	µg/L	0.500	1.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	179601-23	m&p-Xylene	ND	µg/L	1.00	2.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	100-41-4	Ethylbenzene	ND	µg/L	0.500	1.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	179601-23	m&p-Xylene	ND	µg/L	1.00	2.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	104-51-8	n-Butylbenzene	ND	µg/L	0.500	1.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	95-47-6	o-Xylene	ND	µg/L	0.500	1.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	98-06-6	tert-Butylbenzene	0.520	µg/L	0.500	1.00	J	J	Estimated value < LOQ. Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	108-88-3	Toluene	ND	µg/L	0.500	1.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8260D	1330-20-7	Xylenes	ND	µg/L	1.50	3.00		J-	Low MSD recovery in parent sample.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0162	µg/L	0.0261	0.0521	J	J	Estimated value < LOQ. FD imprecision.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0178	µg/L	0.0261	0.0521	J	J	Estimated value < LOQ. FD imprecision.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0261	0.0521		J-	Low LCSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0261	0.0521		J-	Low LCSD recovery.
1232801	SRF TS 1-33	SRF133-TS133JJZ-23	TS1-33JJ	SW8270D SIM-LV	86-73-7	Fluorene	ND	µg/L	0.0261	0.0521		J	FD imprecision.
1232801	SRF TS 1-33	SRF133-TS133O2-23	TS1-33O2	SW8260D	71-43-2	Benzene	143	µg/L	0.200	0.400		J-	Low surrogate recovery.
1232801	SRF TS 2-15	SRF215-FS215B-23	FS2-15B	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0267	0.0534		J-	Low LCSD recovery.
1232801	SRF TS 2-15	SRF215-FS215B-23	FS2-15B	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0267	0.0534		J-	Low LCSD recovery.
1232801	SRF TS 2-15	SRF215-FS215B-23	FS2-15B	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0394	µg/L	0.0535	0.107	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 2-15	SRF215-TS215P-23	TS2-15P	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0236	0.0472		J-	Low LCSD recovery.
1232801	SRF TS 2-15	SRF215-TS215P-23	TS2-15P	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0236	0.0472		J-	Low LCSD recovery.
1232801	SRF TS 2-15	SRF215-TS215P-23	TS2-15P	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0362	µg/L	0.0471	0.0943	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 2-15	SRF215-TS215R-23	TS2-15R	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0245	0.0490		J-	Low LCSD recovery.
1232801	SRF TS 2-15	SRF215-TS215R-23	TS2-15R	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0245	0.0490		J-	Low LCSD recovery.
1232801	SRF TS 3-4	SRF34-FS34A-23	FS3-4A	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0265	µg/L	0.0245	0.0490	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	50-32-8	Benzo(a)pyrene	ND	µg/L	0.00945	0.0189		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	205-99-2	Benzo(b)fluoranthene	ND	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	191-24-2	Benzo(g,h,i)perylene	ND	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	207-08-9	Benzo(k)fluoranthene	ND	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	ND	µg/L	0.00945	0.0189		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	193-39-5	Indeno(1,2,3-cd)pyrene	ND	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34B-23	FS3-4B	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0337	µg/L	0.0471	0.0943	J	JB	Estimated value < LOQ. MB contamination.

ATTACHMENT E-3
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
QUALIFIED RESULTS SUMMARY TABLE

SDG	SITE	SAMPLE ID	LOCATION ID	METHOD	CAS_RN	ANALYTE	RESULT	UNITS	LOD	LOQ	LAB QUALIFIER	VALIDATION QUALIFIER	REASON FOR QUALIFICATION
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	50-32-8	Benzo(a)pyrene	0.0702	µg/L	0.00945	0.0189		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	205-99-2	Benzo(b)fluoranthene	0.0755	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	191-24-2	Benzo(g,h,i)perylene	0.107	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	207-08-9	Benzo(k)fluoranthene	0.0785	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	218-01-9	Chrysene	0.0482	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	0.103	µg/L	0.00945	0.0189		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	193-39-5	Indeno(1,2,3-cd)pyrene	0.108	µg/L	0.0236	0.0472		J	FD imprecision.
1232801	SRF TS 3-4	SRF34-FS34BZ-23	FS3-4B	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0545	µg/L	0.0471	0.0943	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-4	SRF34-TS34MM-23	TS3-4MM	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0214	µg/L	0.0261	0.0521	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-4	SRF34-TS34MM-23	TS3-4MM	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0236	µg/L	0.0261	0.0521	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-4	SRF34-TS34MM-23	TS3-4MM	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0435	µg/L	0.0520	0.104	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-4	SRF34-TS34OO-23	TS3-4OO	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0170	µg/L	0.0255	0.0510	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-4	SRF34-TS34OO-23	TS3-4OO	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0209	µg/L	0.0255	0.0510	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-4	SRF34-TS34OO-23	TS3-4OO	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0340	µg/L	0.0510	0.102	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-9	SRF39-TS39DD-23	TS3-9DD	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0263	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-9	SRF39-TS39DD-23	TS3-9DD	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0326	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination.
1232801	SRF TS 3-9	SRF39-TS39DD-23	TS3-9DD	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0368	µg/L	0.0530	0.106	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-FS19D-23	FS1-9D	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0311	µg/L	0.0471	0.0943	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	95-63-6	1,2,4-Trimethylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	108-67-8	1,3,5-Trimethylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	71-43-2	Benzene	ND	µg/L	0.200	0.400		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	100-41-4	Ethylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	98-82-8	Isopropylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	179601-23	m&p-Xylene	ND	µg/L	1.00	2.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	104-51-8	n-Butylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	95-47-6	o-Xylene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	135-98-8	sec-Butylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	98-06-6	tert-Butylbenzene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	108-88-3	Toluene	ND	µg/L	0.500	1.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8260D	1330-20-7	Xylenes	ND	µg/L	1.50	3.00		J-	Low MS/MSD recovery.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0170	µg/L	0.0236	0.0472	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0213	µg/L	0.0236	0.0472	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-FS19I-23	FS1-9I	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0319	µg/L	0.0471	0.0943	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-FS19M-23	FS1-9M	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0251	µg/L	0.0255	0.0510	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-FS19M-23	FS1-9M	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0284	µg/L	0.0255	0.0510	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-FS19M-23	FS1-9M	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0344	µg/L	0.0510	0.102	J	JB	Estimated value < LOQ. MB contamination.
1232892	SRF TS 1-9	SRF19-TS19C-23	TS1-9C	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	17.8	µg/L	0.120	0.240		J-	Temp > 6°C.
1232892	SRF TS 1-9	SRF19-TS19C-23	TS1-9C	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	20.2	µg/L	0.120	0.240		J-	Temp > 6°C.
1232892	SRF TS 1-9	SRF19-TS19C-23	TS1-9C	SW8270D SIM-LV	91-20-3	Naphthalene	18.6	µg/L	0.240	0.481		J-	Temp > 6°C.
1232892	SRF TS 1-9	SRF19-TS19D-23	TS1-9D	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0865	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 1-9	SRF19-TS19D-23	TS1-9D	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0298	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. Temp > 6°C. MB contamination.
1232892	SRF TS 1-9	SRF19-TS19D-23	TS1-9D	SW8270D SIM-LV	91-20-3	Naphthalene	0.149	µg/L	0.0500	0.100		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0253	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. Temp > 6°C. MB contamination.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	83-32-9	Acenaphthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	50-32-8	Benzo(a)pyrene	ND	µg/L	0.0100	0.0200		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	205-99-2	Benzo(b)fluoranthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.

ATTACHMENT E-3
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
QUALIFIED RESULTS SUMMARY TABLE

SDG	SITE	SAMPLE ID	LOCATION ID	METHOD	CAS_RN	ANALYTE	RESULT	UNITS	LOD	LOQ	LAB QUALIFIER	VALIDATION QUALIFIER	REASON FOR QUALIFICATION
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	191-24-2	Benzo(g,h,i)perylene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	207-08-9	Benzo(k)fluoranthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	ND	µg/L	0.0100	0.0200		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	206-44-0	Fluoranthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	86-73-7	Fluorene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	193-39-5	Indeno(1,2,3-cd)pyrene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	91-20-3	Naphthalene	ND	µg/L	0.0500	0.100		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	85-01-8	Phenanthrene	ND	µg/L	0.0500	0.100		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39B-23	FS3-9B	SW8270D SIM-LV	129-00-0	Pyrene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	1.34	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.911	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	83-32-9	Acenaphthene	0.224	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	0.0969	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	50-32-8	Benzo(a)pyrene	0.0533	µg/L	0.0104	0.0208		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	205-99-2	Benzo(b)fluoranthene	0.0825	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	191-24-2	Benzo(g,h,i)perylene	0.0487	µg/L	0.0261	0.0521	J	J	Estimated value < LOQ. Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	207-08-9	Benzo(k)fluoranthene	0.0227	µg/L	0.0261	0.0521	J	J	Estimated value < LOQ. Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	218-01-9	Chrysene	0.147	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	0.0336	µg/L	0.0104	0.0208		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	206-44-0	Fluoranthene	0.0859	µg/L	0.0261	0.0521		J-,B	Temp > 6°C. MB contamination.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	86-73-7	Fluorene	0.244	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	193-39-5	Indeno(1,2,3-cd)pyrene	0.0329	µg/L	0.0261	0.0521	J	J	Estimated value < LOQ. Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	91-20-3	Naphthalene	7.42	µg/L	0.0520	0.104		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	85-01-8	Phenanthrene	0.166	µg/L	0.0520	0.104		J-,B	Temp > 6°C. MB contamination.
1232892	SRF TS 3-9	SRF39-FS39E-23	FS3-9E	SW8270D SIM-LV	129-00-0	Pyrene	0.147	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0232	µg/L	0.0261	0.0521	J	JB	Estimated value < LOQ. Temp > 6°C. MB contamination.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	83-32-9	Acenaphthene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	50-32-8	Benzo(a)pyrene	ND	µg/L	0.0104	0.0208		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	205-99-2	Benzo(b)fluoranthene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	191-24-2	Benzo(g,h,i)perylene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	207-08-9	Benzo(k)fluoranthene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	ND	µg/L	0.0104	0.0208		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	206-44-0	Fluoranthene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	86-73-7	Fluorene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	193-39-5	Indeno(1,2,3-cd)pyrene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	91-20-3	Naphthalene	0.0323	µg/L	0.0520	0.104	J	J	Estimated value < LOQ. Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	85-01-8	Phenanthrene	ND	µg/L	0.0520	0.104		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-FS39G-23	FS3-9G	SW8270D SIM-LV	129-00-0	Pyrene	ND	µg/L	0.0261	0.0521		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0391	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. Temp > 6°C. MB contamination.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0405	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. Temp > 6°C. MB contamination.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	83-32-9	Acenaphthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.

ATTACHMENT E-3
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
QUALIFIED RESULTS SUMMARY TABLE

SDG	SITE	SAMPLE ID	LOCATION ID	METHOD	CAS_RN	ANALYTE	RESULT	UNITS	LOD	LOQ	LAB QUALIFIER	VALIDATION QUALIFIER	REASON FOR QUALIFICATION
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	56-55-3	Benzo(a)anthracene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	50-32-8	Benzo(a)pyrene	ND	µg/L	0.0100	0.0200		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	205-99-2	Benzo(b)fluoranthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	191-24-2	Benzo(g,h,i)perylene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	207-08-9	Benzo(k)fluoranthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	218-01-9	Chrysene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	ND	µg/L	0.0100	0.0200		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	206-44-0	Fluoranthene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	86-73-7	Fluorene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	193-39-5	Indeno(1,2,3-cd)pyrene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	91-20-3	Naphthalene	0.158	µg/L	0.0500	0.100		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	85-01-8	Phenanthrene	ND	µg/L	0.0500	0.100		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39AA-23	TS3-9AA	SW8270D SIM-LV	129-00-0	Pyrene	ND	µg/L	0.0250	0.0500		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39BB-23	TS3-9BB	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0531	µg/L	0.0255	0.0510		J-,B	Temp > 6°C. MB contamination.
1232892	SRF TS 3-9	SRF39-TS39BB-23	TS3-9BB	SW8270D SIM-LV	91-20-3	Naphthalene	0.719	µg/L	0.0510	0.102		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39U-23	TS3-9U	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.489	µg/L	0.0266	0.0532		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39U-23	TS3-9U	SW8270D SIM-LV	91-20-3	Naphthalene	0.816	µg/L	0.0530	0.106		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39V-23	TS3-9V	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	2.75	µg/L	0.0255	0.0510		J-	Temp > 6°C.
1232892	SRF TS 3-9	SRF39-TS39V-23	TS3-9V	SW8270D SIM-LV	91-20-3	Naphthalene	6.68	µg/L	0.0510	0.102		J-	Temp > 6°C.
1232967	SRF TS 1-4	SRF14-SW1-23	SW-1	SW8260D SIM	123-91-1	1,4-Dioxane	3.13	µg/L	0.200	0.400		J	High LCS/LCSD recovery & high RPD. High MSD recovery & high MS/MSD RPD.
1232967	SRF TS 1-4	SRF14-SW1Z-23	SW-1	SW8260D SIM	123-91-1	1,4-Dioxane	3.61	µg/L	0.200	0.400		J	High LCS/LCSD recovery & high RPD. High MSD recovery & high MS/MSD RPD.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	AK102	DRO	Diesel Range Organics	2350	µg/L	319	638		J-	Low LCS/LCSD recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	AK103	RRO	Residual Range Organics	381	µg/L	266	532	J	J	Estimated value < LOQ. FD imprecision.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0263	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination. Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0229	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination. Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	83-32-9	Acenaphthene	ND	µg/L	0.0266	0.0532		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0266	0.0532		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0266	0.0532		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	ND	µg/L	0.0107	0.0213		J	FD imprecision.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	86-73-7	Fluorene	0.0178	µg/L	0.0266	0.0532	J	J	Estimated value < LOQ. Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	91-20-3	Naphthalene	0.0965	µg/L	0.0530	0.106	J	J	Estimated value < LOQ. Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01-23	MW-01	SW8270D SIM-LV	85-01-8	Phenanthrene	ND	µg/L	0.0530	0.106		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	AK102	DRO	Diesel Range Organics	2880	µg/L	319	638		J-	Low LCS/LCSD recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	AK103	RRO	Residual Range Organics	719	µg/L	266	532		J	FD imprecision.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	83-32-9	Acenaphthene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	0.0399	µg/L	0.0104	0.0208		J	FD imprecision.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	86-73-7	Fluorene	0.0225	µg/L	0.0261	0.0521	J	J	Estimated value < LOQ. Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	91-20-3	Naphthalene	ND	µg/L	0.0520	0.104		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW01Z-23	MW-01	SW8270D SIM-LV	85-01-8	Phenanthrene	ND	µg/L	0.0520	0.104		J-	Low surrogate recovery.
1232975	SCU 23B-03	23B3-MW02-23	MW-02	AK102	DRO	Diesel Range Organics	286	µg/L	306	612	J	J	Estimated value < LOQ. Low LCS/LCSD recovery.
1232975	SCU 23B-03	23B3-MW02-23	MW-02	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0154	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. MB contamination.
1232975	SCU 23B-03	23B3-MW02-23	MW-02	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0196	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. MB contamination.
1232975	SCU 23B-03	23B3-MW03-23	MW-03	AK102	DRO	Diesel Range Organics	309	µg/L	313	625	J	J	Estimated value < LOQ. Low LCS/LCSD recovery.
1232975	SCU 23B-03	23B3-MW03-23	MW-03	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0188	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. MB contamination.
1232975	SCU 23B-03	23B3-MW03-23	MW-03	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0216	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. MB contamination.

ATTACHMENT E-3
2023 KENAI GROUNDWATER MONITORING PROGRAM - SWANSON RIVER FIELD
QUALIFIED RESULTS SUMMARY TABLE

SDG	SITE	SAMPLE ID	LOCATION ID	METHOD	CAS_RN	ANALYTE	RESULT	UNITS	LOD	LOQ	LAB QUALIFIER	VALIDATION QUALIFIER	REASON FOR QUALIFICATION
1232976	SRF TS 3-9	SRF39-TS39F-23	TS3-9F	SW8270D SIM-LV	206-44-0	Fluoranthene	0.0404	µg/L	0.0250	0.0500	J	JB	Estimated value < LOQ. MB contamination.
1232976	SRF TS 3-9	SRF39-TS39F-23	TS3-9F	SW8270D SIM-LV	129-00-0	Pyrene	0.0723	µg/L	0.0250	0.0500		B	MB contamination.
1232977	SCU 312-09	31209-MW01-23	MW-01	AK102	DRO	Diesel Range Organics	ND	µg/L	306	612		J-	Low LCS/LCSD recovery. Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	AK103	RRO	Residual Range Organics	ND	µg/L	255	510		J-	Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0161	µg/L	0.0261	0.0521	J	JB	Estimated value < LOQ. MB contamination. Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0206	µg/L	0.0261	0.0521	J	JB	Estimated value < LOQ. MB contamination. Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	83-32-9	Acenaphthene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	208-96-8	Acenaphthylene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	120-12-7	Anthracene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	86-73-7	Fluorene	ND	µg/L	0.0261	0.0521		J-	Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	91-20-3	Naphthalene	ND	µg/L	0.0520	0.104		J-	Low surrogate recovery.
1232977	SCU 312-09	31209-MW01-23	MW-01	SW8270D SIM-LV	85-01-8	Phenanthrene	ND	µg/L	0.0520	0.104		J-	Low surrogate recovery.
1232977	SCU 312-09	31209-MW02-23	MW-02	AK102	DRO	Diesel Range Organics	ND	µg/L	326	652		J-	Low LCS/LCSD recovery. Low surrogate recovery.
1232977	SCU 312-09	31209-MW02-23	MW-02	AK103	RRO	Residual Range Organics	ND	µg/L	272	543		J-	Low LCS/LCSD recovery. Low surrogate recovery.
1232977	SCU 312-09	31209-MW02-23	MW-02	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0196	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination.
1232977	SCU 312-09	31209-MW02-23	MW-02	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0249	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination.
1232977	SCU 312-09	31209-MW02-23	MW-02	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0478	µg/L	0.0530	0.106	J	JB	Estimated value < LOQ. MB contamination.
1232977	SCU 312-09	31209-MW03-23	MW-03	AK102	DRO	Diesel Range Organics	ND	µg/L	294	588		J-	Low LCS/LCSD recovery. Low MSD recovery.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	90-12-0	1-Methylnaphthalene	0.0174	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	91-57-6	2-Methylnaphthalene	0.0217	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	191-24-2	Benzo(g,h,i)perylene	1.84	µg/L	0.0266	0.0532		J-	Low MS/MSD recovery.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	207-08-9	Benzo(k)fluoranthene	0.520	µg/L	0.0266	0.0532		J-	Low MS/MSD recovery.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	53-70-3	Dibenz(a,h)anthracene	2.10	µg/L	0.0107	0.0213		J-	Low MS/MSD recovery.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	206-44-0	Fluoranthene	0.0185	µg/L	0.0266	0.0532	J	JB	Estimated value < LOQ. MB contamination.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	193-39-5	Indeno(1,2,3-cd)pyrene	1.41	µg/L	0.0266	0.0532		J-	Low MS/MSD recovery.
1232977	SCU 312-09	31209-MW03-23	MW-03	SW8270D SIM-LV	85-01-8	Phenanthrene	0.0494	µg/L	0.0530	0.106	J	JB	Estimated value < LOQ. MB contamination.

Notes:

%R - percent recovery
CL - control limit
DL - detection limit
FD - field duplicate
LCL - lower control limit
LCS - laboratory control sample
LCSD - laboratory control sample duplicate
LOQ - limit of quantitation
MB - method blank
MS - matrix spike
MSD - matrix spike duplicate
ND - not detected
RPD - relative percent difference
SDG - sample delivery group
Temp - temperature

ATTACHMENT E-4
ADEC LABORATORY DATA REVIEW CHECKLISTS

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ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Jordan M. Couture	**CS Site Name:**	SRF TS 1-4/ SRF TS 1-27/ SRF TS 2-15/ SRF TS 1-33/SRF TS 1-9/ SRF TS 3-4/ SRF TS 3-9	**Lab Name:**	SGS Anchorage
Title:	Project Chemist	**ADEC File No.:**	2334.38.018/ 2334.38.020/ 2334.38.022/ 2334.38.021/ 2334.38.019/ 2334.38.023/ 2334.38.024	**Lab Report No.:**	1232801
Consulting Firm:	Aleut Remediation	**Hazard ID No.:**	441/442/444/443/ 448/445/446	**Lab Report Date:**	7/20/23

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. Laboratory

a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
Yes ☒ No ☐ N/A ☐
Comments: Samples were sent to SGS North America of Anchorage, AK.

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
Yes ☐ No ☒ N/A ☐
Comments: Ethylene Glycol 8015M was analyzed by Bio-Chem of Grand Rapids, MI. BIO-CHEM is not an ADEC approved laboratory.

2. Chain of Custody (CoC)

a. Is the CoC information completed, signed, and dated (including released/received by)?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Were the correct analyses requested?
Yes ☒ No ☐ N/A ☐
Analyses requested: SW8260D, SW8015M Glycols, SW8270D- SIM PAH
Comments: Click or tap here to enter text.

CS Site Name: SRF TS 1-4/ SRF TS 1-27/ SRF TS 2-15/ SRF TS 1-33/SRF TS 1-9/ SRF TS 3-4/ SRF TS 3-9
Lab Report No.: 1232801

3. Laboratory Sample Receipt Documentation

a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
Yes ☒ No ☐ N/A ☐
Cooler temperature(s): Click or tap here to enter text.
Sample temperature(s): SGS Anchorage: Bangladesh 3.2 °C, Egypt 2.0°C, Chile 2.0°C, Djibouti 3.7°C.
BIO-CHEM: 3.9°C
Comments: Click or tap here to enter text.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☐ No ☒ N/A ☐
Comments: 8260D - Sample SRF133-TS133JJ-23 has a pH greater than two; the sample was analyzed more than 7 days from collection.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: Several samples (SRF215-FS215B-23, SRF215-TS215P-23, SRF215-TS215O-23, SRF133-TS133UR-23, SRF127-TS127K-23, SRF34-FS34F-23, SRF34-FS34B-23, and SRF34-FS34BZ-23) had headspace > 6mm noted in one or two of the sample vials.

Only SRF127-TS127K-23 had headspace >6mm in all three VOA vials; the lab noted foaming in the sample. All other samples had at least one VOA vial meeting the QC criterion that was used for the analysis.

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, canister not holding a vacuum, etc.?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

e. Is the data quality or usability affected?
Yes ☒ No ☐ N/A ☐
Comments: Data quality and usability were minimally affected. All results were either significantly above or below the ADEC cleanup standards. SW8260D results for SRF127-TS127K-23 were flagged J- to indicate a potential bias low. SW8260D results for SRF133-TS133JJ-23 were flagged J- to indicate a low potential bias.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments: Batch QC issues identified in the case narrative are discussed in the relevant sections of this checklist.

c. Were all the corrective actions documented?
Yes ☐ No ☐ N/A ☒
Comments: Corrective actions were not required.

d. What is the effect on data quality/usability according to the case narrative?
Comments: No systemic effects on data quality were noted in the case narrative. Additional effects on data quality and usability are discussed in the relevant sections of this checklist.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments: SW8015M was requested on the CoC and SW8015B was reported by the laboratory.

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: No soil samples were submitted on this SDG.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments: The LOD for all ND results and estimated detections below the LOQ are below the ADEC Table C groundwater cleanup levels.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality and usability were not affected.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Six method blanks were associated with this SDG. The table below lists the method blank ID, associated prep/analytical batch, and lab sample IDs.

SW8260D:

Method Blank ID	Prep/Analytical Batch	Associated Sample IDs
MB for HBN 1857557 [VXX/40015]	XXX48061/XMS13734	SRF14-FS14E-23, SRF127-TS127G-23, SRF133-FS133S-23, SRF215-TS215O-23, SRF133-TS133UR-23, SRF14-TS14GR-23, SRF19-TS19U-23, SRF19-TS19UZ-23, SRF133-TS133O2-23, SRF34-TS34CC-23, SRF34-TS34P-23, SRF133-FS133F-23, SRF133-FS133FZ-23
MB for HBN 1857670 [VXX/40025]	VXX40025/VMS22500	SRF215-FS215B-23, SRF127-FS127C-23, SRF14-FS14H-23, SRF215-TS215P-23, SRF127-TS127L-23, SRF215-TS215O-23, SRF215-TS215R-23, SRF127-TS127K-23, SRF133-TS133JJZ-23, SRF14-TS14GR-23, SRF19-TS19HH-23, SRF133-TS133O2-23, SRF14-TS14F-23

MB for HBN 1857735 [VXX/40031]	VXX40031/ VMS22503	SRF127-TS127M-23, SRF133-FS133W-23, SRF34-FS34A-23, SRF34-FS34F-23, SRF34-TS34MM-23, SRF34-TS34OO-23, SRF39-TS39DD-23, SRF14-FS14I-23, SRF133-FS133H-23, SRF34-FS34B-23, SRF34-FS34BZ-23
MB for HBN 1857846 [VXX/40045]	VXX40045/ VMS22510	SRF127-TS127M-23, SRF-TB01, SRF14-TS14GRZ-23:
MB for HBN 1857962 [VXX/40056]	VXX40056/ VMS22519	SRF34-TS34MM-23, SRF14-TS14GRZ-23
MB for HBN 1857988 [VXX/40059]	VXX40059/ VMS22521	SRF14-TS14EE-23, SRF133-TS133JJ-23

8270D SIM LV (PAH)

Method Blank ID	**Prep/Analytical Batch**	**Associated Lab Sample IDs**
MB for HBN 1857547 [XXX/48044]	XXX48044/XMS13689	SRF215-FS215B-23, SRF127-FS127C-23, SRF127-TS127M-23, SRF14-TS14EE-23, SRF14-FS14H-23, SRF14-FS14E-23, SRF215-TS215P-23, SRF127-TS127G-23, SRF127-TS127L-23, SRF133-FS133W-23, SRF133-FS133S-23, SRF215-TS215O-23, SRF215-TS215R-23, SRF133-

		TS133JJZ-23, SRF133-TS133UR-23
MB for HBN 1857597 [XXX/48055]	XXX48055/XMS13704	SRF127-TS127K-23, SRF133-TS133JJ-23, SRF14-TS14GR-23, SRF19-TS19U-23, SRF19-TS19UZ-23, SRF19-TS19HH-23, SRF133-TS133O2-23, SRF34-FS34A-23, SRF34-FS34F-23, SRF34-TS34CC-23, SRF34-TS34MM-23, SRF34-TS34OO-23, SRF34-TS34P-23, SRF39-TS39DD-23, SRF14-FS14I-23, SRF14-TS14F-23, SRF133-FS133F-23, SRF133-FS133FZ-23, SRF133-FS133H-23
MB for HBN 1857623 [XXX/48061]	XXX48061/XMS13734	SRF34-FS34B-23, SRF34-FS34BZ-23, SRF14-TS14GRZ-23

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: No target analytes were detected above the LOQ in the method blanks; however the following analytes were detected:

Analyte	**Method**	**Prep Batch**	**Level Detected At**
1-Methylnaphthalene	8270D SIM LV (PAH)	XXX48061	<LOD
		XXX48055	
2-Methylnaphthalene		XXX48061	<LOD
		XXX48055	>LOD, <LOQ
Fluoranthene		XXX48061	<LOD

Phenanthrene		XXX48061	>LOD, <LOQ
		XXX48055	<LOD
		XXX48044	<LOD

iii. If above LoQ or RL, what samples are affected?
Comments: There were no detections above the LOQ; however the following samples were associated with method blank detections: SRF133-TS133JJ-23, SRF14-FS14I-23, SRF34-FS34A-23, SRF34-FS34B-23, SRF34-FS34BZ-23, SRF34-TS34MM-23, SRF34-TS34OO-23, SRF39-TS39DD-23, SRF133-FS133F-23, SRF19-TS19HH-23, SRF127-FS127C-23, SRF133-FS133W-23, SRF19-TS19U-23, SRF19-TS19UZ-23, SRF215-FS215B-23, and SRF215-TS215P-23.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: The following results that were less than 5 times the amount found in the associated method blank were qualified “B” to indicate the results are estimated biased high:

1-Methylnaphthalene in samples SRF133-TS133JJ-23, SRF14-FS14I-23, SRF34-FS34A-23, SRF34-TS34MM-23, SRF34-TS34OO-23, and SRF39-TS39DD-23;

2-Methylnaphthalene in samples SRF133-FS133F-23, SRF133-TS133JJ-23, SRF14-FS14I-23, SRF19-TS19HH-23, SRF34-TS34MM-23, SRF34-TS34OO-23, and SRF39-TS39DD-23;

Phenanthrene in samples SRF127-FS127C-23, SRF133-FS133W-23, SRF215-FS215B-23, SRF215-TS215P-23, SRF133-TS133JJ-23, SRF19-TS19HH-23, SRF19-TS19U-23, SRF19-TS19UZ-23, SRF34-TS34MM-23, SRF34-TS34OO-23, SRF34-FS34B-23, SRF34-FS34BZ-23, and SRF39-TS39DD-23.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: As blank contamination indicates a potential high bias and all qualified results were below the ADEC Table C groundwater cleanup levels, there was no effect on data quality or usability.

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

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics analyses were included in this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☐ No ☒ N/A ☐
Comments: All LCS/LCSD recoveries met acceptance criteria, with the following exceptions:
8270D SIM LV (PAH) – For batch XXX48044; Benzo[a]anthracene (52.9%) recovered below the lower control limit of 59% in the LCSD. Chrysene recovered below the control limit 57% in the LCSD (54.2%).

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☐ No ☒ N/A ☐
Comments: All LCS/LCSD RPDs met acceptance criteria, with the following exception.
8270D SIM LV (PAH): RPDs for Benzo[a]pyrene and Benzo[k]fluoranthene were greater than the upper control limit (20.9%, 28.1%) for batch XXX48055.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: SW8270D SIM LV (PAH) SRF127-FS127C-23, SRF133-FS133W-23, SRF133-TS133JJZ-23, SRF215-FS215B-23, SRF215-TS215P-23, SRF215-TS215R-23, and SRF14-TS14F-23.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐

Comments: Benzo[a]anthracene and Chrysene results associated with percent recovery failures were qualified J- for potential low bias.

The detected result for Benzo[a]pyrene in sample SRF14-TS14F-23 associated with the RPD failure was qualified J to indicate a potential indeterminate bias. All other associated sample results were ND and qualification was not required.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Qualified results were significantly below the ADEC Table C cleanup level, and data usability was unaffected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Two MS/MSDs were submitted as part of this SDG: SRF133-TS133JJ-23 and SRF14-TS14EE-23.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics samples were submitted on this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☒ N/A ☐
Comments: SW8260D: 1,2,4-Trimethylbenzene (76.6%), Ethylbenzene (74.7%), m,p-Xylenes (75.1%), n-Butylbenzene (69.0%), o-Xylene (74%), tert-Butylbenzene (77.4%), Toluene (69.4%), and total Xylenes (74.8%) recoveries in the MSD were below the LCL for sample SRF133-TS133JJ-23.

1,2,4-Trimethylbenzene (58.2%, 53.6%), 1,3,5-Trimethylbenzene (57.2%, 54.5%), Benzene (63.9%, 60.1%), Cumene (58.7%, 55.4%), Ethylbenzene (58.9%, 55.2%), m,p-Xylenes (57.7%, 55.2%), Naphthalene (58.3%, 60.3%), o-Xylene (57.5%, 54.7%), and total Xylenes (57.6%, 55.0%) recoveries in MS/MSD were below the LCL in sample SRF14-TS14EE-23.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if

applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☒ N/A ☐
Comments: SW8260D: 1,2,4-Trimethylbenzene (20.4%), n-Butylbenzene (20.4%), and sec-Butylbenzene (20.2%) MS/MSD RPDs exceeded the criterion in SRF133-TS133JJ-23. Parent sample results were ND for these analytes and qualification was not required.

8270D SIM LV (PAH): Benzo[a]pyrene (21.9%), Benzo[b]fluoranthene (23.9%), and Benzo[k]fluoranthene (21.4%) MS/MSD RPDs exceeded the criterion in SRF133-TS133JJ-23. Parent sample results were ND for these analytes and qualification was not required.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: SRF133-TS133JJ-23, SRF14-TS14EE-23.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: SW8260: 1,2,4-Trimethylbenzene, Ethylbenzene, m,p-Xylenes, n-Butylbenzene, o-Xylene, tert-butylbenzene, Toluene, and total Xylenes results were flagged J- in sample SRF133-TS133JJ-23 and its field duplicate, SRF133-TS133JJZ-23, indicate a potential low bias.

1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Benzene, Cumene, Ethylbenzene, m,p-Xylenes, Naphthalene, o-Xylene, and total Xylenes non-detect results were flagged J- in sample SRF14-TS14EE-23 indicate a potential bias low.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Qualified results were significantly below the ADEC Table C cleanup level, and data usability was not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK

Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☒ N/A ☐
Comments: SW8260D: 1,2-Dichloroethane-D4 recoveries were below the LCL (81%) in sample SRF133-TS133O2-23.

8270D SIM LV (PAH): 2-Methylnaphthalene-d10 recoveries were below the LCL (38%) in samples SRF127-TS127L-23, SRF133-FS133H-23, SRF14-FS14E-23, SRF14-FS14H-23, SRF19-TS19UZ-23.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: SW8260D: The detected result for Benzene associated with the failed surrogate in sample SRF133-TS133O2-23 was flagged J- to indicate a low potential bias.

8270D SIM LV (PAH): Detected results for 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene for sample SRF14-FS14H-23 were flagged J- to indicate a potential low bias.

Results for 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Fluorene, Naphthalene, and Phenanthrene which were associated with the failed surrogate were flagged J- for potential low bias in sample SRF19-TS19UZ-23.

Detect results for 1-Methylnaphthalene, 2-Methylnaphthalene, and Naphthalene for sample SRF133-FS133H-23 that were associated with the failed surrogate were flagged J- to indicate a potential low bias.

Surrogates outside QC limits with a dilution factor of 5 or greater were not qualified.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Qualified results were significantly below the ADEC Table C cleanup level, and data usability was not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Are all results less than LoQ or RL?

Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iii. If above LoQ or RL, what samples are affected?
Comments: Click or tap here to enter text.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: All QC criteria were met.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments: Five duplicate samples were submitted with 32 primary samples as part of this SDG:
SRF133-FS133F-23/SRF133-FS133FZ-23
SRF133-TS133JJ-23/SRF133-TS133JJZ-23
SRF14-TS14GR-23/ SRF14-TS14GRZ-23
SRF19-TS19U-23/ SRF19-TS19UZ-23
SRF34-FS34B-23/ SRF34-FS34BZ-23

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

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

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐
Comments: The primary duplicate RPD was not calculated under the following conditions. If one sample was non-detect and the other is less than the LOQ or if both samples have detections less than the LOQ. When the RPD between duplicate results exceeded 30% and/or the duplicate precision did not meet criteria, both results in the pair were qualified as estimated, “J”, bias indeterminate.

The following analytes exceeded the 30% RPD limit in sample duplicate pair SRF133-FS133F-23/SRF133-FS133FZ-23:
SW8270D SIM: 1-Methylnaphthalene (38%), 2-Methylnaphthalene (39%)

Duplicate results for the following analytes were detected at concentrations above the LOQ in one sample and not detected in the other sample in duplicate pair SRF34-FS34B-23/SRF34-FS34BZ-23:
SW8270D SIM: Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenzo[a,h]anthracene, Indeno[1,2,3-cd]pyrene

Duplicate results for the following analytes were detected at concentrations above the LOQ in one sample and not detected or below the LOD in the other sample in duplicate pair SRF133-TS133JJ-23/SRF133-TS133JJZ-23:
SW8270D SIM: 1-Methylnaphthalene, 2-Methylnaphthalene, Fluorene

The RPD for results for SW8260D analyte 1,3,5-trimethylbenzene (32.8%) exceeded the RPD limit of 30% in duplicate pair SRF14-TS14GR-23/SRF14-TS14GRZ-23.

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: Qualified results were either significantly below or above the ADEC Table C cleanup levels, and data usability was unaffected.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☒ N/A ☐
Comments: Equipment blanks were not required for this project. Per the work plan, cross-contamination was mitigated by decontaminating reusable sampling equipment between wells in accordance with SOP-14.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: Equipment blanks were not required for this project.

iii. If above LoQ or RL, specify what samples are affected.
Comments: Click or tap here to enter text.

iv. Are data quality or usability affected?
Yes ☐ No ☒ N/A ☐

Comments: Data quality and usability are not affected. Non-disposable equipment was decontaminated in between wells in accordance with standard operating procedures.

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

a. Are they defined and appropriate?

Yes ☒ No ☐ N/A ☐

Comments: All applied qualifiers are defined above.

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Jordan M. Couture	**CS Site Name:**	SRF TS 1-9	**Lab Name:**	SGS Anchorage
Title:	Chemist	**ADEC File No.:**	2334.38.019	**Lab Report No.:**	1232892
Consulting Firm:	Aleut Remediation	**Hazard ID No.:**	448	**Lab Report Date:**	11/15/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: Samples were sent to SGS North America of Anchorage, AK.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: No samples were transferred to another laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: SW8260D and SW8270D-SIM PAH
   Comments: Click or tap here to enter text.

3. **Laboratory Sample Receipt Documentation**

   a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
   Yes ☐ No ☒ N/A ☐
   Cooler temperature(s):
   Sample temperature(s): Fiji 6.0°C, Guatemala 6.3°C.

Comments: Click or tap here to enter text.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: All samples arrived intact.

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, canister not holding a vacuum, etc.?
Yes ☐ No ☒ N/A ☐
Comments: SGS recorded the temperature of cooler Guatemala as exceeding the temperature threshold but noted all temperatures meeting QC requirements on the sample receipt form, and there was no note in the case narrative. SGS was contacted about the discrepancy and responded, "More likely someone new was taking care of it and didn't understand the difference between the two (temperature blank temperature and cooler temperature)."

e. Is the data quality or usability affected?
Yes ☒ No ☐ N/A ☐
Comments: SW8270D SIM PAH results for samples SRF19-TS19C-23, SRF19-TS19D-23, SRF39-FS39B-23, SRF39-FS39E-23, SRF39-FS39G-23, SRF39-TS39AA-23, SRF39-TS39BB-23, SRF39-TS39U-23, and SRF39-TS39V-23 were flagged J- to indicate a potential low bias due to elevated sample temperature. Data quality and usability were minimally affected. All qualified results were either significantly above or below ADEC cleanup levels.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments: Batch QC issues identified in the case narrative are discussed in the relevant sections of this checklist.

c. Were all the corrective actions documented?
Yes ☐ No ☐ N/A ☒
Comments: No corrective actions were required.

d. What is the effect on data quality/usability according to the case narrative?
Comments: No systemic effects on data quality were noted in the case narrative. Additional effects on data quality and usability are discussed in the relevant sections of this checklist.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: No soil samples were submitted on this SDG

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments: The LOD for all non-detect results and estimated detections below the LOQ are below the ADEC Table C groundwater cleanup levels.

e. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: The data quality or usability is not affected.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text. SW8260D

Method Blank ID	Prep/Analytical Batch	Associated Sample IDs
MB for HBN 1857838 [VXX/40043]	VXX40043/VMS22517	SRF19-FS19D-23, SRF19-FS19M-23, SRF19-FS19N-23, SRF19-FS19NZ-23, SRF19-TS19A-23, SRF19-TS19B-23,

		SRF19-TS19C-23, SRF19-TS19D-23
MB for HBN 1857846 [VXX/40045]	VXX40045/VMS22510	SRF19-FS39B-23, SRF19-FS39E-23, SRF19-FS39G-23, SRF19-TS39AA-23, SRF19-TS39BB-23
MB for HBN 1857962 [VXX/40056]	VXX40056/VMS22519	SRF19-TS19A-23, SRF19-TS19B-23, SRF19-TS19C-23
MB for HBN 1857988 [VXX/40059]	VXX40059/VMS22521	SRF19-FS19I-23, SRF19-FS39G-23, SRF19-TS39AA-23
MB for HBN 1858006 [VXX/40063]	VXX40063/VMS22524	SRF19-TS19D-23, SRF19-TS39U-23, SRF19-TS39V-23
MB for HBN 1858279 [VXX/40082]	VXX40082/VMS22537	SRF19-FS39B-23

SW8270D-SIM
One method blank, MB for HBN 1857633 [XXX/48064], was analyzed for this SDG.

ii. Are all method blank results less than LOQ (or RL)?

Yes ☒ No ☐

Comments: SW8270D-SIM: No target analytes were detected above the LOQ in the method blanks; however, 1-Methylnaphthalene, 2-Methylnaphthalene, Fluoranthene, and Phenanthrene were detected in MB for HBN 1857633 [XXX/48064].

iii. If above LoQ or RL, what samples are affected?

Comments: There were no detections above the LOQ; however, the following samples were associated with method blank detection: SRF19-FS19D-23, SRF19-FS19M-23, SRF19-FS19I-23, SRF19-TS19D-23, SRF39-TS39AA-23, SRF39-TS39BB-23, SRF39-FS39B-23, SRF39-FS39E-23, SRF39-FS39G-23.

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

Yes ☒ No ☐ N/A ☐

Comments: The following results were less than 5 times the amount found in the associated method blank and were qualified as estimated, "J, B", for potential high bias:

1-Methylnaphthalene in samples SRF19-FS19I-23, SRF19-FS19M-23, SRF39-TS39AA-23, and SRF39-TS39BB-23;

2-Methylnaphthalene in samples SRF19-FS19I-23, SRF19-FS19M-23, SRF19-TS19D-23, SRF39-FS39B-23, SRF39-FS39G-23, SRF39-TS39AA-23;

Fluoranthene in sample SRF39-FS39E-23; and

Phenanthrene in samples SRF19-FS19D-23, SRF19-FS19I-23, SRF19-FS19M-23, and SRF39-FS39E-23.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: As blank contamination indicates a potential high bias and all qualified results were below the ADEC Table C groundwater cleanup levels, there was no effect on data quality or usability.

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

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No Metals/Inorganics were submitted as part of this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: Click or tap here to enter text.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: All QC criteria were met.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability was not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: One MS/MSD (SRF19-FS19I-23) was submitted for 19 primary samples on this SDG.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics samples were submitted on this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☒ N/A ☐
Comments: SW8260D: The table below shows the MS/MSD recoveries that failed to meet the criterion.

Sample_ID	Analyte	% Recovery	LCL
SRF19-FS19I-23(1232892002BMS)	1,2,4-Trimethylbenzene	73.7	79
	1,3,5-Trimethylbenzene	73.7	75
	Cumene	74.2	72
	Ethylbenzene	75.1	79
	m,p-Xylenes	74.9	80
	n-Butylbenzene	66.7	75
	o-Xylene	73.7	78
	sec-Butylbenzene	73.2	77
	tert-Butylbenzene	72.3	78
	Toluene	69.7	80
	Xylenes	74.5	79

Sample_ID	Analyte	% Recovery	LCL
SRF19-FS19I-23(1232892002BMSD)	1,2,4-Trimethylbenzene	68.9	79
	1,3,5-Trimethylbenzene	69.1	75
	Benzene	75.1	79
	Cumene	70.3	72
	Ethylbenzene	70	79
	m,p-Xylenes	69.5	80
	n-Butylbenzene	62.7	75
	o-Xylene	68.2	78
	sec-Butylbenzene	70.4	77
	tert-Butylbenzene	69.1	78
	Toluene	64.6	80
	Xylenes	69.1	79

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes ☐ No ☒ N/A ☐

Comments: 8270D SIM (PAH): Benzo[g,h,i]perylene (20.9%) and Dibenzo[a,h]anthracene (21.3%) results exceeded the UCL (20%) for the MS/MSD RPD. Parent sample results for these analytes were ND and qualification was not required.

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

Comments: SRF19-FS19I-23

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

Yes ☒ No ☐ N/A ☐

Comments: SW8260D: Results for analytes 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Benzene, Cumene, Ethylbenzene, m,p-Xylenes, n-Butylbenzene, o-Xylene, sec-Butylbenzene, tert-Butylbenzene, Toluene, and total Xylenes in parent sample SRF19-FS19I-23 were flagged J- to indicate a potential bias low due to MS and/or MSD recoveries below the lower control limits.

SW8270D-SIM (PAH): All results associated with RPD exceedances were non-detect for the target analyte; therefore, no data flags are required.

vii. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐

Comments: Qualified results were significantly below the ADEC Table C cleanup level, and data usability was unaffected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: All surrogate recoveries were within the QC criterion.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability is not affected as all surrogate recoveries are within the criterion.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☒ No ☐ N/A ☐
Comments: One trip blank SRF-TB02 was submitted for this SDG.

ii. Are all results less than LoQ or RL?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iii. If above LoQ or RL, what samples are affected?
Comments: Click or tap here to enter text.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability is unaffected.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments: One parent/duplicate (SRF19-FS19N-23/SRF19-FS19NZ-23) was submitted as part of this SDG. Overall, the requirement for one field duplicate submitted per matrix, analysis, and 10 project samples was met.

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

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

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes ☒ No ☐ N/A ☐
Comments: The primary duplicate RPD was not calculated under the following conditions. If one sample was non-detect and the other is less than the LOQ or if both samples have detections less than the LOQ. All calculated RPDs were less than 30%.

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: There was no effect on data quality or usability.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☒ N/A ☐
Comments: Equipment blanks were not required for this project. Per the work plan, reusable sampling equipment was decontaminated between wells in accordance with SOP-14.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: Equipment blanks were not required for this project.

iii. If above LoQ or RL, specify what samples are affected.
Comments: Click or tap here to enter text.

iv. Are data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality and usability are not affected. Non-disposable equipment was decontaminated in between wells in accordance with standard operating procedures.

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

a. Are they defined and appropriate?
Yes ☒ No ☐ N/A ☐
Comments: All applied qualifiers are defined above.

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Jordan M. Couture	**CS Site Name:**	SRF TS 1-4	**Lab Name:**	SGS
Title:	Chemist	**ADEC File No.:**	2334.38.018	**Lab Report No.:**	1232967
Consulting Firm:	Aleut Remediation	**Hazard ID No.:**	441	**Lab Report Date:**	8/8/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: Samples were sent to SGS North America of Anchorage, AK.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☒ N/A ☐
   Comments: Ethylene Glycol 8015M was analyzed by Bio-Chem of Grand Rapids, MI. BIO-CHEM is not an ADEC-approved laboratory.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: SW8260D-SIM, SW8015M Glycols
   Comments: Click or tap here to enter text.

3. **Laboratory Sample Receipt Documentation**

   a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
   Yes ☒ No ☐ N/A ☐
   Cooler temperature(s): Click or tap here to enter text.

Sample temperature(s): Receipt in Anchorage: Honduras 3.5° C
Receipt at BIO-CHEM: 3.9°C
Comments: Click or tap here to enter text.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: All samples arrived compliant with QC criteria.

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, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: All samples arrived compliant with QC criteria.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: All samples arrived compliant with QC criteria; therefore, data quality or usability are unaffected.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments: Batch QC issues identified in the case narrative are discussed in the relevant sections of this checklist.

c. Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

d. What is the effect on data quality/usability according to the case narrative?
Comments: No systemic effects on data quality were noted in the case narrative. Additional effects on data quality and usability are discussed in the relevant sections of this checklist.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments: The case narrative notes that 1,4-dioxane results were rerun outside of the hold time in order to confirm the results. The reanalyses confirmed the original results, and the in-hold results were reported.

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: No soil samples were reported as part of this SDG.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: The data quality or usability is unaffected. Only in-hold results are reported.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: No analytes were detected in the method blanks.

iii. If above LoQ or RL, what samples are affected?
Comments: Click or tap here to enter text.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: All results were compliant with the QC criteria.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: All results were compliant with the QC criteria. Therefore, data quality or usability is unaffected.

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

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics were run as part of this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☐ No ☒ N/A ☐
Comments: SW8260D-SIM: For batch VMS22573, 1,4-dioxane (198%) recovered above the upper control limit (139%) in the LCSD.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☐ No ☒ N/A ☐
Comments: SW8260D-SIM: For batch VMS22573, 1,4-dioxane (57.1%) LCS/LCSD RPD exceeded the criterion (20%).

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: SRF14-SW1-23 and SRF14-SW1Z-23

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: SW8260D-SIM: Detected results for 1,4-dioxane in samples SRF14-SW1-23 and SRF14-SW1Z-23 were associated with high LCSD recoveries (potential high bias) and LCS/LCSD RPD exceedance (indeterminate bias). Both sample results were qualified as estimated, “J”, for the more conservative indeterminate bias.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Qualified results were below the ADEC Table C cleanup level. Data usability was unaffected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics were run as part of this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☒ N/A ☐
Comments: SW8260D-SIM: For batch VMS22573, 1,4-dioxane (235%) recovered above the upper control limit (139%) in the MSD.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☒ N/A ☐
Comments: For batch VMS22573, 1,4-dioxane (64%) MS/MSD RPD exceeded the criterion (20%).

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: SRF14-SW1-23 and its duplicate, SRF14-SW1Z-23

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Detected results for 1,4-dioxane in samples SRF14-SW1-23 and SRF14-SW1Z-23 were associated with high MSD recovery (potential high bias) and MS/MSD RPD exceedance (indeterminate bias). Both of these results were also affected by LCS/LCSD recovery and RPD exceedances. Both sample results were qualified as estimated, “J”, for the more conservative indeterminate bias.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐

Comments: Qualified results were below the ADEC Table C cleanup level, and data usability was unaffected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☒ N/A ☐
Comments: SW8260D-SIM: Recoveries of 4-Bromofluorobenzene exceeded the criterion (114%) in the method blank (122%) and LCSD (117%) for prep batch VXX40126.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Surrogate recovery failures are associated with QC samples. Samples and trip blank surrogate recoveries met acceptance criteria, and data flagging is not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability was unaffected as all surrogate recoveries in project samples meet the QC criterion.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Are all results less than LoQ or RL?
Yes ☒ No ☐ N/A ☐
Comments: All results are non-detect.

iii. If above LoQ or RL, what samples are affected?
Comments: Click or tap here to enter text.

iv. Is the data quality or usability affected?

Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability was not affected.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments: One primary duplicate pair SRF14-SW1-23/SRF14-SW1Z-23 was submitted for one parent sample for this SDG.

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

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

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: Data quality or usability was unaffected as calculated primary/duplicate RPDs meet QC criteria.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☒ N/A ☐
Comments: Equipment blanks were not required for this project. Per the work plan, reusable sampling equipment was decontaminated between wells in accordance with SOP-14.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: Equipment blanks were not required for this project.

iii. If above LoQ or RL, specify what samples are affected.
Comments: Click or tap here to enter text.

iv. Are data quality or usability affected?
Yes ☒ No ☐ N/A ☐
Comments: Data quality and usability are not affected. Reusable sampling equipment was decontaminated in between wells in accordance with standard operating procedures.

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

a. Are they defined and appropriate?
Yes ☒ No ☐ N/A ☐
Comments: All applied qualifiers are defined above.

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Kelly Carson	**CS Site Name:**	Swanson River Pad 23B-3	**Lab Name:**	SGS North America, Inc. (SGS)
Title:	Chemist	**ADEC File No.:**	2334.38.058	**Lab Report No.:**	1232975
Consulting Firm:	Aleut Remediation	**Hazard ID No.:**	26526	**Lab Report Date:**	7/28/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: All samples were analyzed by SGS North America, Inc. (SGS) in Anchorage, AK.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: AK102/AK103, SW8260D, SW8270D SIM
   Comments: Click or tap here to enter text.

3. **Laboratory Sample Receipt Documentation**

   a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
   Yes ☒ No ☐ N/A ☐
   Cooler temperature(s): Cooler "Honduras" temperature blank = 3.5°C

Sample temperature(s): Click or tap here to enter text.
Comments: Click or tap here to enter text.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: All samples were received properly preserved.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: All samples were received intact.

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, canister not holding a vacuum, etc.?
Yes ☒ No ☐ N/A ☐
Comments: No discrepancies were identified on the cooler receipt form. However, it was noted that the trip blank submitted with the samples in this SDG is shared with the SDG 1232977 for Swanson River site SCU 312-09. The results for this trip blank are reported in SDG 1232977.

e. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments: QC failures identified in the case narrative are discussed in the relevant sections of this checklist.

c. Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

d. What is the effect on data quality/usability according to the case narrative?
Comments: Effects on data quality/usability are discussed in relevant sections of this checklist.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments: Several samples were re-extracted outside of holding time in the AK102 and SW8270D SIM analyses due to QC failures in the original analysis. The case narrative indicates that the re-extracted and reanalyzed results confirmed the in-hold results. In all cases, only the in-hold results were reported and available for review. Results in samples affected by QC failures are discussed in the relevant sections of this checklist.

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: No soil samples were submitted or analyzed in this SDG.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

e. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: No analytes were detected above the LOQ in the method blanks; however, several analytes were detected at concentrations greater than or equal to the DL and below the LOQ.

iii. If above LoQ or RL, what samples are affected?
Comments:
SW8270D SIM – 1-Methylnaphthalene, 2-methylnaphthalene,

fluoranthene, phenanthrene, and pyrene were detected in the method blank for batch XXX48086 at concentrations below the LOQ. As this indicates a potential high bias, associated sample results that were non-detect were not qualified. Detected results for 1-methylnaphthalene and 2-methylnaphthalene in samples 23B3-MW01-23, 23B3-MW02-23, and 23B3-MW03-23 were less than 5 times the amount found in the method blank and qualified as estimated, "B", for potential high bias. Qualified results were significantly below the cleanup levels and data usability was not affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. Data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Affected results were qualified for potential high bias and below the ADEC Table C groundwater cleanup levels. Data usability was not affected.

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

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics analyses were included in this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☐ No ☒ N/A ☐
Comments: All LCS and/or LCSD recoveries met acceptance criteria, except as noted below.
AK102 – DRO recovered below the lower control limit of 75% in the LCS/LCSD (73.9%/69.9%) for batch XXX48108. The case narrative indicates that the associated samples were re-extracted and reanalyzed outside of holding time, and the results confirmed. Only the in-hold results were reported and available for review. DRO results in the following

samples were qualified as estimated, "J-", for potential low bias: 23B3-MW01-23, 23B3-MW01Z-23, 23B3-MW02-23, and 23B3-MW03-23. Qualified results for samples 23B3-MW02-23 and 23B3-MW03-23 were detected below the LOQ; the more conservative "J" flag for indeterminate bias was applied for these results.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: 23B3-MW01-23, 23B3-MW01Z-23, 23B3-MW02-23, and 23B3-MW03-23

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Qualified results either exceeded the ADEC Table C groundwater cleanup level or were significantly below the cleanup level. Data usability was not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No MS/MSD samples were submitted or analyzed for this SDG.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics analyses were included in this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: No MS/MSD samples were analyzed in this SDG.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: No MS/MSD samples were analyzed in this SDG.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: No samples were affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Click or tap here to enter text.

vii. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☒ N/A ☐
Comments: All surrogate recoveries met acceptance criteria, except as noted below.
SW8260D – Surrogate 1,2-dichloroethane-d4 recovered above the upper control limit of 118% at 120% in the method blank for batch VXX40078. No analytes were detected in the method blank and all associated samples had acceptable surrogate recoveries. Qualification was not required.
SW8270D SIM – Surrogate 2-methynaphthalene-d10 recovered below the lower control limit of 38% in samples 23B3-MW01-23 (13.5%) and 23B3-MW01Z-23 (26.7%). The case narrative indicates that these samples were re-extracted and reanalyzed outside of holding time, and the results confirmed the in-hold analysis. Only the in-hold results were reported and available for review. Results in these samples for analytes associated with this surrogate (1-methylnaphthalene, 2-

methylnaphthalene, acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene) were qualified as estimated, "J-", for potential low bias. For detected results that were qualified due to as estimated below the LOQ, the more conservative "J" flag for indeterminate bias was retained.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☐
Comments: Qualified results were significantly below the ADEC Table C groundwater cleanup levels. Data usability was not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☒ No ☐ N/A ☐
Comments: Trip blank TB-03 was submitted in the same cooler as the samples for site SCU 312-09, which were reported in SDG 1232977.

ii. Are all results less than LoQ or RL?
Yes ☒ No ☐ N/A ☐
Comments: No analytes were detected in TB-03.

iii. If above LoQ or RL, what samples are affected?
Comments: No samples were affected.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments: One field duplicate was submitted and analyzed for 3 primary groundwater samples.

ii. Was the duplicate submitted blind to lab?
Yes ☒ No ☐ N/A ☐
Comments: Duplicate pair: 23B3-MW01-23/23B3-MW01Z-23

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

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes ☐ No ☒ N/A ☐
Comments: Duplicate pair 23B3-MW01-23/23B3-MW01Z-23 was analyzed by methods AK102/AK103, SW8260D (petroleum-related VOCs), and SW8270D SIM (PAHs). Out of 36 pairs of duplicate results, both results were non-detect or below the LOD in 18 pairs. One result for dibenz(a,h)anthracene was non-detect and one result was detected above the LOQ; both results in this pair were qualified as estimated, "J". The RPD was calculated for the remaining 17 pairs of results with at least one result greater than the LOD, and 16 calculated RPDs were below the QC limit of 30% for waters. The calculated RPD for RRO (61.5%) exceeded the QC limit of 30% and both results in the pair were qualified as estimated, "J".

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☒ N/A ☐
Comments: Qualified results were below the ADEC Table C groundwater cleanup levels and data usability was not affected.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Equipment blanks were not required for this project.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: Not applicable.

iii. If above LoQ or RL, specify what samples are affected.
Comments: Not applicable.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

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

a. Are they defined and appropriate?

Yes ☒ No ☐ N/A ☐

Comments: There were no additional qualifiers used. Validation qualifiers are defined in the accompanying Data Quality Report (Appendix E).

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ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Nathaniel Gingery	**CS Site Name:**	SRF TS 3-9	**Lab Name:**	SGS Anchorage
Title:	Chemist	**ADEC File No.:**	2334.38.024	**Lab Report No.:**	1232976r1
Consulting Firm:	ARS Aleut Remediation	**Hazard ID No.:**	446	**Lab Report Date:**	10/03/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: All samples were analyzed by SGS North America, Inc. in Anchorage, AK.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: SW8260D, SW8270D SIM
   Comments: Custom analyte lists

3. **Laboratory Sample Receipt Documentation**

   a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
   Yes ☒ No ☐ N/A ☐
   Cooler temperature(s): Click or tap here to enter text.

Sample temperature(s): Cooler temp:
Honduras: 3.5°C,
Indonesia: 1.4°C
Comments: Click or tap here to enter text.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: Samples SRF39-TS39T-23 and SRF-TB03 had two out of three vials with headspace exceeding 6mm. The lab was able to use the remaining vial without headspace for analysis, therefore there was no effect on data quality and usability.

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, canister not holding a vacuum, etc.?
Yes ☐ No ☐ N/A ☒
Comments: No additional discrepancies were identified in the cooler receipt information.

e. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: There was no effect on data quality or usability.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☐ No ☒ N/A ☐
Comments: No issues were noted in the case narrative.

c. Were all the corrective actions documented?
Yes ☐ No ☐ N/A ☒
Comments: No issues were noted in the case narrative.

d. What is the effect on data quality/usability according to the case narrative?
Comments: The data quality and usability were unaffected.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments: This report was revised to report the correct requested analyte list for each sample.

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: Soil samples were not included in this SDG.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments: The LOD for all ND results, and LOQ for estimated detections below the LOQ, are below the ADEC Table C groundwater cleanup levels.

e. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Data quality and usability were not affected.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☒ N/A ☐
Comments: Click or tap here to enter text.

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: No target analytes were detected above the LOQ in the method blanks; however, the following analytes were detected in the method blank for SW8270D SIM prep batch XXX48086 at concentrations greater than or equal to the DL and below the LOQ:
1-Methylnaphthalene at 0.019 ug/L
2-Methynaphthalene at 0.023 ug/L
Fluoranthene at 0.023 ug/L
Phenanthrene at 0.041 ug/L
Pyrene at 0.016 ug/L

Qualification was not required for associated sample results that were non-detect or more than 5x the method blank detection.

iii. If above LoQ or RL, what samples are affected?
Comments: The following sample was reported with analytes less than 5x the method blank detection and was qualified “B” to indicate an estimated value with a potential high bias:
SRF39-TS39F-23 – fluoranthene and pyrene

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. Data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality and usability were not affected. All qualified results were significantly below the ADEC Table C groundwater cleanup levels.

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

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Inorganic analyses were not included in this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments: All LCS/LCSD recoveries were within control criteria.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐

Comments: All LCS/LCSD RPDs were within control criteria.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Qualification was not necessary.

vii. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Data quality and usability were not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☒ N/A ☐
Comments: Extra volume was not provided for an MS/MSD with this SDG.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: Inorganic analyses were not included in this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?
Yes ☐ No ☐ N/A ☒
Comments: The laboratory did not analyze an MS/MSD with the samples in this SDG. Matrix effects on analyte recovery cannot be determined.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☐ No ☐ N/A ☒
Comments: The laboratory did not analyze an MS/MSD with the samples in this SDG. Matrix effects on analyte recovery cannot be determined.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: N/A

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

Yes ☐ No ☐ N/A ☒
Comments: N/A

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Data quality and usability were not affected. Matrix effects on analyte recovery cannot be determined, but LCS/LCSD recovery and RPD were within control limits indicating method performance met requirements.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☒ No ☐ N/A ☐
Comments: All surrogate recoveries were within control limits.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐ N/A ☒
Comments: Qualification was not required.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Data quality and usability were not affected.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☒ No ☐ N/A ☐
Comments: SRF-TB03 was submitted in the cooler containing all other volatile containers.

ii. Are all results less than LoQ or RL?
Yes ☒ No ☐ N/A ☐
Comments: No target analytes were detected in SRF-TB03.

iii. If above LoQ or RL, what samples are affected?

Comments: N/A

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Data quality and usability were not affected.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☒ No ☐ N/A ☐
Comments: No duplicate samples were included with the three primary samples included in this SDG, however, the project-required frequency of one field duplicate for every 10 or fewer project samples was met.

ii. Was the duplicate submitted blind to lab?
Yes ☐ No ☐ N/A ☒
Comments: No field duplicates were included with this SDG.

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

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes ☐ No ☐ N/A ☒
Comments: N/A

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☐ N/A ☒
Comments: Data quality and usability were not affected.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☒ N/A ☐
Comments: Equipment blanks were not required to be collected for this project.

ii. Are all results less than LoQ or RL?

Yes ☐ No ☐ N/A ☒
Comments: Equipment blanks were not collected.

iii. If above LoQ or RL, specify what samples are affected.
Comments: N/A.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Data quality and usability were not affected.

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

a. Are they defined and appropriate?
Yes ☒ No ☐ N/A ☐
Comments: All qualifiers used in this SDG are defined above and in the accompanying Data Quality Report (Appendix E).

ADEC Contaminated Sites Program Laboratory Data Review Checklist

Completed By:	Kelly Carson	**CS Site Name:**	Swanson River SCU Well 312-09	**Lab Name:**	SGS North America, Inc. (SGS)
Title:	Chemist	**ADEC File No.:**	2334.38.062	**Lab Report No.:**	1232977
Consulting Firm:	Aleut Remediation	**Hazard ID No.:**	27210	**Lab Report Date:**	10/3/2023

Note: *Any N/A or No box checked must have an explanation in the comments box.*

1. **Laboratory**

   a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?
   Yes ☐ No ☐ N/A ☒
   Comments: All samples were analyzed by SGS North America, Inc. (SGS) in Anchorage, AK.

2. **Chain of Custody (CoC)**

   a. Is the CoC information completed, signed, and dated (including released/received by)?
   Yes ☒ No ☐ N/A ☐
   Comments: Click or tap here to enter text.

   b. Were the correct analyses requested?
   Yes ☒ No ☐ N/A ☐
   Analyses requested: AK102/AK103, SW8260D, SW8270D SIM
   Comments: Click or tap here to enter text.

3. **Laboratory Sample Receipt Documentation**

   a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?
   Yes ☒ No ☐ N/A ☐

Cooler temperature(s): Cooler “Honduras” temperature blank = 3.5°C, Cooler “Indonesia” temperature blank = 1.4°C
Sample temperature(s): Click or tap here to enter text.
Comments: Click or tap here to enter text.

b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?
Yes ☒ No ☐ N/A ☐
Comments: All samples were received properly preserved.

c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?
Yes ☒ No ☐ N/A ☐
Comments: All samples were received intact.

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, canister not holding a vacuum, etc.?
Yes ☒ No ☐ N/A ☐
Comments: No discrepancies were identified on the cooler receipt form. It was noted that the trip blank submitted in this SDG is shared with the samples in SDG 1232977 for Swanson River site SCU 23B-03.

e. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

4. Case Narrative

a. Is the case narrative present and understandable?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are there discrepancies, errors, or QC failures identified by the lab?
Yes ☒ No ☐ N/A ☐
Comments: QC failures identified in the case narrative are discussed in the relevant sections of this checklist.

c. Were all the corrective actions documented?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

d. What is the effect on data quality/usability according to the case narrative?
Comments: Effects on data quality/usability are discussed in relevant sections of this checklist.

5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

b. Are all applicable holding times met?
Yes ☒ No ☐ N/A ☐
Comments: Several samples were re-extracted outside of holding time in the AK102 and SW8270D SIM analyses due to QC failures in the original analysis. The case narrative indicates that the re-extracted and reanalyzed results confirmed the in-hold results. In all cases, only the in-hold results were reported and available for review. Results in samples affected by QC failures are discussed in the relevant sections of this checklist.

c. Are all soils reported on a dry weight basis?
Yes ☐ No ☐ N/A ☒
Comments: No soil samples were submitted or analyzed in this SDG.

d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

e. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

6. QC Samples

a. Method Blank

i. Was one method blank reported per matrix, analysis, and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Are all method blank results less than LOQ (or RL)?
Yes ☒ No ☐
Comments: No analytes were detected above the LOQ in the method blanks; however, several analytes were detected at concentrations greater than or equal to the DL and below the LOQ in the SW8270D SIM analysis.

iii. If above LoQ or RL, what samples are affected?

Comments:
SW8270D SIM – 1-Methylnaphthalene, 2-methylnaphthalene, fluoranthene, phenanthrene, and pyrene were detected in the method blank for batch XXX48086 at concentrations below the LOQ. As this indicates a potential high bias, associated sample results that were non-detect were not qualified. The following detected results were less than 5 times the amount found in the method blank and qualified as estimated, "B", for potential high bias: 1-methylnaphthalene and 2-methylnaphthalene in samples 31209-MW01-23, 31209-MW02-23, and 31209-MW03-23; fluoranthene in sample 31209-MW03-23; and phenanthrene in samples 31209-MW02-23, and 31209-MW03-23. Qualified results were significantly below the cleanup levels and data usability was not affected.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. Data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: Affected results were qualified for potential high bias and below the ADEC Table C groundwater cleanup levels. Data usability was not affected.

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

i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics analyses were included in this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes ☐ No ☒ N/A ☐
Comments: All LCS and/or LCSD recoveries met acceptance criteria, except as noted below.
AK102 – DRO recovered below the lower control limit of 75% in the

LCS/LCSD (73.9%/69.9%) for batch XXX48108. The case narrative indicates that the associated samples were re-extracted and reanalyzed outside of holding time, and the results confirmed. Only the in-hold results were reported and available for review. DRO results in the following samples were non-detect and were qualified as estimated, “J-”, for potential low bias: 31209-MW01-23, 31209-MW02-23, and 31209-MW03-23. Qualified results were non-detect with LODs significantly below the ADEC Table C groundwater cleanup level and data usability was not affected.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: 31209-MW01-23, 31209-MW02-23, and 31209-MW03-23

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

vii. Is the data quality or usability affected?
Yes ☐ No ☒ N/A ☐
Comments: Qualified results were non-detect with LODs significantly below the cleanup level. Data usability was not affected.

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☒ No ☐ N/A ☐
Comments: One sample was submitted for MS/MSD for all requested methods.

ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?
Yes ☐ No ☐ N/A ☒
Comments: No metals/inorganics analyses were included in this SDG.

iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes ☐ No ☒ N/A ☐
Comments: All MS/MSD recoveries met acceptance criteria, except as noted below.
AK102 – DRO recovered below the lower control limit of 75% at 67.7% in the MSD prepared and analyzed from sample 31209-MW03-23 in batch XXX48108. The non-detect result for DRO in the parent sample was qualified as estimated, "J-", for potential low bias. The LOD for the qualified non-detect result was significantly below the ADEC Table C cleanup level and data usability was not affected.
SW8270D SIM – The following analytes recovered below the lower control limits in the MS/MSD prepared and analyzed from sample 31209-MW03-23 in batch XXX48086: benzo(g,h,i)perylene (-27%/-32%, LCL = 44%), benzo(k)fluoranthene (43%/38%, LCL = 54%), dibenzo(a,h)anthracene (-43%/-47%, LCL = 44%), and indeno(1,2,3-cd) pyrene (-18%/-21%, LCL = 48%). Detected results for these analytes in the parent sample 31209-MW03-23 were qualified as estimated, "J-", for potential low bias. In most cases, qualified results were either significantly below or exceeded the ADEC Table C groundwater cleanup levels and data usability was not affected. The result of 1.41 µg/L for indeno(1,2,3cd)pyrene in sample 31209-MW03-23 is below the ADEC cleanup level of 2.5 µg/L but is biased significantly low.

iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments: 31209-MW03-23

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

vii. Is the data quality or usability affected?
Yes ☒ No ☐ N/A ☐
Comments: In most cases, qualified results were biased low and either significantly below or exceeded the ADEC Table C groundwater cleanup levels, and data usability was not affected. The result of 1.41 µg/L for indeno(1,2,3cd)pyrene in sample 31209-MW03-23 is below the ADEC cleanup level of 2.5 µg/L but is biased significantly low.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)
Yes ☐ No ☒ N/A ☐
Comments: All surrogate recoveries met acceptance criteria, except as noted below.
AK102/AK103 – Surrogates 5a-androstane (-87%) and n-triacontane-d62 (0%) were not recovered in sample 31209-MW-01. In addition, surrogates 5a-androstane (27.3%) and n-triacontane-d62 (33.4%) recovered low in sample 31209-MW-02. The case narrative indicates that these samples were re-extracted and reanalyzed outside of holding time with results that confirmed the original analysis. Only the in-hold data were reported and available for review. DRO and RRO results are non-detect in both samples; professional discretion was used in qualifying DRO and RRO results in both samples 31209-MW-01 and 31209-MW-02 as estimated, “J-”. Sample 31209-MW-01 results were qualified as estimated, rather than considered unusable, as the reason was attributed to laboratory error in the case narrative.
SW8260D – Surrogate 1,2-dichloroethane-d4 recovered above the upper control limit of 118% at 120% in the method blank for batch VXX40078. No analytes were detected in the method blank. and all associated samples had acceptable surrogate recoveries. Qualification was not required.
SW8270D SIM – Surrogate 2-methynaphthalene-d10 recovered below the lower control limit of 38% in sample 31209-MW01-23 (28.1%). Results for analytes associated with this surrogate (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene) were qualified as estimated, “J-”, for potential low bias. Results for 1-methylnaphthalene and 2-methylnaphthalene in this sample were affected by low surrogate recovery but also detected below the LOQ; therefore the more conservative “J”, for indeterminate bias was applied for these results.

iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?
Yes ☒ No ☐ N/A ☐
Comments: Click or tap here to enter text.

iv. Is the data quality or usability affected?
Yes ☒ No ☐ N/A ☐
Comments: In most cases, qualified results were significantly below the ADEC Table C groundwater cleanup levels and data usability was not affected. DRO and RRO results for samples 31209-MW-01 and 31209-MW-02 were qualified as estimated. Results for sample 31209-MW-01 may be considered estimated rather than unusable, attributing the lack of surrogate recovery to a laboratory error.

e. Trip Blanks

i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes ☒ No ☐ N/A ☐
Comments: Trip blank TB-03 was included in a cooler with samples from SCU 312-09 in this SDG and samples from site SCU 23B-03 in SDG 1232975.

ii. Are all results less than LoQ or RL?
Yes ☒ No ☐ N/A ☐
Comments: No analytes were detected in TB-03.

iii. If above LoQ or RL, what samples are affected?
Comments: No samples were affected.

iv. Is the data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?
Yes ☐ No ☐ N/A ☒
Comments: No field duplicates were included in this SDG.

ii. Was the duplicate submitted blind to lab?
Yes ☐ No ☐ N/A ☒
Comments: No field duplicates were included in this SDG.

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

$$RPD\ (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| X\ 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Is the data quality or usability affected? (Explain)

Yes ☐ No ☐ N/A ☒
Comments: No field duplicates were included in this SDG.

iv. Is the data quality or usability affected? (Explain)
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?
Yes ☐ No ☐ N/A ☒
Comments: Equipment blanks were not required for this project.

ii. Are all results less than LoQ or RL?
Yes ☐ No ☐ N/A ☒
Comments: Not applicable.

iii. If above LoQ or RL, specify what samples are affected.
Comments: Not applicable.

iv. Are data quality or usability affected?
Yes ☐ No ☐ N/A ☒
Comments: There was no effect on data quality or usability.

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

a. Are they defined and appropriate?
Yes ☒ No ☐ N/A ☐
Comments: There were no additional qualifiers used. Validation qualifiers are defined in the accompanying Data Quality Report (Appendix E).

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APPENDIX F

SURVEY REPORT

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2023 HILCORP MONITORING WELL SURVEY REPORT: SWANSON RIVER FIELD

Date:	24 April 2024
Revision:	Version 1.0
Project:	2023 Groundwater Monitoring Program Report; Swanson River Field
Prepared for:	Hilcorp Alaska, LLC
Prepared by:	Aleut Remediation, LLC
Attachments:	Level Report and OPUS Solution Report

1. PERSONNEL

- Brad Ramsay, Environmental Scientist, Aleut Remediation, LLC
- Kyle Therrien, Geologist/GIS Specialist, Aleut Remediation, LLC

2. WORK SUMMARY

Project Location: Various Hilcorp Kenai Unit locations

Unit of Measurement: U.S. Survey Foot

Horizontal Datum: North American Datum of 1983 (NAD 83 2011 [EPOCH 2010.0000])

Coordinate System: Alaska State Plane Coordinate System, Zone 4

Vertical Datum: North American Vertical Datum of 1988(NAVD88)

Aleut Remediation, LLC (Aleut) performed monitoring well surveying at Swanson River Field (SRF) SCU 23B-03, SCU 312-09, Tank Settings 1-4, 1-9, 1-27, 1-3, 2-15, 3-4, and 3-9 on 23, 24, and 27 June 2023. In total, 75 monitoring wells were surveyed at nine sites:

- SRF Tank Setting 1-4
- SRF Tank Setting 1-9
- SRF Tank Setting 1-27
- SRF Tank Setting 1-33
- SRF Tank Setting 2-15
- SRF Tank Setting 3-4
- SRF Tank Setting 3-9

- SRF SCU 23B-03
- SRF SCU 312-09

Elevation was measured using third order differential leveling techniques, as outlined in "Standards and Specifications for Geodetic Control Networks," Federal Geodetic Control Committee (1984). Leveling equipment consisted of a Leica LS-15 digital auto-level and 4-meter telescoping bar-code staff. A two-peg test was completed each morning to confirm the level was functioning optimally. Refer to Section 4 for resulting elevations (and historic horizontal coordinates) of the surveyed monitoring wells. See Attachment G-1 for raw leveling measurements and loop misclosure.

3. SURVEY CONTROL

Existing horizontal and vertical control has been previously established at the sites by McLane Consulting, Inc (McLane) and Brice Engineering, LLC (BENG). The existing survey control was utilized for all 2023 survey activities. Additional temporary benchmarks (TBMs) were installed at SRF SCU-23B-03 and SCU-312-09 during the 2023 survey effort. Static data was measured using real-time-kinematic (RTK) Global Navigation Satellite System (GNSS) survey techniques. A Lecia GS-16 GNSS receiver and a Leica CS20 data collector running Leica Captivate software were utilized to collect static location data at 5-second intervals. The 2023 TMBs were occupied, and static GNSS raw observable data were submitted to National Geodetic Survey's (NGS) Online Positioning User System (OPUS) to determine position and NAVD88 elevation. Complete OPUS outputs are included as Attachment G-2.

Table 3-1 Survey Control

SURVEY ID	NAD83(2011) EPOCH 2010.0000		NAVD88	DESCRIPTION
	U.S. SURVEY FOOT			
	NORTHING	EASTING	ELEVATION	
CP-02	2,458,384.58	1,483,669.44	212.69	Primary Swanson River Field control monument, located at Cookshack. 2" aluminum cap, LS-4928.
CP-150	2,451,461.04	1,483,311.21	163.17	Found 2" aluminum cap, LS-4928.
CP-217	2,465,103.14	1,486,152.24	169.23	Found 2" aluminum cap, LS-4928.
CP-228	2,471,513.67	1,491,575.58	264.45	Found 2" aluminum cap, LS-4928.
CP-236	2,480,030.87	1,488,857.92	318.98	Found 2" aluminum cap, LS-4928.

Table 3-1 Survey Control

SURVEY ID	NAD83(2011) EPOCH 2010.0000		NAVD88	DESCRIPTION
	U.S. SURVEY FOOT			
	NORTHING	EASTING	ELEVATION	
SRF ES-TBM-1	2,460,187	1,485,805	147.35	Chiseled “X”, top of NW I-beam anchor bolt of truck loading dock.
SRF TS1-9-TBM-1	2,455,582	1,486,109	134.49	Spike set 1’ above ground in 10” Aspen. S30°W 15' from SRF MW 1-9II.
SRF TS1-9-TBM-2	2,455,828	1,485,984	137.45	Top of I-beam corner. Painted with pink spray paint.
SRF TS1-27-TBM-1	-	-	264.51	Top of centerline of garage door concrete floor of green building. Approximately 60’ ENE of CP 228.
SRF TS1-33-TBM-1	2,465,219	1,486,280	175.56	Top of bolt in light pole foundation. Marked with pink flagging.
SRF TS2-15-TBM-1	2,479,860	1,489,224	327.1	Top of 6” piping, at point of two intersecting pipes. 3.2’ Above ground.
SRF TS2-15-TBM-2	2,479,982	1,489,210	327.45	Chiseled “X” on I-beam pipe support. 2.5’ above ground.
SRF TS3-4-TBM-1	2,457,463	1,482,560	164.59	Top of 6" pipe, 7.0’ from NE metal building corner.
SRF TS3-4-TBM-2	2,457,481	1,482,486	169.75	Bottom of I-beam support corner. Marked with pink spray paint.
SRF TS3-9-TBM-1	2,451,366	1,483,434	162.7	Spike 1’ above ground in power pole. From SRF TS3-9S spike bears N21°E 29.2'.
SRF-TS1-4-TBM-1	2,460,320.503	1,4860,93.752	145.325	Set 1-inch plastic red caped 3’rebar
SRF-TS1-9-TBM-3	2,455,798.937	1,486,212.689	136.443	Set 1-inch plastic red caped 3’rebar
SRF-TS1-33-TBM-2	2,465,359.478	1,486,508.185	163.595	Set 1-inch plastic red caped 3’rebar
SRF-SCU-23B-03-TBM-1	2,457,663.628	1,488,746.304	129.514	Set 1-inch plastic red caped 3’rebar
SRF-SCU-312-09-TBM-1	2,454,031.776	1,483,208.383	126.81	Set 1-inch plastic red caped 3’rebar

Notes:

TBM horizontal position, except for SRF-TS1-4-TBM-1, SRF-TS1-9-TBM-3, and SRF-TS1-33-TBM-2 estimated to the nearest foot, for purposes of relocation. Horizontal positions of SRF-TS1-4-TBM-1, SRF-TS1-9-TBM-3, and SRF-TS1-33-TBM-2, SRF-SCU-23B-03-TBM-1, and SRF-SCU-312-09-TBM-1 were determined by OPUS solution.

4. MONITORING WELL SURVEY TABLES

Tables 4-1 through 4-9, on the following pages, list position and elevation of monitoring wells surveyed at the nine sites. Top of PVC riser and ground elevations were measured at each well. Previously collected horizontal data is included in Tables 4-1 through 4-9 for reference.

Table 4-1 Tank Setting 1-4 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
SRF FS1-4E	2,460,516.73	1,486,168.44	60°43'55.80050"	-150°51'42.47323"	141.28	137.81
SRF FS1-4H	2,460,529.57	1,486,145.85	60°43'55.91833"	-150°51'42.84910"	140.24	137.21
SRF FS1-4I	2,460,540.92	1,486,085.23	60°43'56.02234"	-150°51'44.07108"	134.54	131.64
SRF TS1-4DD	2,460,307.48	1,485,904.54	60°43'53.70006"	-150°51'47.64319"	136.99	134.04
SRF TS1-4EE	2,460,281.59	1,486,000.22	60°43'53.45753"	-150°51'45.71216"	137.14	134.42
SRF TS1-4F	2,460,171.54	1,486,003.89	60°43'52.37426"	-150°51'45.60939"	148.70	146.47
SRF TS1-4J	2,460,028.53	1,486,030.26	60°43'50.96941"	-150°51'45.04127"	155.38	154.31
SRF TS1-4GR	2,460,196.65	1,486,123.59	60°43'52.63703"	-150°51'43.20885"	151.71	149.45

Table 4-2 Tank Setting 1-9 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
SRF FS1-9D	2,455,950.05	1,486,144.24	60°43'10.82073"	-150°51'41.67325"	129.12	127.03
SRF FS1-9F	2,455,975.63	1,486,221.38	60°43'11.08259"	-150°51'40.12928"	127.72	125.25
SRF FS1-9I	2,456,032.09	1,486,138.42	60°43'11.62787"	-150°51'41.81194"	128.79	126.79
SRF FS1-9M	2,455,858.13	1,486,203.46	60°43'09.92324"	-150°51'40.45858"	135.64	133.48
SRF FS1-9N	2,455,889.35	1,486,254.15	60°43'10.23716"	-150°51'39.44784"	132.09	129.93
SRF TS1-9A	2,455,788.36	1,486,174.37	60°43'09.23237"	-150°51'41.02512"	137.78	135.44
SRF TS1-9B	2,455,691.09	1,485,958.12	60°43'08.24657"	-150°51'45.34641"	137.19	134.76
SRF TS1-9C	2,455,800.42	1,485,989.80	60°43'09.32730"	-150°51'44.73843"	137.70	136.30
SRF TS1-9D	2,455,689.45	1,486,041.56	60°43'08.24114"	-150°51'43.66873"	136.87	134.35
SRF TS1-9HH	2,455,545.03	1,485,963.01	60°43'06.80881"	-150°51'45.20959"	135.81	133.69
SRF TS1-9II	2,455,596.08	1,486,115.23	60°43'07.33119"	-150°51'42.16312"	136.39	134.06
SRF TS1-9U	2,455,572.77	1,485,804.36	60°43'07.06148"	-150°51'48.40609"	138.65	136.88

Table 4-3 Tank Setting 1-27 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
SRF FS1-27C	2,471,752.69	1,491,466.19	60°45'47.11571"	-150°49'58.71773"	257.17	254.15
SRF TS1-27G	2,471,514.15	1,491,504.02	60°45'44.77142"	-150°49'57.89527"	259.37	257.67
SRF TS1-27J	2,471,511.69	1,491,577.01	60°45'44.75624"	-150°49'56.42543"	266.42	264.53
SRF TS1-27K	2,471,553.66	1,491,510.15	60°45'45.16128"	-150°49'57.78199"	262.11	260.16
SRF TS1-27L	2,471,552.11	1,491,637.42	60°45'45.16188"	-150°49'55.21967"	267.95	265.60
SRF TS1-27M	2,471,539.52	1,491,434.20	60°45'45.01253"	-150°49'59.30712"	258.42	256.60
SRF TS1-27N	2,471,442.80	1,491,479.80	60°45'44.06574"	-150°49'58.36453"	258.69	256.14

Table 4-4 Tank Setting 1-33 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
SRF FS1-33F	2,465,259.62	1,486,764.05	60°44'42.57787"	-150°51'31.66084"	159.08	156.49
SRF FS1-33H	2,465,297.66	1,486,886.49	60°44'42.96822"	-150°51'29.20749"	159.78	157.06
SRF FS1-33O	2,465,230.82	1,486,792.46	60°44'42.29791"	-150°51'31.08165"	159.37	156.45
SRF FS1-33S	2,465,249.39	1,486,914.67	60°44'42.49647"	-150°51'28.62780"	159.17	157.72
SRF FS1-33T	2,465,155.93	1,486,806.59	60°44'41.56221"	-150°51'30.77768"	156.24	154.65
SRF FS1-33W	2,465,170.33	1,486,983.17	60°44'41.72671"	-150°51'27.22906"	158.12	156.06
SRF TS1-33JJ	2,465,312.60	1,486,442.19	60°44'43.05813"	-150°51'38.15015"	165.37	162.82
SRF TS1-33KK	2,465,464.01	1,486,617.41	60°44'44.57175"	-150°51'34.66480"	163.30	161.10
SRF TS1-33O2	2,465,566.75	1,486,476.92	60°44'45.56531"	-150°51'37.51844"	167.18	165.18
SRF TS1-33P	2,465,568.26	1,486,661.08	60°44'45.60400"	-150°51'33.81364"	162.68	160.96
SRF TS1-33Q	2,465,335.48	1,486,591.17	60°44'43.30261"	-150°51'35.15891"	Destroyed	
SRF TS1-33UR	2,465,465.53	1,486,436.94	60°44'44.56341"	-150°51'38.29598"	165.13	162.38

Table 4-5 Tank Setting 2-15 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
SRF FS2-15B	2,480,103.91	1,488,926.62	60°47'09.03514"	-150°50'52.00945"	315.19	312.26
SRF TS2-15O	2,479,823.69	1,489,198.96	60°47'06.31029"	-150°50'46.45061"	324.71	323.28
SRF TS2-15P	2,480,017.42	1,489,129.73	60°47'08.20930"	-150°50'47.89559"	320.58	318.02
SRF TS2-15Q	2,480,079.63	1,489,223.19	60°47'08.83376"	-150°50'46.02903"	326.67	324.30
SRF TS2-15R	2,479,884.18	1,489,263.87	60°47'06.91423"	-150°50'45.15887"	327.13	324.85

Table 4-6 Tank Setting 3-4 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
SRF FS3-4A	2,457,252.63	1,482,716.98	60°43'23.20041"	-150°52'50.92075"	152.75	150.10
SRF FS3-4B	2,457,293.51	1,482,799.68	60°43'23.61384"	-150°52'49.26900"	147.65	146.49
SRF FS3-4D	2,457,292.68	1,482,699.94	60°43'23.59252"	-150°52'51.27407"	154.28	151.06
SRF FS3-4F	2,457,302.16	1,482,610.74	60°43'23.67414"	-150°52'53.06997"	161.54	160.05
SRF TS3-4CC	2,457,275.28	1,482,521.31	60°43'23.39759"	-150°52'54.86073"	162.51	160.46
SRF TS3-4D	2,457,461.07	1,482,526.88	60°43'25.22791"	-150°52'54.79876"	163.48	161.26
SRF TS3-4MM	2,457,452.20	1,482,647.66	60°43'25.15652"	-150°52'52.36817"	154.17	151.22
SRF TS3-4NN	2,457,538.52	1,482,291.76	60°43'25.95946"	-150°52'59.54672"	156.81	154.18
SRF TS3-4OO	2,457,453.69	1,482,241.23	60°43'25.11745"	-150°53'00.53974"	156.02	153.42
SRF TS3-4P	2,457,435.74	1,482,318.30	60°43'24.95082"	-150°52'58.98537"	158.89	157.50
SRF TS3-4PP	2,457,377.14	1,482,254.63	60°43'24.36532"	-150°53'00.24960"	158.28	155.71
SRF TS3-4Z	2,457,580.93	1,482,548.71	60°43'26.41111"	-150°52'54.39223"	161.56	160.00

Table 4-7 Tank Setting 3-9 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
SRF FS3-9B	2,451,031.82	1,483,331.52	60°42'22.02128"	-150°52'36.89596"	163.43	160.62
SRF FS3-9E	2,450,998.53	1,483,336.10	60°42'21.69410"	-150°52'36.79509"	160.27	157.85
SRF FS3-9G	2,450,951.04	1,483,363.27	60°42'21.22996"	-150°52'36.23623"	159.90	157.48
SRF TS3-9A	2,451,148.23	1,483,404.42	60°42'23.17728"	-150°52'35.46240"	167.88	165.33
SRF TS3-9AA	2,451,348.52	1,483,534.78	60°42'25.16672"	-150°52'32.89655"	165.58	163.03
SRF TS3-9BB	2,451,241.44	1,483,553.06	60°42'24.11466"	-150°52'32.50049"	164.85	162.38
SRF TS3-9CC	2,451,105.73	1,483,546.07	60°42'22.77729"	-150°52'32.60465"	158.98	156.64
SRF TS3-9CR	2,451,211.70	1,483,395.30	60°42'23.80103"	-150°52'35.66259"	168.99	166.53
SRF TS3-9DD	2,451,018.85	1,483,472.62	60°42'21.91215"	-150°52'34.05728"	157.02	154.13
SRF TS3-9F	2,451,254.26	1,483,434.57	60°42'24.22530"	-150°52'34.88489"	168.44	166.05
SRF TS3-9S	2,451,338.97	1,483,422.99	60°42'25.05799"	-150°52'35.14038"	165.02	163.20
SRF TS3-9T	2,451,175.01	1,483,500.74	60°42'23.45360"	-150°52'33.53402"	165.89	163.97
SRF TS3-9U	2,451,090.67	1,483,427.69	60°42'22.61349"	-150°52'34.97931"	165.55	163.31
SRF TS3-9V	2,451,498.40	1,483,397.95	60°42'26.62472"	-150°52'35.68620"	159.02	157.07

Table 4-8 SCU 23B-03 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
23B03-MW01	2,457,669.832	1,488,743.241	60°43'28.09560"	-150°50'49.95600"	132.83	129.56
23B03-MW02	2,457,651.705	1,488,842.629	60°43'27.93000"	-150°50'47.95080"	132.92	132.92
23B03-MW03	2,457,802.006	1,488,722.404	60°43'29.39520"	-150°50'50.40600"	134.74	131.36

Table 4-9 SCU 312-09 Monitoring Wells

WELL ID	NAD83(2011) EPOCH 2010.0000				NAVD88 ELEVATIONS	
	(U.S. SURVEY FOOT)		(DEGREES, MINUTE, SECONDS)		(U.S. SURVEY FOOT)	
	NORTHING	EASTING	LATITUDE	LONGITUDE	PVC	GROUND
312-09-MW01	2,453,983.855	1,483,157.161	60°42'51.07320"	-150°52'41.27520"	125.40	122.49
312-09-MW02	2,454,023.212	1,483,198.509	60°42'51.46920"	-150°52'40.45440"	128.76	125.94
312-09-MW03	2,454,022.772	1,483,126.725	60°42'51.45480"	-150°52'41.89800"	127.56	124.60

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LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.216		3.216	0.000	318.980
FS2-15B		7.004	3.216	-3.788	315.192
FS2-15B	7.004		3.216	-3.788	315.192
grnd		9.939	3.216	-6.723	312.257
grnd	9.939		3.216	-6.723	312.257
BASE		3.216	3.216	0.000	318.980

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1015
End Time:	1020
Surveyor:	BDR
Site:	SRF TS 2-15
Project:	Kenai GWM 2023
Base Used:	CP-236
Base Ht:	318.98
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.442		3.442	0	318.98
TP1		4.414	3.442	-0.972	318.008
TP1	10.754		9.782	-0.972	318.008
TS2-15O		4.049	9.782	5.733	324.713
TS2-15O	4.049		9.782	5.733	324.713
ground O		5.480	9.782	4.302	323.282
ground O	5.480		9.782	4.302	323.282
TS2-15R		1.630	9.782	8.152	327.132
TS2-15R	1.630		9.782	8.152	327.132
ground R		3.914	9.782	5.868	324.848
ground R	3.914		9.782	5.868	324.848
TS2-15Q		2.092	9.782	7.69	326.67
TS2-15Q	2.092		9.782	7.69	326.67
ground Q		4.461	9.782	5.321	324.301
ground Q	4.461		9.782	5.321	324.301
TS2-15P		8.179	9.782	1.603	320.583
TS2-15P	8.179		9.782	1.603	320.583
ground P		10.745	9.782	-0.963	318.017
ground P	10.745		9.782	-0.963	318.017
TP-1		10.754	9.782	-0.972	318.008
TP-1	10.774		9.802	-0.972	318.008
TS2-15-TBM-2		1.340	9.802	8.462	327.442
TS2-15-TBM-2	1.340		9.802	8.462	327.442
TP-1		10.774	9.802	-0.972	318.008
TP-1	4.217		3.245	-0.972	318.008
BASE		3.245	3.245	0	318.98

PROJECT INFO

Date:	23-Jun-23
Start Time:	1020
End Time:	1100
Surveyor:	BDR
Site:	SRF TS 2-15
Project:	Kenai GWM 2023
Base Used:	CP-236
Base Ht:	318.98
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

	327.45
	318.98
	8.47

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	4.243		4.243	0.000	264.450
TS1-27J		2.277	4.243	1.966	266.416
TS1-27J	2.277		4.243	1.966	266.416
Ground J		4.166	4.243	0.077	264.527
Ground J	4.166		4.243	0.077	264.527
TS1-27L		0.744	4.243	3.499	267.949
TS1-27L	0.744		4.243	3.499	267.949
Ground L		3.096	4.243	1.147	265.597
Ground L	3.096		4.243	1.147	265.597
TP-1		5.951	4.243	-1.708	262.742
TP-1	5.378		3.670	-1.708	262.742
TP-2		9.604	3.670	-5.934	258.516
TP-2	2.535		-3.399	-5.934	258.516
FS1-27C		3.881	-3.399	-7.280	257.170
FS1-27C	3.881		-3.399	-7.280	257.170
Ground C		6.900	-3.399	-10.299	254.151
Ground C	6.900		-3.399	-10.299	254.151
TP-2		2.536	-3.399	-5.935	258.515
TP-2	9.572		3.637	-5.935	258.515
TP-1		5.343	3.637	-1.706	262.744
TP-1	5.661		3.955	-1.706	262.744
TS1-27K		6.298	3.955	-2.343	262.107
TS1-27K	6.298		3.955	-2.343	262.107
Ground K		8.245	3.955	-4.290	260.160
Ground K	8.245		3.955	-4.290	260.160
TS1-27G		9.039	3.955	-5.084	259.366
TS1-27G	9.039		3.955	-5.084	259.366
Ground G		10.737	3.955	-6.782	257.668
Ground G	10.737		3.955	-6.782	257.668
TS1-27N		9.718	3.955	-5.763	258.687
TS1-27N	9.718		3.955	-5.763	258.687
Ground N		12.264	3.955	-8.309	256.141
Ground N	12.264		3.955	-8.309	256.141
TS1-27M		9.989	3.955	-6.034	258.416
TS1-27M	9.989		3.955	-6.034	258.416
Ground M		11.806	3.955	-7.851	256.599
Ground M	11.806		3.955	-7.851	256.599
TP-1		5.662	3.955	-1.707	262.743
TP-1	5.665		3.958	-1.707	262.743
BASE		3.956	3.958	0.002	264.452

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1120
End Time:	1205
Surveyor:	BDR
Site:	SRF TS 1-27
Project:	Kenai GWM 2023
Base Used:	CP-228
Base Ht:	264.45
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.387		3.387	0.000	169.230
TP-1		11.404	3.387	-8.017	161.213
TP-1	5.885		-2.132	-8.017	161.213
TS1-33-TBM-2		4.949	-2.132	-7.081	162.149
TS1-33-TBM-2	4.949		-2.132	-7.081	162.149
TP-1		5.885	-2.132	-8.017	161.213
TP-1	10.730		2.713	-8.017	161.213
BASE		2.714	2.713	-0.001	169.229

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.673		3.673	0.000	162.149
TS1-33JJ		0.449	3.673	3.224	165.373
TS1-33JJ	0.449		3.673	3.224	165.373
Ground JJ		2.999	3.673	0.674	162.823
Ground JJ	2.999		3.673	0.674	162.823
FS1-33F		6.739	3.673	-3.066	159.083
FS1-33F	3.489		0.423	-3.066	159.083
Ground F		6.087	0.423	-5.664	156.485
Ground F	6.087		0.423	-5.664	156.485
FS1-33O		3.199	0.423	-2.776	159.373
FS1-33O	3.199		0.423	-2.776	159.373
Ground O		6.125	0.423	-5.702	156.447
Ground O	6.125		0.423	-5.702	156.447
FS1-33H		2.796	0.423	-2.373	159.776
FS1-33H	2.796		0.423	-2.373	159.776
Ground H		5.509	0.423	-5.086	157.063
Ground H	5.509		0.423	-5.086	157.063
TP-1		5.901	0.423	-5.478	156.671
TP-1	5.944		0.466	-5.478	156.671
FS1-33W		4.497	0.466	-4.031	158.118
FS1-33W	4.497		0.466	-4.031	158.118
Ground W		6.560	0.466	-6.094	156.055
Ground W	6.560		0.466	-6.094	156.055
FS1-33S		3.449	0.466	-2.983	159.166
FS1-33S	3.449		0.466	-2.983	159.166
Ground S		4.900	0.466	-4.434	157.715
Ground S	4.900		0.466	-4.434	157.715
TP-1		5.944	0.466	-5.478	156.671
TP-1	5.669		0.191	-5.478	156.671
FS1-33F		3.256	0.191	-3.065	159.084
FS1-33F	6.780		3.715	-3.065	159.084
BASE		3.714	3.715	0.001	162.150

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1325
End Time:	1400
Surveyor:	BDR
Site:	SRF TS 1-33
Project:	Kenai GWM 2023
Base Used:	TS1-33-TBM-2
Base Ht:	162.149
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	4.477		4.477	0.000	162.149
TS1-33KK		3.325	4.477	1.152	163.301
TS1-33KK	5.597		6.749	1.152	163.301
Ground KK		7.794	6.749	-1.045	161.104
Ground KK	7.794		6.749	-1.045	161.104
TS1-33P		6.220	6.749	0.529	162.678
TS1-33P	6.220		6.749	0.529	162.678
Ground P		7.938	6.749	-1.189	160.960
Ground P	7.938		6.749	-1.189	160.960
TS1-33O2		1.722	6.749	5.027	167.176
TS1-33O2	1.722		6.749	5.027	167.176
Ground O2		3.722	6.749	3.027	165.176
Ground O2	3.722		6.749	3.027	165.176
TS1-33KK		5.597	6.749	1.152	163.301
TS1-33KK	3.039		4.191	1.152	163.301
TP-1		4.970	4.191	-0.779	161.370
TP-1	5.471		4.692	-0.779	161.370
TS1-33UR		1.707	4.692	2.985	165.134
TS1-33UR	1.707		4.692	2.985	165.134
Ground UR		4.465	4.692	0.227	162.376
Ground UR	4.465		4.692	0.227	162.376
TP-1		5.471	4.692	-0.779	161.370
TP-1	5.140		4.361	-0.779	161.370
BASE		4.361	4.361	0.000	162.149

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1405
End Time:	1445
Surveyor:	BDR
Site:	SRF TS 1-33
Project:	Kenai GWM 2023
Base Used:	TS1-33-TBM-2
Base Ht:	162.149
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	2.976		2.976	0.000	147.350
TP-1		5.355	2.976	-2.379	144.971
TP-1	6.304		3.925	-2.379	144.971
TS1-4F		2.579	3.925	1.346	148.696
TS1-4F	2.579		3.925	1.346	148.696
Ground F		4.801	3.925	-0.876	146.474
Ground F	4.801		3.925	-0.876	146.474
TP-1		6.304	3.925	-2.379	144.971
TP-1	8.182		5.803	-2.379	144.971
TS1-4GR		1.442	5.803	4.361	151.711
TS1-4GR	1.442		5.803	4.361	151.711
Ground GR		3.702	5.803	2.101	149.451
Ground GR	3.702		5.803	2.101	149.451
TS1-4GR		1.442	5.803	4.361	151.711
TS1-4GR	6.019		10.380	4.361	151.711
TS1-4J		2.348	10.380	8.032	155.382
TS1-4J	2.348		10.380	8.032	155.382
Ground J		3.418	10.380	6.962	154.312
Ground J	3.418		10.380	6.962	154.312
TS1-4GR		6.019	10.380	4.361	151.711
TS1-4GR	1.508		5.869	4.361	151.711
TP-2		12.235	5.869	-6.366	140.984
TP-2	2.636		-3.730	-6.366	140.984
FS1-4E		2.342	-3.730	-6.072	141.278
FS1-4E	2.342		-3.730	-6.072	141.278
Ground E		5.807	-3.730	-9.537	137.813
Ground E	5.807		-3.730	-9.537	137.813
FS1-4H		3.376	-3.730	-7.106	140.244
FS1-4H	3.376		-3.730	-7.106	140.244
Ground H		6.413	-3.730	-10.143	137.207
Ground H	6.413		-3.730	-10.143	137.207
FS1-4I		9.084	-3.730	-12.814	134.536
FS1-4I	9.084		-3.730	-12.814	134.536
Ground I		11.981	-3.730	-15.711	131.639
Ground I	11.981		-3.730	-15.711	131.639
TP-2		2.636	-3.730	-6.366	140.984
TP-2	4.156		-2.210	-6.366	140.984
TS1-4-TBM-1		1.133	-2.210	-3.343	144.007
TS1-4-TBM-1	9.759		6.416	-3.343	144.007
TS1-4GR		2.056	6.416	4.360	151.710
TS1-4GR	1.074		5.434	4.360	151.710
TP-3		7.815	5.434	-2.381	144.969
TP-3	5.488		3.107	-2.381	144.969
BASE		3.108	3.107	-0.001	147.349

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1645
End Time:	1820
Surveyor:	BDR
Site:	SRF TS 1-4
Project:	Kenai GWM 2023
Base Used:	ES-TBM-1
Base Ht:	147.35
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	2.969		2.969	0.000	147.350
TP-1		11.172	2.969	-8.203	139.147
TP-1	3.595		-4.608	-8.203	139.147
TP-2		8.551	-4.608	-13.159	134.191
TP-2	4.097		-9.062	-13.159	134.191
TS1-4DD		1.296	-9.062	-10.358	136.992
TS1-4DD	1.296		-9.062	-10.358	136.992
Ground DD		4.249	-9.062	-13.311	134.039
Ground DD	4.249		-9.062	-13.311	134.039
TS1-4EE		1.144	-9.062	-10.206	137.144
TS1-4EE	1.144		-9.062	-10.206	137.144
Ground EE		3.868	-9.062	-12.930	134.420
Ground EE	3.868		-9.062	-12.930	134.420
TP-2		4.097	-9.062	-13.159	134.191
TP-2	8.397		-4.762	-13.159	134.191
TP-1		3.443	-4.762	-8.205	139.145
TP-1	11.181		2.976	-8.205	139.145
BASE		2.976	2.976	0.000	147.350

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1620
End Time:	1640
Surveyor:	BDR
Site:	SRF TS 1-4
Project:	Kenai GWM 2023
Base Used:	ES-TBM-1
Base Ht:	147.35
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	2.583		2.583	0.000	137.450
TS1-9B		2.847	2.583	-0.264	137.186
TS1-9B	2.847		2.583	-0.264	137.186
Ground B		5.276	2.583	-2.693	134.757
Ground B	5.276		2.583	-2.693	134.757
TP-1		6.085	2.583	-3.502	133.948
TP-1	8.154		4.652	-3.502	133.948
TS1-9U		3.455	4.652	1.197	138.647
TS1-9U	3.455		4.652	1.197	138.647
Ground U		5.220	4.652	-0.568	136.882
Ground U	5.220		4.652	-0.568	136.882
TP-1		8.154	4.652	-3.502	133.948
TP-1	5.360		1.858	-3.502	133.948
TS1-9HH		3.497	1.858	-1.639	135.811
TS1-9HH	3.497		1.858	-1.639	135.811
Ground HH		5.617	1.858	-3.759	133.691
Ground HH	5.617		1.858	-3.759	133.691
TS1-9B		2.123	1.858	-0.265	137.185
TS1-9B	2.479		2.214	-0.265	137.185
TS1-9D		2.790	2.214	-0.576	136.874
TS1-9D	2.790		2.214	-0.576	136.874
Ground D		5.311	2.214	-3.097	134.353
Ground D	5.311		2.214	-3.097	134.353
TS1-9II		3.272	2.214	-1.058	136.392
TS1-9II	3.272		2.214	-1.058	136.392
Ground II		5.606	2.214	-3.392	134.058
Ground II	5.606		2.214	-3.392	134.058
TS1-9A		1.884	2.214	0.330	137.780
TS1-9A	1.884		2.214	0.330	137.780
Ground A		4.227	2.214	-2.013	135.437
Ground A	4.227		2.214	-2.013	135.437
TS1-9A		1.884	2.214	0.330	137.780
TS1-9A	1.363		1.693	0.330	137.780
TS1-9-TBM-3		4.193	1.693	-2.500	134.950
TS1-9-TBM-3	4.193		1.693	-2.500	134.950
Ground M		5.664	1.693	-3.971	133.479
Ground M	5.664		1.693	-3.971	133.479
FS1-9M		3.502	1.693	-1.809	135.641
FS1-9M	0.356		-1.453	-1.809	135.641
FS1-9N		3.911	-1.453	-5.364	132.086
FS1-9N	3.911		-1.453	-5.364	132.086
Ground N		6.068	-1.453	-7.521	129.929
Ground N	6.068		-1.453	-7.521	129.929
FS1-9D		6.873	-1.453	-8.326	129.124

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1900
End Time:	2020
Surveyor:	BDR
Site:	SRF TS 1-9
Project:	Kenai GWM 2023
Base Used:	TS1-9-TBM-2
Base Ht:	137.45
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

FS1-9D	6.873		-1.453	-8.326	129.124
Ground D		8.965	-1.453	-10.418	127.032
Ground D	8.965		-1.453	-10.418	127.032
FS1-9I		7.210	-1.453	-8.663	128.787
FS1-9I	7.210		-1.453	-8.663	128.787
Ground I		9.211	-1.453	-10.664	126.786
Ground I	9.211		-1.453	-10.664	126.786
FS1-9F		8.278	-1.453	-9.731	127.719
FS1-9F	8.278		-1.453	-9.731	127.719
Ground F		10.749	-1.453	-12.202	125.248
Ground F	10.749		-1.453	-12.202	125.248
FS1-9M		0.356	-1.453	-1.809	135.641
FS1-9M	3.945		2.136	-1.809	135.641
Ground C		3.290	2.136	-1.154	136.296
Ground C	3.290		2.136	-1.154	136.296
FS1-9C		1.888	2.136	0.248	137.698
FS1-9C	3.122		3.370	0.248	137.698
BASE		3.376	3.370	-0.006	137.444

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.429		3.429	0.000	163.170
TS3-9V		7.575	3.429	-4.146	159.024
TS3-9V	7.575		3.429	-4.146	159.024
Ground V		9.532	3.429	-6.103	157.067
Ground V	9.532		3.429	-6.103	157.067
BASE		3.429	3.429	0.000	163.170
BASE	9.124		9.124	0.000	163.170
TS3-9S		7.272	9.124	1.852	165.022
TS3-9S	7.272		9.124	1.852	165.022
Ground S		9.096	9.124	0.028	163.198
Ground S	9.096		9.124	0.028	163.198
TS3-9F		3.850	9.124	5.274	168.444
TS3-9F	3.850		9.124	5.274	168.444
Ground F		6.243	9.124	2.881	166.051
Ground F	6.243		9.124	2.881	166.051
TS3-9BB		7.448	9.124	1.676	164.846
TS3-9BB	7.448		9.124	1.676	164.846
Ground BB		9.910	9.124	-0.786	162.384
Ground BB	9.910		9.124	-0.786	162.384
TS3-9T		6.407	9.124	2.717	165.887
TS3-9T	6.407		9.124	2.717	165.887
Ground T		8.321	9.124	0.803	163.973
Ground T	8.321		9.124	0.803	163.973
TS3-9CR		3.304	9.124	5.820	168.990
TS3-9CR	3.304		9.124	5.820	168.990
Ground CR		5.765	9.124	3.359	166.529
Ground CR	5.765		9.124	3.359	166.529
TS3-9A		4.413	9.124	4.711	167.881
TS3-9A	4.413		9.124	4.711	167.881
Ground A		6.965	9.124	2.159	165.329
Ground A	6.965		9.124	2.159	165.329
Ground U		8.984	9.124	0.140	163.310
Ground U	8.984		9.124	0.140	163.310
TS3-9U		6.743	9.124	2.381	165.551
TS3-9U	1.045		3.426	2.381	165.551
FS3-9E		6.325	3.426	-2.899	160.271
FS3-9E	6.325		3.426	-2.899	160.271
Ground E		8.744	3.426	-5.318	157.852
Ground E	8.744		3.426	-5.318	157.852
FS3-9B		3.166	3.426	0.260	163.430
FS3-9B	3.166		3.426	0.260	163.430
Ground B		5.979	3.426	-2.553	160.617
Ground B	5.979		3.426	-2.553	160.617
FS3-9G		6.698	3.426	-3.272	159.898

ALEUT

PROJECT INFO

Date:	24-Jun-23
Start Time:	948
End Time:	1149
Surveyor:	KT
Site:	SRF TS 3-9
Project:	Kenai GWM 2023
Base Used:	CP-150
Base Ht:	163.17
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

FS3-9G	6.698		3.426	-3.272	159.898
Ground G		9.119	3.426	-5.693	157.477
Ground G	9.119		3.426	-5.693	157.477
TS3-9DD		9.579	3.426	-6.153	157.017
TS3-9DD	9.579		3.426	-6.153	157.017
Ground DD		12.469	3.426	-9.043	154.127
Ground DD	12.469		3.426	-9.043	154.127
TS3-9CC		7.614	3.426	-4.188	158.982
TS3-9CC	7.614		3.426	-4.188	158.982
Ground CC		9.952	3.426	-6.526	156.644
Ground CC	9.952		3.426	-6.526	156.644
TS3-9U		1.045	3.426	2.381	165.551
TS3-9U	4.088		6.469	2.381	165.551
TS3-9AA		4.058	6.469	2.411	165.581
TS3-9AA	4.058		6.469	2.411	165.581
Ground AA		6.612	6.469	-0.143	163.027
Ground AA	6.612		6.469	-0.143	163.027
TP-1		3.904	6.469	2.565	165.735
TP-1	3.272		5.837	2.565	165.735
BASE		5.835	5.837	0.002	163.172

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	-5.103		-5.103	0.000	169.750
TS3-4NN		7.842	-5.103	-12.945	156.805
TS3-4NN	7.842		-5.103	-12.945	156.805
Ground NN		10.468	-5.103	-15.571	154.179
Ground NN	10.468		-5.103	-15.571	154.179
TS3-4P		5.760	-5.103	-10.863	158.887
TS3-4P	5.760		-5.103	-10.863	158.887
Ground P		7.145	-5.103	-12.248	157.502
Ground P	7.145		-5.103	-12.248	157.502
TS3-4P		5.760	-5.103	-10.863	158.887
TS3-4P	2.849		-8.014	-10.863	158.887
TP-1		7.257	-8.014	-15.271	154.479
TP-1	3.794		-11.477	-15.271	154.479
TS3-4OO		2.252	-11.477	-13.729	156.021
TS3-4OO	2.737		-10.992	-13.729	156.021
TS3-4PP		0.479	-10.992	-11.471	158.279
TS3-4PP	0.479		-10.992	-11.471	158.279
Ground PP		3.045	-10.992	-14.037	155.713
Ground PP	3.045		-10.992	-14.037	155.713
Ground OO		5.343	-10.992	-16.335	153.415
Ground OO	5.343		-10.992	-16.335	153.415
TS3-4OO		2.736	-10.992	-13.728	156.022
TS3-4OO	2.646		-11.082	-13.728	156.022
TP-1		4.188	-11.082	-15.270	154.480
TP-1	7.538		-7.732	-15.270	154.480
TS3-4P		3.128	-7.732	-10.860	158.890
TS3-4P	6.067		-4.793	-10.860	158.890
BASE		-4.796	-4.793	0.003	169.753

ALEUT

PROJECT INFO

Date:	24-Jun-23
Start Time:	1245
End Time:	1515
Surveyor:	KT
Site:	SRF TS 3-4
Project:	Kenai GWM 2023
Base Used:	CP-150
Base Ht:	169.75
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	-4.796		-4.796	0.000	169.750
Ground Z		4.955	-4.796	-9.751	159.999
Ground Z	4.955		-4.796	-9.751	159.999
TS3-4Z		3.399	-4.796	-8.195	161.555
TS3-4Z	3.719		-4.476	-8.195	161.555
TS3-4D		1.799	-4.476	-6.275	163.475
TS3-4D	1.799		-4.476	-6.275	163.475
Ground D		4.014	-4.476	-8.490	161.260
Ground D	4.014		-4.476	-8.490	161.260
TP-1		8.699	-4.476	-13.175	156.575
TP-1	6.311		-6.864	-13.175	156.575
FS3-4D		8.610	-6.864	-15.474	154.276
FS3-4D	8.610		-6.864	-15.474	154.276
Ground D		11.829	-6.864	-18.693	151.057
Ground D	11.829		-6.864	-18.693	151.057
FS3-4F		1.343	-6.864	-8.207	161.543
FS3-4F	1.343		-6.864	-8.207	161.543
Ground F		2.840	-6.864	-9.704	160.046
Ground F	2.840		-6.864	-9.704	160.046
Ground A		12.786	-6.864	-19.650	150.100
Ground A	12.786		-6.864	-19.650	150.100
FS3-4A		10.141	-6.864	-17.005	152.745
FS3-4A	10.141		-6.864	-17.005	152.745
TS3-4MM		8.714	-6.864	-15.578	154.172
TS3-4MM	8.714		-6.864	-15.578	154.172
Ground MM		11.664	-6.864	-18.528	151.222
Ground MM	11.664		-6.864	-18.528	151.222
TP-2		12.296	-6.864	-19.160	150.590
TP-2	1.112		-18.048	-19.160	150.590
FS3-4B		4.054	-18.048	-22.102	147.648
FS3-4B	4.054		-18.048	-22.102	147.648
Ground B		5.212	-18.048	-23.260	146.490
Ground B	5.212		-18.048	-23.260	146.490
TP-3		1.008	-18.048	-19.056	150.694
TP-3	11.892		-7.164	-19.056	150.694
TP-4		3.176	-7.164	-10.340	159.410
TP-4	7.853		-2.487	-10.340	159.410
TS3-4CC		4.749	-2.487	-7.236	162.514
TS3-4CC	4.749		-2.487	-7.236	162.514
Ground CC		6.804	-2.487	-9.291	160.459
Ground CC	6.804		-2.487	-9.291	160.459
TP-5		4.463	-2.487	-6.950	162.800
TP-5	5.084		-1.866	-6.950	162.800
Base		-1.869	-1.866	0.003	169.753

ALEUT

PROJECT INFO

Date:	24-Jun-23
Start Time:	1403
End Time:	1517
Surveyor:	KT
Site:	SRF TS 3-4
Project:	Kenai GWM 2023
Base Used:	CP-150
Base Ht:	169.75
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.118		3.118	0.000	137.450
TS1-9-TBM-3		5.614	3.118	-2.496	134.954
TS1-9-TBM-3	5.614		3.118	-2.496	134.954
BASE		3.118	3.118	0.000	137.450

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.790		3.790	0.000	162.149
TP-1		7.181	3.790	-3.391	158.758
TP-1	3.882		0.491	-3.391	158.758
FS1-33T		6.403	0.491	-5.912	156.237
FS1-33T	6.403		0.491	-5.912	156.237
33TG		7.992	0.491	-7.501	154.648
33TG	7.992		0.491	-7.501	154.648
TP-1		3.882	0.491	-3.391	158.758
TP-1	7.516		4.125	-3.391	158.758
BASE		4.125	4.125	0.000	162.149

ALEUT

PROJECT INFO

Date:	27-Jun-23
Start Time:	1615
End Time:	1630
Surveyor:	BDR
Site:	SRF TS 1-33
Project:	Kenai GWM 2023
Base Used:	TS1-33-TBM-2
Base Ht:	162.149
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	5.696		5.696	0.000	129.514
23B03-MW01		2.382	5.696	3.314	132.828
23B03-MW01	2.382		5.696	3.314	132.828
Ground 1		5.651	5.696	0.045	129.559
Ground 1	5.651		5.696	0.045	129.559
23B03-MW02		2.286	5.696	3.410	132.924
23B03-MW02	2.286		5.696	3.410	132.924
Ground 2		5.423	5.696	0.273	129.787
Ground 2	5.423		5.696	0.273	129.787
T1		5.437	5.696	0.259	129.773
T1	6.527		6.786	0.259	129.773
23B03-MW03		1.561	6.786	5.225	134.739
23B03-MW03	1.561		6.786	5.225	134.739
Ground 3		4.940	6.786	1.846	131.360
Ground 3	4.940		6.786	1.846	131.360
BASE		6.787	6.786	-0.001	129.513

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	2045
End Time:	2115
Surveyor:	KT
Site:	SRF SCU 23B-3
Project:	Kenai GWM 2023
Base Used:	23B-03-TBM-1
Base Ht:	129.514
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.994		3.994	0.000	126.810
312-09-MW02		2.041	3.994	1.953	128.763
312-09-MW02	2.041		3.994	1.953	128.763
Ground 2		4.861	3.994	-0.867	125.943
Ground 2	4.861		3.994	-0.867	125.943
312-09-MW01		5.400	3.994	-1.406	125.404
312-09-MW01	5.400		3.994	-1.406	125.404
Ground 1		8.312	3.994	-4.318	122.492
Ground 1	8.312		3.994	-4.318	122.492
312-09-MW03		3.247	3.994	0.747	127.557
312-09-MW03	3.247		3.994	0.747	127.557
Ground 3		6.206	3.994	-2.212	124.598
Ground 3	6.206		3.994	-2.212	124.598
BASE		3.994	3.994	0.000	126.810

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	5.696		5.696	0.000	129.514
23B03-MW01		2.382	5.696	3.314	132.828
23B03-MW01	2.382		5.696	3.314	132.828
Ground 1		5.651	5.696	0.045	129.559
Ground 1	5.651		5.696	0.045	129.559
23B03-MW02		2.286	5.696	3.410	132.924
23B03-MW02	2.286		5.696	3.410	132.924
Ground 2		5.423	5.696	0.273	129.787
Ground 2	5.423		5.696	0.273	129.787
T1		5.437	5.696	0.259	129.773
T1	6.527		6.786	0.259	129.773
23B03-MW03		1.561	6.786	5.225	134.739
23B03-MW03	1.561		6.786	5.225	134.739
Ground 3		4.940	6.786	1.846	131.360
Ground 3	4.940		6.786	1.846	131.360
BASE		6.787	6.786	-0.001	129.513

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	2045
End Time:	2115
Surveyor:	KT
Site:	SRF SCU 23B-3
Project:	Kenai GWM 2023
Base Used:	23B-03-TBM-1
Base Ht:	129.514
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.994		3.994	0.000	126.810
312-09-MW02		2.041	3.994	1.953	128.763
312-09-MW02	2.041		3.994	1.953	128.763
Ground 2		4.861	3.994	-0.867	125.943
Ground 2	4.861		3.994	-0.867	125.943
312-09-MW01		5.400	3.994	-1.406	125.404
312-09-MW01	5.400		3.994	-1.406	125.404
Ground 1		8.312	3.994	-4.318	122.492
Ground 1	8.312		3.994	-4.318	122.492
312-09-MW03		3.247	3.994	0.747	127.557
312-09-MW03	3.247		3.994	0.747	127.557
Ground 3		6.206	3.994	-2.212	124.598
Ground 3	6.206		3.994	-2.212	124.598
BASE		3.994	3.994	0.000	126.810

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	2.969		2.969	0.000	147.350
TP-1		11.172	2.969	-8.203	139.147
TP-1	3.595		-4.608	-8.203	139.147
TP-2		8.551	-4.608	-13.159	134.191
TP-2	4.097		-9.062	-13.159	134.191
TS1-4DD		1.296	-9.062	-10.358	136.992
TS1-4DD	1.296		-9.062	-10.358	136.992
Ground DD		4.249	-9.062	-13.311	134.039
Ground DD	4.249		-9.062	-13.311	134.039
TS1-4EE		1.144	-9.062	-10.206	137.144
TS1-4EE	1.144		-9.062	-10.206	137.144
Ground EE		3.868	-9.062	-12.930	134.420
Ground EE	3.868		-9.062	-12.930	134.420
TP-2		4.097	-9.062	-13.159	134.191
TP-2	8.397		-4.762	-13.159	134.191
TP-1		3.443	-4.762	-8.205	139.145
TP-1	11.181		2.976	-8.205	139.145
BASE		2.976	2.976	0.000	147.350

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1620
End Time:	1640
Surveyor:	BDR
Site:	SRF TS 1-4
Project:	Kenai GWM 2023
Base Used:	ES-TBM-1
Base Ht:	147.35
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	2.976		2.976	0.000	147.350
TP-1		5.355	2.976	-2.379	144.971
TP-1	6.304		3.925	-2.379	144.971
TS1-4F		2.579	3.925	1.346	148.696
TS1-4F	2.579		3.925	1.346	148.696
Ground F		4.801	3.925	-0.876	146.474
Ground F	4.801		3.925	-0.876	146.474
TP-1		6.304	3.925	-2.379	144.971
TP-1	8.182		5.803	-2.379	144.971
TS1-4GR		1.442	5.803	4.361	151.711
TS1-4GR	1.442		5.803	4.361	151.711
Ground GR		3.702	5.803	2.101	149.451
Ground GR	3.702		5.803	2.101	149.451
TS1-4GR		1.442	5.803	4.361	151.711
TS1-4GR	6.019		10.380	4.361	151.711
TS1-4J		2.348	10.380	8.032	155.382
TS1-4J	2.348		10.380	8.032	155.382
Ground J		3.418	10.380	6.962	154.312
Ground J	3.418		10.380	6.962	154.312
TS1-4GR		6.019	10.380	4.361	151.711
TS1-4GR	1.508		5.869	4.361	151.711
TP-2		12.235	5.869	-6.366	140.984
TP-2	2.636		-3.730	-6.366	140.984
FS1-4E		2.342	-3.730	-6.072	141.278
FS1-4E	2.342		-3.730	-6.072	141.278
Ground E		5.807	-3.730	-9.537	137.813
Ground E	5.807		-3.730	-9.537	137.813
FS1-4H		3.376	-3.730	-7.106	140.244
FS1-4H	3.376		-3.730	-7.106	140.244
Ground H		6.413	-3.730	-10.143	137.207
Ground H	6.413		-3.730	-10.143	137.207
FS1-4I		9.084	-3.730	-12.814	134.536
FS1-4I	9.084		-3.730	-12.814	134.536
Ground I		11.981	-3.730	-15.711	131.639
Ground I	11.981		-3.730	-15.711	131.639
TP-2		2.636	-3.730	-6.366	140.984
TP-2	4.156		-2.210	-6.366	140.984
TS1-4-TBM-1		1.133	-2.210	-3.343	144.007
TS1-4-TBM-1	9.759		6.416	-3.343	144.007
TS1-4GR		2.056	6.416	4.360	151.710
TS1-4GR	1.074		5.434	4.360	151.710
TP-3		7.815	5.434	-2.381	144.969
TP-3	5.488		3.107	-2.381	144.969
BASE		3.108	3.107	-0.001	147.349

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1645
End Time:	1820
Surveyor:	BDR
Site:	SRF TS 1-4
Project:	Kenai GWM 2023
Base Used:	ES-TBM-1
Base Ht:	147.35
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.118		3.118	0.000	137.450
TS1-9-TBM-3		5.614	3.118	-2.496	134.954
TS1-9-TBM-3	5.614		3.118	-2.496	134.954
BASE		3.118	3.118	0.000	137.450

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	2.583		2.583	0.000	137.450
TS1-9B		2.847	2.583	-0.264	137.186
TS1-9B	2.847		2.583	-0.264	137.186
Ground B		5.276	2.583	-2.693	134.757
Ground B	5.276		2.583	-2.693	134.757
TP-1		6.085	2.583	-3.502	133.948
TP-1	8.154		4.652	-3.502	133.948
TS1-9U		3.455	4.652	1.197	138.647
TS1-9U	3.455		4.652	1.197	138.647
Ground U		5.220	4.652	-0.568	136.882
Ground U	5.220		4.652	-0.568	136.882
TP-1		8.154	4.652	-3.502	133.948
TP-1	5.360		1.858	-3.502	133.948
TS1-9HH		3.497	1.858	-1.639	135.811
TS1-9HH	3.497		1.858	-1.639	135.811
Ground HH		5.617	1.858	-3.759	133.691
Ground HH	5.617		1.858	-3.759	133.691
TS1-9B		2.123	1.858	-0.265	137.185
TS1-9B	2.479		2.214	-0.265	137.185
TS1-9D		2.790	2.214	-0.576	136.874
TS1-9D	2.790		2.214	-0.576	136.874
Ground D		5.311	2.214	-3.097	134.353
Ground D	5.311		2.214	-3.097	134.353
TS1-9II		3.272	2.214	-1.058	136.392
TS1-9II	3.272		2.214	-1.058	136.392
Ground II		5.606	2.214	-3.392	134.058
Ground II	5.606		2.214	-3.392	134.058
TS1-9A		1.884	2.214	0.330	137.780
TS1-9A	1.884		2.214	0.330	137.780
Ground A		4.227	2.214	-2.013	135.437
Ground A	4.227		2.214	-2.013	135.437
TS1-9A		1.884	2.214	0.330	137.780
TS1-9A	1.363		1.693	0.330	137.780
TS1-9-TBM-3		4.193	1.693	-2.500	134.950
TS1-9-TBM-3	4.193		1.693	-2.500	134.950
Ground M		5.664	1.693	-3.971	133.479
Ground M	5.664		1.693	-3.971	133.479
FS1-9M		3.502	1.693	-1.809	135.641
FS1-9M	0.356		-1.453	-1.809	135.641
FS1-9N		3.911	-1.453	-5.364	132.086
FS1-9N	3.911		-1.453	-5.364	132.086
Ground N		6.068	-1.453	-7.521	129.929
Ground N	6.068		-1.453	-7.521	129.929
FS1-9D		6.873	-1.453	-8.326	129.124
FS1-9D	6.873		-1.453	-8.326	129.124
Ground D		8.965	-1.453	-10.418	127.032

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1900
End Time:	2020
Surveyor:	BDR
Site:	SRF TS 1-9
Project:	Kenai GWM 2023
Base Used:	TS1-9-TBM-2
Base Ht:	137.45
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

Ground D	8.965		-1.453	-10.418	127.032
FS1-9I		7.210	-1.453	-8.663	128.787
FS1-9I	7.210		-1.453	-8.663	128.787
Ground I		9.211	-1.453	-10.664	126.786
Ground I	9.211		-1.453	-10.664	126.786
FS1-9F		8.278	-1.453	-9.731	127.719
FS1-9F	8.278		-1.453	-9.731	127.719
Ground F		10.749	-1.453	-12.202	125.248
Ground F	10.749		-1.453	-12.202	125.248
FS1-9M		0.356	-1.453	-1.809	135.641
FS1-9M	3.945		2.136	-1.809	135.641
Ground C		3.290	2.136	-1.154	136.296
Ground C	3.290		2.136	-1.154	136.296
FS1-9C		1.888	2.136	0.248	137.698
FS1-9C	3.122		3.370	0.248	137.698
BASE		3.376	3.370	-0.006	137.444

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	4.243		4.243	0.000	264.450
TS1-27J		2.277	4.243	1.966	266.416
TS1-27J	2.277		4.243	1.966	266.416
Ground J		4.166	4.243	0.077	264.527
Ground J	4.166		4.243	0.077	264.527
TS1-27L		0.744	4.243	3.499	267.949
TS1-27L	0.744		4.243	3.499	267.949
Ground L		3.096	4.243	1.147	265.597
Ground L	3.096		4.243	1.147	265.597
TP-1		5.951	4.243	-1.708	262.742
TP-1	5.378		3.670	-1.708	262.742
TP-2		9.604	3.670	-5.934	258.516
TP-2	2.535		-3.399	-5.934	258.516
FS1-27C		3.881	-3.399	-7.280	257.170
FS1-27C	3.881		-3.399	-7.280	257.170
Ground C		6.900	-3.399	-10.299	254.151
Ground C	6.900		-3.399	-10.299	254.151
TP-2		2.536	-3.399	-5.935	258.515
TP-2	9.572		3.637	-5.935	258.515
TP-1		5.343	3.637	-1.706	262.744
TP-1	5.661		3.955	-1.706	262.744
TS1-27K		6.298	3.955	-2.343	262.107
TS1-27K	6.298		3.955	-2.343	262.107
Ground K		8.245	3.955	-4.290	260.160
Ground K	8.245		3.955	-4.290	260.160
TS1-27G		9.039	3.955	-5.084	259.366
TS1-27G	9.039		3.955	-5.084	259.366
Ground G		10.737	3.955	-6.782	257.668
Ground G	10.737		3.955	-6.782	257.668
TS1-27N		9.718	3.955	-5.763	258.687
TS1-27N	9.718		3.955	-5.763	258.687
Ground N		12.264	3.955	-8.309	256.141
Ground N	12.264		3.955	-8.309	256.141
TS1-27M		9.989	3.955	-6.034	258.416
TS1-27M	9.989		3.955	-6.034	258.416
Ground M		11.806	3.955	-7.851	256.599
Ground M	11.806		3.955	-7.851	256.599
TP-1		5.662	3.955	-1.707	262.743
TP-1	5.665		3.958	-1.707	262.743
BASE		3.956	3.958	0.002	264.452

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1120
End Time:	1205
Surveyor:	BDR
Site:	SRF TS 1-27
Project:	Kenai GWM 2023
Base Used:	CP-228
Base Ht:	264.45
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.387		3.387	0.000	169.230
TP-1		11.404	3.387	-8.017	161.213
TP-1	5.885		-2.132	-8.017	161.213
TS1-33-TBM-2		4.949	-2.132	-7.081	162.149
TS1-33-TBM-2	4.949		-2.132	-7.081	162.149
TP-1		5.885	-2.132	-8.017	161.213
TP-1	10.730		2.713	-8.017	161.213
BASE		2.714	2.713	-0.001	169.229

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1300
End Time:	1315
Surveyor:	BDR
Site:	SRF TS 1-33
Project:	Kenai GWM 2023
Base Used:	CP-217
Base Ht:	169.23
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.673		3.673	0.000	162.149
TS1-33JJ		0.449	3.673	3.224	165.373
TS1-33JJ	0.449		3.673	3.224	165.373
Ground JJ		2.999	3.673	0.674	162.823
Ground JJ	2.999		3.673	0.674	162.823
FS1-33F		6.739	3.673	-3.066	159.083
FS1-33F	3.489		0.423	-3.066	159.083
Ground F		6.087	0.423	-5.664	156.485
Ground F	6.087		0.423	-5.664	156.485
FS1-33O		3.199	0.423	-2.776	159.373
FS1-33O	3.199		0.423	-2.776	159.373
Ground O		6.125	0.423	-5.702	156.447
Ground O	6.125		0.423	-5.702	156.447
FS1-33H		2.796	0.423	-2.373	159.776
FS1-33H	2.796		0.423	-2.373	159.776
Ground H		5.509	0.423	-5.086	157.063
Ground H	5.509		0.423	-5.086	157.063
TP-1		5.901	0.423	-5.478	156.671
TP-1	5.944		0.466	-5.478	156.671
FS1-33W		4.497	0.466	-4.031	158.118
FS1-33W	4.497		0.466	-4.031	158.118
Ground W		6.560	0.466	-6.094	156.055
Ground W	6.560		0.466	-6.094	156.055
FS1-33S		3.449	0.466	-2.983	159.166
FS1-33S	3.449		0.466	-2.983	159.166
Ground S		4.900	0.466	-4.434	157.715
Ground S	4.900		0.466	-4.434	157.715
TP-1		5.944	0.466	-5.478	156.671
TP-1	5.669		0.191	-5.478	156.671
FS1-33F		3.256	0.191	-3.065	159.084
FS1-33F	6.780		3.715	-3.065	159.084
BASE		3.714	3.715	0.001	162.150

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1325
End Time:	1400
Surveyor:	BDR
Site:	SRF TS 1-33
Project:	Kenai GWM 2023
Base Used:	TS1-33-TBM-2
Base Ht:	162.149
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	4.477		4.477	0.000	162.149
TS1-33KK		3.325	4.477	1.152	163.301
TS1-33KK	5.597		6.749	1.152	163.301
Ground KK		7.794	6.749	-1.045	161.104
Ground KK	7.794		6.749	-1.045	161.104
TS1-33P		6.220	6.749	0.529	162.678
TS1-33P	6.220		6.749	0.529	162.678
Ground P		7.938	6.749	-1.189	160.960
Ground P	7.938		6.749	-1.189	160.960
TS1-33O2		1.722	6.749	5.027	167.176
TS1-33O2	1.722		6.749	5.027	167.176
Ground O2		3.722	6.749	3.027	165.176
Ground O2	3.722		6.749	3.027	165.176
TS1-33KK		5.597	6.749	1.152	163.301
TS1-33KK	3.039		4.191	1.152	163.301
TP-1		4.970	4.191	-0.779	161.370
TP-1	5.471		4.692	-0.779	161.370
TS1-33UR		1.707	4.692	2.985	165.134
TS1-33UR	1.707		4.692	2.985	165.134
Ground UR		4.465	4.692	0.227	162.376
Ground UR	4.465		4.692	0.227	162.376
TP-1		5.471	4.692	-0.779	161.370
TP-1	5.140		4.361	-0.779	161.370
BASE		4.361	4.361	0.000	162.149

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1405
End Time:	1445
Surveyor:	BDR
Site:	SRF TS 1-33
Project:	Kenai GWM 2023
Base Used:	TS1-33-TBM-2
Base Ht:	162.149
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.790		3.790	0.000	162.149
TP-1		7.181	3.790	-3.391	158.758
TP-1	3.882		0.491	-3.391	158.758
FS1-33T		6.403	0.491	-5.912	156.237
FS1-33T	6.403		0.491	-5.912	156.237
33TG		7.992	0.491	-7.501	154.648
33TG	7.992		0.491	-7.501	154.648
TP-1		3.882	0.491	-3.391	158.758
TP-1	7.516		4.125	-3.391	158.758
BASE		4.125	4.125	0.000	162.149

PROJECT INFO

Date:	27-Jun-23
Start Time:	1615
End Time:	1630
Surveyor:	BDR
Site:	SRF TS 1-33
Project:	Kenai GWM 2023
Base Used:	TS1-33-TBM-2
Base Ht:	162.149
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.216		3.216	0.000	318.980
FS2-15B		7.004	3.216	-3.788	315.192
FS2-15B	7.004		3.216	-3.788	315.192
grnd		9.939	3.216	-6.723	312.257
grnd	9.939		3.216	-6.723	312.257
BASE		3.216	3.216	0.000	318.980

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1015
End Time:	1020
Surveyor:	BDR
Site:	SRF TS 2-15
Project:	Kenai GWM 2023
Base Used:	CP-236
Base Ht:	318.98
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.442		3.442	0	318.98
TP1		4.414	3.442	-0.972	318.008
TP1	10.754		9.782	-0.972	318.008
TS2-15O		4.049	9.782	5.733	324.713
TS2-15O	4.049		9.782	5.733	324.713
ground O		5.480	9.782	4.302	323.282
ground O	5.480		9.782	4.302	323.282
TS2-15R		1.630	9.782	8.152	327.132
TS2-15R	1.630		9.782	8.152	327.132
ground R		3.914	9.782	5.868	324.848
ground R	3.914		9.782	5.868	324.848
TS2-15Q		2.092	9.782	7.69	326.67
TS2-15Q	2.092		9.782	7.69	326.67
ground Q		4.461	9.782	5.321	324.301
ground Q	4.461		9.782	5.321	324.301
TS2-15P		8.179	9.782	1.603	320.583
TS2-15P	8.179		9.782	1.603	320.583
ground P		10.745	9.782	-0.963	318.017
ground P	10.745		9.782	-0.963	318.017
TP-1		10.754	9.782	-0.972	318.008
TP-1	10.774		9.802	-0.972	318.008
TS2-15-TBM-2		1.340	9.802	8.462	327.442
TS2-15-TBM-2	1.340		9.802	8.462	327.442
TP-1		10.774	9.802	-0.972	318.008
TP-1	4.217		3.245	-0.972	318.008
BASE		3.245	3.245	0	318.98

ALEUT

PROJECT INFO

Date:	23-Jun-23
Start Time:	1020
End Time:	1100
Surveyor:	BDR
Site:	SRF TS 2-15
Project:	Kenai GWM 2023
Base Used:	CP-236
Base Ht:	318.98
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

	327.45
	318.98
	8.47

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	-5.103		-5.103	0.000	169.750
TS3-4NN		7.842	-5.103	-12.945	156.805
TS3-4NN	7.842		-5.103	-12.945	156.805
Ground NN		10.468	-5.103	-15.571	154.179
Ground NN	10.468		-5.103	-15.571	154.179
TS3-4P		5.760	-5.103	-10.863	158.887
TS3-4P	5.760		-5.103	-10.863	158.887
Ground P		7.145	-5.103	-12.248	157.502
Ground P	7.145		-5.103	-12.248	157.502
TS3-4P		5.760	-5.103	-10.863	158.887
TS3-4P	2.849		-8.014	-10.863	158.887
TP-1		7.257	-8.014	-15.271	154.479
TP-1	3.794		-11.477	-15.271	154.479
TS3-4OO		2.252	-11.477	-13.729	156.021
TS3-4OO	2.737		-10.992	-13.729	156.021
TS3-4PP		0.479	-10.992	-11.471	158.279
TS3-4PP	0.479		-10.992	-11.471	158.279
Ground PP		3.045	-10.992	-14.037	155.713
Ground PP	3.045		-10.992	-14.037	155.713
Ground OO		5.343	-10.992	-16.335	153.415
Ground OO	5.343		-10.992	-16.335	153.415
TS3-4OO		2.736	-10.992	-13.728	156.022
TS3-4OO	2.646		-11.082	-13.728	156.022
TP-1		4.188	-11.082	-15.270	154.480
TP-1	7.538		-7.732	-15.270	154.480
TS3-4P		3.128	-7.732	-10.860	158.890
TS3-4P	6.067		-4.793	-10.860	158.890
BASE		-4.796	-4.793	0.003	169.753

ALEUT

PROJECT INFO

Date:	24-Jun-23
Start Time:	1245
End Time:	1515
Surveyor:	KT
Site:	SRF TS 3-4
Project:	Kenai GWM 2023
Base Used:	CP-150
Base Ht:	169.75
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	-4.796		-4.796	0.000	169.750
Ground Z		4.955	-4.796	-9.751	159.999
Ground Z	4.955		-4.796	-9.751	159.999
TS3-4Z		3.399	-4.796	-8.195	161.555
TS3-4Z	3.719		-4.476	-8.195	161.555
TS3-4D		1.799	-4.476	-6.275	163.475
TS3-4D	1.799		-4.476	-6.275	163.475
Ground D		4.014	-4.476	-8.490	161.260
Ground D	4.014		-4.476	-8.490	161.260
TP-1		8.699	-4.476	-13.175	156.575
TP-1	6.311		-6.864	-13.175	156.575
FS3-4D		8.610	-6.864	-15.474	154.276
FS3-4D	8.610		-6.864	-15.474	154.276
Ground D		11.829	-6.864	-18.693	151.057
Ground D	11.829		-6.864	-18.693	151.057
FS3-4F		1.343	-6.864	-8.207	161.543
FS3-4F	1.343		-6.864	-8.207	161.543
Ground F		2.840	-6.864	-9.704	160.046
Ground F	2.840		-6.864	-9.704	160.046
Ground A		12.786	-6.864	-19.650	150.100
Ground A	12.786		-6.864	-19.650	150.100
FS3-4A		10.141	-6.864	-17.005	152.745
FS3-4A	10.141		-6.864	-17.005	152.745
TS3-4MM		8.714	-6.864	-15.578	154.172
TS3-4MM	8.714		-6.864	-15.578	154.172
Ground MM		11.664	-6.864	-18.528	151.222
Ground MM	11.664		-6.864	-18.528	151.222
TP-2		12.296	-6.864	-19.160	150.590
TP-2	1.112		-18.048	-19.160	150.590
FS3-4B		4.054	-18.048	-22.102	147.648
FS3-4B	4.054		-18.048	-22.102	147.648
Ground B		5.212	-18.048	-23.260	146.490
Ground B	5.212		-18.048	-23.260	146.490
TP-3		1.008	-18.048	-19.056	150.694
TP-3	11.892		-7.164	-19.056	150.694
TP-4		3.176	-7.164	-10.340	159.410
TP-4	7.853		-2.487	-10.340	159.410
TS3-4CC		4.749	-2.487	-7.236	162.514
TS3-4CC	4.749		-2.487	-7.236	162.514
Ground CC		6.804	-2.487	-9.291	160.459
Ground CC	6.804		-2.487	-9.291	160.459
TP-5		4.463	-2.487	-6.950	162.800
TP-5	5.084		-1.866	-6.950	162.800
Base		-1.869	-1.866	0.003	169.753

ALEUT

PROJECT INFO

Date:	24-Jun-23
Start Time:	1403
End Time:	1517
Surveyor:	KT
Site:	SRF TS 3-4
Project:	Kenai GWM 2023
Base Used:	CP-150
Base Ht:	169.75
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

LEVEL LOOP FIELD FORM

PointID	Backshot (+)	Foreshot (-)	Equipment Horizon	Point Height (rel)	Point Height
BASE	3.429		3.429	0.000	163.170
TS3-9V		7.575	3.429	-4.146	159.024
TS3-9V	7.575		3.429	-4.146	159.024
Ground V		9.532	3.429	-6.103	157.067
Ground V	9.532		3.429	-6.103	157.067
BASE		3.429	3.429	0.000	163.170
BASE	9.124		9.124	0.000	163.170
TS3-9S		7.272	9.124	1.852	165.022
TS3-9S	7.272		9.124	1.852	165.022
Ground S		9.096	9.124	0.028	163.198
Ground S	9.096		9.124	0.028	163.198
TS3-9F		3.850	9.124	5.274	168.444
TS3-9F	3.850		9.124	5.274	168.444
Ground F		6.243	9.124	2.881	166.051
Ground F	6.243		9.124	2.881	166.051
TS3-9BB		7.448	9.124	1.676	164.846
TS3-9BB	7.448		9.124	1.676	164.846
Ground BB		9.910	9.124	-0.786	162.384
Ground BB	9.910		9.124	-0.786	162.384
TS3-9T		6.407	9.124	2.717	165.887
TS3-9T	6.407		9.124	2.717	165.887
Ground T		8.321	9.124	0.803	163.973
Ground T	8.321		9.124	0.803	163.973
TS3-9CR		3.304	9.124	5.820	168.990
TS3-9CR	3.304		9.124	5.820	168.990
Ground CR		5.765	9.124	3.359	166.529
Ground CR	5.765		9.124	3.359	166.529
TS3-9A		4.413	9.124	4.711	167.881
TS3-9A	4.413		9.124	4.711	167.881
Ground A		6.965	9.124	2.159	165.329
Ground A	6.965		9.124	2.159	165.329
Ground U		8.984	9.124	0.140	163.310
Ground U	8.984		9.124	0.140	163.310
TS3-9U		6.743	9.124	2.381	165.551
TS3-9U	1.045		3.426	2.381	165.551
FS3-9E		6.325	3.426	-2.899	160.271
FS3-9E	6.325		3.426	-2.899	160.271
Ground E		8.744	3.426	-5.318	157.852
Ground E	8.744		3.426	-5.318	157.852
FS3-9B		3.166	3.426	0.260	163.430
FS3-9B	3.166		3.426	0.260	163.430
Ground B		5.979	3.426	-2.553	160.617
Ground B	5.979		3.426	-2.553	160.617
FS3-9G		6.698	3.426	-3.272	159.898
FS3-9G	6.698		3.426	-3.272	159.898
Ground G		9.119	3.426	-5.693	157.477

ALEUT

PROJECT INFO

Date:	24-Jun-23
Start Time:	948
End Time:	1149
Surveyor:	KT
Site:	SRF TS 3-9
Project:	Kenai GWM 2023
Base Used:	CP-150
Base Ht:	163.17
Units:	ft

DIGITAL LEVEL INFO

Model #:	Leica LS-15
Serial #:	700065

Ground G	9.119		3.426	-5.693	157.477
TS3-9DD		9.579	3.426	-6.153	157.017
TS3-9DD	9.579		3.426	-6.153	157.017
Ground DD		12.469	3.426	-9.043	154.127
Ground DD	12.469		3.426	-9.043	154.127
TS3-9CC		7.614	3.426	-4.188	158.982
TS3-9CC	7.614		3.426	-4.188	158.982
Ground CC		9.952	3.426	-6.526	156.644
Ground CC	9.952		3.426	-6.526	156.644
TS3-9U		1.045	3.426	2.381	165.551
TS3-9U	4.088		6.469	2.381	165.551
TS3-9AA		4.058	6.469	2.411	165.581
TS3-9AA	4.058		6.469	2.411	165.581
Ground AA		6.612	6.469	-0.143	163.027
Ground AA	6.612		6.469	-0.143	163.027
TP-1		3.904	6.469	2.565	165.735
TP-1	3.272		5.837	2.565	165.735
BASE		5.835	5.837	0.002	163.172

FILE: 8343_0623_071352.m00 OP1688072291577 SRF-SCU-23B-03-TBM-1

NGS OPUS SOLUTION REPORT

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy

USER: brad.ramsay@aar.aleutfederal.com DATE: June 29, 2023
RINEX FILE: 8343174r.23o TIME: 20:59:31 UTC

SOFTWARE: page5 2008.25 master272.pl 160321 START: 2023/06/23 17:14:00
EPHEMERIS: igr22675.eph [rapid] STOP: 2023/06/24 04:40:00
NAV FILE: brdc1740.23n OBS USED: 30973 / 33140 : 93%
ANT NAME: LEIGS16 NONE # FIXED AMB: 103 / 132 : 78%
ARP HEIGHT: 1.346 OVERALL RMS: 0.015(m)

REF FRAME:	NAD_83(2011)(EPOCH:2010.0000)		ITRF2014 (EPOCH:2023.4766)	
X:	-2730856.409(m)	0.016(m)	-2730857.662(m)	0.016(m)
Y:	-1523273.555(m)	0.023(m)	-1523272.566(m)	0.023(m)
Z:	5540431.611(m)	0.042(m)	5540431.772(m)	0.042(m)
LAT:	60 43 28.03339	0.030(m)	60 43 28.01867	0.030(m)
E LON:	209 9 10.10783	0.020(m)	209 9 10.01059	0.020(m)
W LON:	150 50 49.89217	0.020(m)	150 50 49.98941	0.020(m)
EL HGT:	44.419(m)	0.032(m)	44.859(m)	0.032(m)
ORTHO HGT:	39.476(m)	0.264(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES UTM (Zone 05)	STATE PLANE COORDINATES SPC (5004 AK 4)
Northing (Y) [meters]	6734021.072	749097.531
Easting (X) [meters]	617429.229	453769.529
Convergence [degrees]	1.87805833	-0.73900000
Point Scale	0.99976897	0.99992618
Combined Factor	0.99976202	0.99991923

US NATIONAL GRID DESIGNATOR: 5VPH1742934021(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DP9274	MCES MCNEIL CANYON ELE CORS GRP	N594445.880	W1511528.105	111358.3
DO1814	AC51 STRANDLINEAK2007 CORS GRP	N612953.103	W1515007.161	101349.9
DM7483	AC17 DRIFTRIVERAK2006 CORS GRP	N603950.053	W1522413.757	85308.7

NEAREST NGS PUBLISHED CONTROL POINT

DH4673	UNSTAMPED 2	N604756.877	W1510048.067	12299.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

FILE: 8343_0624_071854.m00 OP1688072575299 SRF-SCU-312-09-TBM-1

NGS OPUS SOLUTION REPORT

All computed coordinate accuracies are listed as peak-to-peak values.
For additional information: https://www.ngs.noaa.gov/OPUS/about.jsp#accuracy

USER: brad.ramsay@aar.aleutfederal.com DATE: June 29, 2023
RINEX FILE: 8343175r.23o TIME: 21:03:54 UTC

SOFTWARE: page5 2008.25 master251.pl 160321 START: 2023/06/24 17:19:00
EPHEMERIS: igr22676.eph [rapid] STOP: 2023/06/25 01:43:00
NAV FILE: brdc1750.23n OBS USED: 14281 / 18789 : 76%
ANT NAME: LEIGS16 NONE # FIXED AMB: 118 / 131 : 90%
ARP HEIGHT: 1.136 OVERALL RMS: 0.018(m)

REF FRAME:	NAD_83(2011)(EPOCH:2010.0000)		ITRF2014 (EPOCH:2023.4791)	
X:	-2732531.117(m)	0.014(m)	-2732532.372(m)	0.014(m)
Y:	-1522292.749(m)	0.017(m)	-1522291.763(m)	0.017(m)
Z:	5539878.198(m)	0.012(m)	5539878.357(m)	0.012(m)
LAT:	60 42 51.52428	0.010(m)	60 42 51.50945	0.010(m)
E LON:	209 7 19.82716	0.022(m)	209 7 19.73006	0.022(m)
W LON:	150 52 40.17284	0.022(m)	150 52 40.26994	0.022(m)
EL HGT:	43.571(m)	0.013(m)	44.011(m)	0.013(m)
ORTHO HGT:	38.650(m)	0.246(m)	[NAVD88 (Computed using GEOID12B)]	

	UTM COORDINATES UTM (Zone 05)	STATE PLANE COORDINATES SPC (5004 AK 4)
Northing (Y) [meters]	6732837.538	747989.662
Easting (X) [meters]	615795.159	452082.855
Convergence [degrees]	1.85114444	-0.76564722
Point Scale	0.99976430	0.99992812
Combined Factor	0.99975748	0.99992130

US NATIONAL GRID DESIGNATOR: 5VPH1579532838(NAD 83)

BASE STATIONS USED

PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE(m)
DP9274	MCES MCNEIL CANYON ELE CORS GRP	N594445.880	W1511528.105	109915.4
DO1814	AC51 STRANDLINEAK2007 CORS GRP	N612953.103	W1515007.161	101466.8
DM7483	AC17 DRIFTRIVERAK2006 CORS GRP	N603950.053	W1522413.757	83570.2

NEAREST NGS PUBLISHED CONTROL POINT

DH4673	UNSTAMPED 2	N604756.877	W1510048.067	11996.7

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

APPENDIX G

LABORATORY DATA PACKAGE

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Laboratory Report of Analysis

To: Hilcorp Alaska, LLC
3800 Centerpoint Drive Suite 417
Anchorage, AK 99503
(907)277-7297

Report Number: **1232801**

Client Project: **Hilcorp 2023 Groundwater Monit**

Dear Kelly Carson,

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 Justin 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.



Justin Nelson
2023.10.03
09:12:53 -08'00'

Justin Nelson Date
Project Manager
Justin.Nelson@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

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Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
SGS Project: **1232801**
Project Name/Site: **Hilcorp 2023 Groundwater Monit**
Project Contact: **Kelly Carson**

Refer to sample receipt form for information on sample condition.

SRF14-TS14EE-23(1232801004BMS) (1232801005) BMS

8260D - BMS recoveries for multiple analytes do not meet QC criteria. See LCS for accuracy requirements.

SRF14-TS14E...(1232801004BMSD) (1232801006) BMSD

8260D - BMSD recoveries for multiple analytes do not meet QC criteria. See LCS for accuracy requirements.

SRF14-FS14H-23 (1232801007) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 does not meet QC criteria.

SRF14-FS14E-23 (1232801008) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 does not meet QC criteria due to sample dilution.

SRF127-TS127L-23 (1232801011) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 does not meet QC criteria due to sample dilution.

SRF127-TS127K-23 (1232801016) PS

8270D-SIM PAH- Sample was spiked with double surrogate.

SRF133-TS133JJ-23 (1232801017) PS

8260D - Sample has a pH greater than two; the sample was analyzed more than 7 days from collection.

SRF133-TS13...(1232801017BMSD) (1232801019) BMSD

8260D - BMSD recoveries for multiple analytes do not meet QC criteria. See LCS for accuracy requirements.
8270D SIM - PAH MS/MSD RPD's for several analytes do not meet QC criteria. See LCS for accuracy requirements.

SRF19-TS19UZ-23 (1232801024) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 does not meet QC criteria.

SRF133-FS133H-23 (1232801038) PS

8270D SIM - PAH surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria.

SRF34-FS34B-23 (1232801039) PS

8270-SIMD PAH - Sample was spiked with double surrogate.

LCSD for HBN 1857547 [XXX/4804 (1718663) LCSD

8270D SIM - PAH LCSD recoveries for benzo(a)anthracene and chrysene do not meet QC criteria.

LCSD for HBN 1857597 [XXX/4805 (1718871) LCSD

8270D SIM - PAH LCS/LCSD RPD for benzo[k]fluoranthene does not meet QC criteria. The associated sample concentrations for this analyte are less than the LOQ.
8270D SIM - PAH LCS/LCSD RPD for benzo[a]pyrene does not meet QC criteria.

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Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
SGS Project: **1232801**
Project Name/Site: **Hilcorp 2023 Groundwater Monit**
Project Contact: **Kelly Carson**

Ethylene Glycol 8015M was analyzed by Bio-Chem of Grand Rapids, MI.
Revised Report - Compound lists have been updated.

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
SW8260D				
1232801016	SRF127-TS127K-23	VMS22500	tert-Butylbenzene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. 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, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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
TNTC	Too Numerous To Count
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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SRF215-FS215B-23	1232801001	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF127-FS127C-23	1232801002	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF127-TS127M-23	1232801003	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-TS14EE-23	1232801004	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-TS14EE-23(1232801004E	1232801005	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-TS14E...(1232801004BM	1232801006	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-FS14H-23	1232801007	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-FS14E-23	1232801008	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF215-TS215P-23	1232801009	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF127-TS127G-23	1232801010	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF127-TS127L-23	1232801011	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-FS133W-23	1232801012	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-FS133S-23	1232801013	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF215-TS215O-23	1232801014	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF215-TS215R-23	1232801015	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF127-TS127K-23	1232801016	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-TS133JJ-23	1232801017	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-TS133...(1232801017BM	1232801018	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-TS13...(1232801017BMS	1232801019	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-TS133JJZ-23	1232801020	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-TS133UR-23	1232801021	06/17/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-TS14GR-23	1232801022	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF19-TS19U-23	1232801023	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF19-TS19UZ-23	1232801024	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF19-TS19HH-23	1232801025	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-TS133O2-23	1232801026	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF34-FS34A-23	1232801027	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF34-FS34F-23	1232801028	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF34-TS34CC-23	1232801029	06/19/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF34-TS34MM-23	1232801030	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF34-TS34OO-23	1232801031	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF34-TS34P-23	1232801032	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF39-TS39DD-23	1232801033	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-FS14I-23	1232801034	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-TS14F-23	1232801035	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-FS133F-23	1232801036	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-FS133FZ-23	1232801037	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF133-FS133H-23	1232801038	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF34-FS34B-23	1232801039	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SRF34-FS34BZ-23	1232801040	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF-TB01	1232801041	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)
SRF14-TS14GRZ-23	1232801042	06/18/2023	06/20/2023	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV-Custom
SW8260D	Volatile Organic Compounds(W)Custom List
SW8260D	Volatile Organic Compounds (W) FULL
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV

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Detectable Results Summary

Client Sample ID: **SRF215-FS215B-23**
Lab Sample ID: 1232801001

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Phenanthrene	0.0394J	ug/L

Client Sample ID: **SRF127-FS127C-23**
Lab Sample ID: 1232801002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Phenanthrene	0.0355J	ug/L

Client Sample ID: **SRF14-FS14H-23**
Lab Sample ID: 1232801007

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.200	ug/L
	2-Methylnaphthalene	0.0628	ug/L
	Naphthalene	0.134	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	1.02	ug/L
	1,3,5-Trimethylbenzene	1.82	ug/L
	Benzene	5.09	ug/L
	Ethylbenzene	0.972J	ug/L
	Isopropylbenzene (Cumene)	1.40	ug/L
	Naphthalene	0.460J	ug/L
	P & M -Xylene	0.969J	ug/L

Client Sample ID: **SRF14-FS14E-23**
Lab Sample ID: 1232801008

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	12.6	ug/L
	2-Methylnaphthalene	8.87	ug/L
	Naphthalene	34.0	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	106	ug/L
	1,3,5-Trimethylbenzene	36.3	ug/L
	Benzene	30.8	ug/L
	Ethylbenzene	75.2	ug/L
	Isopropylbenzene (Cumene)	17.0	ug/L
	Naphthalene	116	ug/L
	o-Xylene	0.829J	ug/L
	P & M -Xylene	175	ug/L
	Xylenes (total)	176	ug/L

Client Sample ID: **SRF215-TS215P-23**
Lab Sample ID: 1232801009

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Phenanthrene	0.0362J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF127-TS127G-23**
Lab Sample ID: 1232801010

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.240	ug/L
	2-Methylnaphthalene	0.112	ug/L
	Naphthalene	3.03	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	38.5	ug/L
	1,3,5-Trimethylbenzene	12.4	ug/L
	Benzene	3.66	ug/L
	Ethylbenzene	3.08	ug/L
	Isopropylbenzene (Cumene)	15.5	ug/L
	Naphthalene	7.51	ug/L
	P & M -Xylene	123	ug/L
	Xylenes (total)	123	ug/L

Client Sample ID: **SRF127-TS127L-23**
Lab Sample ID: 1232801011

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	21.5	ug/L
	2-Methylnaphthalene	22.5	ug/L
	Naphthalene	29.9	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	281	ug/L
	1,3,5-Trimethylbenzene	98.8	ug/L
	Benzene	4.70	ug/L
	Ethylbenzene	61.6	ug/L
	Isopropylbenzene (Cumene)	36.6	ug/L
	Naphthalene	63.1	ug/L
	o-Xylene	89.0	ug/L
	P & M -Xylene	157	ug/L
	Xylenes (total)	246	ug/L

Client Sample ID: **SRF133-FS133W-23**
Lab Sample ID: 1232801012

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Phenanthrene	0.0370J	ug/L

Client Sample ID: **SRF133-FS133S-23**
Lab Sample ID: 1232801013

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0432J	ug/L
	2-Methylnaphthalene	0.0437J	ug/L
	Naphthalene	0.0900J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	0.343J	ug/L
	1,3,5-Trimethylbenzene	3.36	ug/L
	Benzene	0.620	ug/L
	Ethylbenzene	0.818J	ug/L
	Isopropylbenzene (Cumene)	2.64	ug/L
	P & M -Xylene	0.658J	ug/L
	tert-Butylbenzene	0.385J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF215-TS215O-23**
Lab Sample ID: 1232801014

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	8.91	ug/L
	Naphthalene	14.1	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	211	ug/L
	1,3,5-Trimethylbenzene	83.5	ug/L
	Benzene	3.37	ug/L
	Ethylbenzene	31.1	ug/L
	Naphthalene	27.9	ug/L
	o-Xylene	2.16J	ug/L
	P & M -Xylene	967	ug/L
	Xylenes (total)	969	ug/L

Client Sample ID: **SRF127-TS127K-23**
Lab Sample ID: 1232801016

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	34.9	ug/L
	2-Methylnaphthalene	38.1	ug/L
	Naphthalene	96.5	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	1130	ug/L
	1,3,5-Trimethylbenzene	295	ug/L
	Benzene	25.3	ug/L
	Ethylbenzene	481	ug/L
	Isopropylbenzene (Cumene)	299	ug/L
	Naphthalene	296	ug/L
	o-Xylene	35.7	ug/L
	P & M -Xylene	2050	ug/L
	tert-Butylbenzene	+SP	ug/L
	Xylenes (total)	2080	ug/L

Client Sample ID: **SRF133-TS133JJ-23**
Lab Sample ID: 1232801017

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0758	ug/L
	2-Methylnaphthalene	0.113	ug/L
	Acenaphthene	0.0169J	ug/L
	Fluorene	0.0653	ug/L
	Naphthalene	0.0512J	ug/L
	Phenanthrene	0.0684J	ug/L
Volatile GC/MS	Benzene	0.711	ug/L
	tert-Butylbenzene	0.426J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF133-TS133JJZ-23**
Lab Sample ID: 1232801020

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0162J	ug/L
	2-Methylnaphthalene	0.0178J	ug/L
	Naphthalene	0.0369J	ug/L
Volatile GC/MS	Benzene	0.836	ug/L
	Isopropylbenzene (Cumene)	0.720J	ug/L
	sec-Butylbenzene	0.737J	ug/L
	tert-Butylbenzene	0.520J	ug/L

Client Sample ID: **SRF133-TS133UR-23**
Lab Sample ID: 1232801021

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.141	ug/L
	2-Methylnaphthalene	0.0600	ug/L
	Naphthalene	0.415	ug/L
Volatile GC/MS	Benzene	9.68	ug/L
	Ethylbenzene	4.15	ug/L
	Isopropylbenzene (Cumene)	0.988J	ug/L
	Naphthalene	1.46	ug/L

Client Sample ID: **SRF14-TS14GR-23**
Lab Sample ID: 1232801022

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	44.2	ug/L
	2-Methylnaphthalene	54.0	ug/L
	Naphthalene	71.9	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	711	ug/L
	1,3,5-Trimethylbenzene	390	ug/L
	Benzene	19.0	ug/L
	Ethylbenzene	146	ug/L
	Isopropylbenzene (Cumene)	109	ug/L
	Naphthalene	117	ug/L
	o-Xylene	58.1	ug/L
	P & M -Xylene	322	ug/L
	Xylenes (total)	380	ug/L

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Detectable Results Summary

Client Sample ID: **SRF19-TS19U-23**
Lab Sample ID: 1232801023

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	1.82	ug/L
	2-Methylnaphthalene	1.82	ug/L
	Acenaphthene	0.0762	ug/L
	Fluorene	0.170	ug/L
	Naphthalene	1.53	ug/L
	Phenanthrene	0.106	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	15.7	ug/L
	1,3,5-Trimethylbenzene	10.9	ug/L
	Benzene	0.450	ug/L
	Ethylbenzene	4.42	ug/L
	Isopropylbenzene (Cumene)	3.25	ug/L
	Naphthalene	4.28	ug/L
	o-Xylene	0.827J	ug/L
	P & M -Xylene	7.33	ug/L
	sec-Butylbenzene	1.16	ug/L
	Xylenes (total)	8.16	ug/L

Client Sample ID: **SRF19-TS19UZ-23**
Lab Sample ID: 1232801024

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	1.39	ug/L
	2-Methylnaphthalene	1.42	ug/L
	Acenaphthene	0.0634	ug/L
	Fluorene	0.130	ug/L
	Naphthalene	1.18	ug/L
	Phenanthrene	0.0870J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	16.9	ug/L
	1,3,5-Trimethylbenzene	11.5	ug/L
	Benzene	0.458	ug/L
	Ethylbenzene	4.59	ug/L
	Isopropylbenzene (Cumene)	3.31	ug/L
	Naphthalene	4.30	ug/L
	o-Xylene	0.830J	ug/L
	P & M -Xylene	6.95	ug/L
	sec-Butylbenzene	1.21	ug/L
	Xylenes (total)	7.78	ug/L

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Detectable Results Summary

Client Sample ID: **SRF19-TS19HH-23**
Lab Sample ID: 1232801025

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.153	ug/L
	2-Methylnaphthalene	0.0885	ug/L
	Naphthalene	0.0970J	ug/L
	Phenanthrene	0.0378J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	0.509J	ug/L
	1,3,5-Trimethylbenzene	2.80	ug/L
	Benzene	0.227J	ug/L
	Isopropylbenzene (Cumene)	2.66	ug/L
	sec-Butylbenzene	1.83	ug/L

Client Sample ID: **SRF133-TS133O2-23**
Lab Sample ID: 1232801026

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	9.75	ug/L
	2-Methylnaphthalene	7.32	ug/L
	Naphthalene	14.3	ug/L
Volatile GC/MS	Benzene	143	ug/L
	Ethylbenzene	174	ug/L
	Isopropylbenzene (Cumene)	42.6	ug/L
	Naphthalene	49.4	ug/L
	o-Xylene	1.33	ug/L
	P & M -Xylene	0.876J	ug/L
	tert-Butylbenzene	2.14	ug/L
	Xylenes (total)	2.21J	ug/L

Client Sample ID: **SRF34-FS34A-23**
Lab Sample ID: 1232801027

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0265J	ug/L
	Naphthalene	0.0384J	ug/L
Volatile GC/MS	Benzene	2.68	ug/L

Client Sample ID: **SRF34-FS34F-23**
Lab Sample ID: 1232801028

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	1.55	ug/L
	Naphthalene	3.10	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	3.55	ug/L
	1,3,5-Trimethylbenzene	2.08	ug/L
	Benzene	9.14	ug/L
	Ethylbenzene	3.20	ug/L
	Naphthalene	9.31	ug/L
	P & M -Xylene	2.64	ug/L
	Xylenes (total)	2.64J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF34-TS34CC-23**
Lab Sample ID: 1232801029

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.552	ug/L
	Naphthalene	1.10	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	17.7	ug/L
	1,3,5-Trimethylbenzene	9.70	ug/L
	Benzene	0.169J	ug/L
	Ethylbenzene	7.51	ug/L
	Naphthalene	1.88	ug/L
	P & M -Xylene	17.9	ug/L
	Xylenes (total)	17.9	ug/L

Client Sample ID: **SRF34-TS34MM-23**
Lab Sample ID: 1232801030

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0214J	ug/L
	2-Methylnaphthalene	0.0236J	ug/L
	Phenanthrene	0.0435J	ug/L

Client Sample ID: **SRF34-TS34OO-23**
Lab Sample ID: 1232801031

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0170J	ug/L
	2-Methylnaphthalene	0.0209J	ug/L
	Phenanthrene	0.0340J	ug/L
Volatile GC/MS	Naphthalene	1.11	ug/L

Client Sample ID: **SRF34-TS34P-23**
Lab Sample ID: 1232801032

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	1.34	ug/L
	Naphthalene	11.2	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	13.4	ug/L
	1,3,5-Trimethylbenzene	39.6	ug/L
	Benzene	475	ug/L
	Ethylbenzene	250	ug/L
	Naphthalene	28.5	ug/L
	P & M -Xylene	168	ug/L
	Xylenes (total)	168	ug/L

Client Sample ID: **SRF39-TS39DD-23**
Lab Sample ID: 1232801033

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0263J	ug/L
	2-Methylnaphthalene	0.0326J	ug/L
	Naphthalene	0.0395J	ug/L
	Phenanthrene	0.0368J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	0.393J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF14-FS14I-23**
Lab Sample ID: 1232801034

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0185J	ug/L
	2-Methylnaphthalene	0.0234J	ug/L
	Naphthalene	0.0347J	ug/L

Client Sample ID: **SRF14-TS14F-23**
Lab Sample ID: 1232801035

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	15.1	ug/L
	2-Methylnaphthalene	16.6	ug/L
	Acenaphthene	0.190	ug/L
	Benzo(a)Anthracene	0.0636	ug/L
	Benzo[a]pyrene	0.0205	ug/L
	Benzo[b]Fluoranthene	0.0342J	ug/L
	Benzo[g,h,i]perylene	0.0203J	ug/L
	Chrysene	0.0940	ug/L
	Fluoranthene	0.0663	ug/L
	Fluorene	0.704	ug/L
	Naphthalene	49.6	ug/L
	Phenanthrene	1.19	ug/L
	Pyrene	0.107	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	5820	ug/L
	1,3,5-Trimethylbenzene	4100	ug/L
	Benzene	15.0J	ug/L
	Ethylbenzene	149	ug/L
	Isopropylbenzene (Cumene)	1300	ug/L
	Naphthalene	90.3	ug/L
	o-Xylene	739	ug/L
	P & M -Xylene	331	ug/L
	sec-Butylbenzene	15.5J	ug/L
	Xylenes (total)	1070	ug/L

Client Sample ID: **SRF133-FS133F-23**
Lab Sample ID: 1232801036

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.105	ug/L
	2-Methylnaphthalene	0.108	ug/L
	Naphthalene	0.276	ug/L
Volatile GC/MS	Benzene	319	ug/L
	P & M -Xylene	4.11	ug/L
	Xylenes (total)	4.11J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF133-FS133FZ-23**
Lab Sample ID: 1232801037

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.154	ug/L
	2-Methylnaphthalene	0.160	ug/L
	Naphthalene	0.369	ug/L
Volatile GC/MS	Benzene	322	ug/L
	P & M -Xylene	4.37	ug/L
	Xylenes (total)	4.37J	ug/L

Client Sample ID: **SRF133-FS133H-23**
Lab Sample ID: 1232801038

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.416	ug/L
	2-Methylnaphthalene	0.310	ug/L
	Naphthalene	0.807	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	3.06	ug/L
	1,3,5-Trimethylbenzene	6.02	ug/L
	Benzene	16.9	ug/L
	Ethylbenzene	24.9	ug/L
	Isopropylbenzene (Cumene)	7.99	ug/L
	Naphthalene	3.87	ug/L
	o-Xylene	0.369J	ug/L
	P & M -Xylene	7.97	ug/L
	tert-Butylbenzene	0.451J	ug/L
	Xylenes (total)	8.34	ug/L

Client Sample ID: **SRF34-FS34B-23**
Lab Sample ID: 1232801039

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Phenanthrene	0.0337J	ug/L
Volatile GC/MS	Benzene	0.423	ug/L

Client Sample ID: **SRF34-FS34BZ-23**
Lab Sample ID: 1232801040

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0200J	ug/L
	2-Methylnaphthalene	0.0288J	ug/L
	Benzo(a)Anthracene	0.0438J	ug/L
	Benzo[a]pyrene	0.0702	ug/L
	Benzo[b]Fluoranthene	0.0755	ug/L
	Benzo[g,h,i]perylene	0.107	ug/L
	Benzo[k]fluoranthene	0.0785	ug/L
	Chrysene	0.0482	ug/L
	Dibenzo[a,h]anthracene	0.103	ug/L
	Fluoranthene	0.0383J	ug/L
	Indeno[1,2,3-c,d] pyrene	0.108	ug/L
	Naphthalene	0.0325J	ug/L
	Phenanthrene	0.0545J	ug/L
	Pyrene	0.0335J	ug/L
Volatile GC/MS	Benzene	0.424	ug/L

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Detectable Results Summary

Client Sample ID: **SRF14-TS14GRZ-23**
Lab Sample ID: 1232801042

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	33.1	ug/L
	2-Methylnaphthalene	40.7	ug/L
	Naphthalene	53.7	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	528	ug/L
	1,3,5-Trimethylbenzene	280	ug/L
	Benzene	17.0	ug/L
	Ethylbenzene	132	ug/L
	Isopropylbenzene (Cumene)	95.3	ug/L
	Naphthalene	111	ug/L
	o-Xylene	58.4	ug/L
	P & M -Xylene	298	ug/L
	Xylenes (total)	356	ug/L

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Results of **SRF215-FS215B-23**

Client Sample ID: **SRF215-FS215B-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801001
Lab Project ID: 1232801

Collection Date: 06/17/23 11:05
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS2-15B

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
2-Methylnaphthalene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Acenaphthene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Acenaphthylene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Anthracene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Benzo(a)Anthracene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Benzo[a]pyrene	0.0107	U	0.0214	0.00662	0.0107	ug/L	1		06/26/23 15:25
Benzo[b]Fluoranthene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Benzo[g,h,i]perylene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Benzo[k]fluoranthene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Chrysene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Dibenzo[a,h]anthracene	0.0107	U	0.0214	0.00662	0.0107	ug/L	1		06/26/23 15:25
Fluoranthene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Fluorene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Indeno[1,2,3-c,d] pyrene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Naphthalene	0.0535	U	0.107	0.0331	0.0535	ug/L	1		06/26/23 15:25
Phenanthrene	0.0394	J	0.107	0.0331	0.0535	ug/L	1		06/26/23 15:25
Pyrene	0.0267	U	0.0534	0.0160	0.0267	ug/L	1		06/26/23 15:25
Surrogates									
2-Methylnaphthalene-d10 (surr)	58		38-100			%	1		06/26/23 15:25
Fluoranthene-d10 (surr)	59.5		30-111			%	1		06/26/23 15:25

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 15:25
Container ID: 1232801001-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 234 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF215-FS215B-23**

Client Sample ID: **SRF215-FS215B-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801001
Lab Project ID: 1232801

Collection Date: 06/17/23 11:05
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS2-15B

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/23/23 16:39
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/23/23 16:39
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 16:39
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/23/23 16:39
Surrogates									
1,2-Dichloroethane-D4 (surr)	107		81-118			%	1		06/23/23 16:39
4-Bromofluorobenzene (surr)	101		85-114			%	1		06/23/23 16:39
Toluene-d8 (surr)	94.6		89-112			%	1		06/23/23 16:39

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 16:39
Container ID: 1232801001-A

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF127-FS127C-23**

Client Sample ID: **SRF127-FS127C-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801002
Lab Project ID: 1232801

Collection Date: 06/17/23 12:40
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-27C

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
2-Methylnaphthalene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Acenaphthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Acenaphthylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		06/26/23 15:42
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Chrysene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		06/26/23 15:42
Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Fluorene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Naphthalene	0.0500	U	0.100	0.0310	0.0500	ug/L	1		06/26/23 15:42
Phenanthrene	0.0355	J	0.100	0.0310	0.0500	ug/L	1		06/26/23 15:42
Pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		06/26/23 15:42
Surrogates									
2-Methylnaphthalene-d10 (surr)	60.7		38-100			%	1		06/26/23 15:42
Fluoranthene-d10 (surr)	72.9		30-111			%	1		06/26/23 15:42

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 15:42
Container ID: 1232801002-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF127-FS127C-23**

Client Sample ID: **SRF127-FS127C-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801002
Lab Project ID: 1232801

Collection Date: 06/17/23 12:40
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-27C

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/23/23 19:33
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/23/23 19:33
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:33
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/23/23 19:33
Surrogates									
1,2-Dichloroethane-D4 (surr)	100		81-118			%	1		06/23/23 19:33
4-Bromofluorobenzene (surr)	104		85-114			%	1		06/23/23 19:33
Toluene-d8 (surr)	94		89-112			%	1		06/23/23 19:33

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 19:33
Container ID: 1232801002-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF127-TS127M-23**

Client Sample ID: **SRF127-TS127M-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801003
Lab Project ID: 1232801

Collection Date: 06/17/23 14:00
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27M

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		06/26/23 15:58
2-Methylnaphthalene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		06/26/23 15:58
Naphthalene	0.0510	U	0.102	0.0316	0.0510	ug/L	1		06/26/23 15:58
Surrogates									
2-Methylnaphthalene-d10 (surr)	60.5		38-100			%	1		06/26/23 15:58
Fluoranthene-d10 (surr)	65.5		30-111			%	1		06/26/23 15:58

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 15:58
Container ID: 1232801003-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

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

Member of SGS Group

Results of **SRF127-TS127M-23**

Client Sample ID: **SRF127-TS127M-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801003
Lab Project ID: 1232801

Collection Date: 06/17/23 14:00
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27M

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 19:50
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 19:50
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/21/23 19:50
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 19:50
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 19:50
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 00:39
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 19:50
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 19:50
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 19:50
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		06/21/23 19:50
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/21/23 19:50
Toluene-d8 (surr)	97.1		89-112			%	1		06/21/23 19:50

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 00:39
Container ID: 1232801003-B

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 19:50
Container ID: 1232801003-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF14-TS14EE-23**

Client Sample ID: **SRF14-TS14EE-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801004
Lab Project ID: 1232801

Collection Date: 06/17/23 16:00
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4EE

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		06/26/23 16:14
2-Methylnaphthalene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		06/26/23 16:14
Naphthalene	0.0510	U	0.102	0.0316	0.0510	ug/L	1		06/26/23 16:14
Surrogates									
2-Methylnaphthalene-d10 (surr)	53.3		38-100			%	1		06/26/23 16:14
Fluoranthene-d10 (surr)	66.3		30-111			%	1		06/26/23 16:14

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 16:14
Container ID: 1232801004-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Results of **SRF14-TS14EE-23**

Client Sample ID: **SRF14-TS14EE-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801004
Lab Project ID: 1232801

Collection Date: 06/17/23 16:00
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4EE

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:41
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:41
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/28/23 22:41
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:41
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:41
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:41
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:41
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/28/23 22:41
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/28/23 22:41
Surrogates									
1,2-Dichloroethane-D4 (surr)	101		81-118			%	1		06/28/23 22:41
4-Bromofluorobenzene (surr)	104		85-114			%	1		06/28/23 22:41
Toluene-d8 (surr)	92.9		89-112			%	1		06/28/23 22:41

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 22:41
Container ID: 1232801004-A

Prep Batch: VXX40059
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-FS14H-23**

Client Sample ID: **SRF14-FS14H-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801007
Lab Project ID: 1232801

Collection Date: 06/17/23 17:30
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-4H

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.200		0.0490	0.0147	0.0245	ug/L	1		07/04/23 01:23
2-Methylnaphthalene	0.0628		0.0490	0.0147	0.0245	ug/L	1		07/04/23 01:23
Naphthalene	0.134		0.0980	0.0304	0.0490	ug/L	1		07/04/23 01:23
Surrogates									
2-Methylnaphthalene-d10 (surr)	37.1	*	38-100			%	1		07/04/23 01:23
Fluoranthene-d10 (surr)	69.3		30-111			%	1		07/04/23 01:23

Batch Information

Analytical Batch: XMS13705
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 01:23
Container ID: 1232801007-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-FS14H-23**

Client Sample ID: **SRF14-FS14H-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801007
Lab Project ID: 1232801

Collection Date: 06/17/23 17:30
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-4H

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	1.02		1.00	0.310	0.500	ug/L	1		06/23/23 19:48
1,3,5-Trimethylbenzene	1.82		1.00	0.310	0.500	ug/L	1		06/23/23 19:48
Benzene	5.09		0.400	0.120	0.200	ug/L	1		06/23/23 19:48
Ethylbenzene	0.972	J	1.00	0.310	0.500	ug/L	1		06/23/23 19:48
Isopropylbenzene (Cumene)	1.40		1.00	0.310	0.500	ug/L	1		06/23/23 19:48
Naphthalene	0.460	J	1.00	0.310	0.500	ug/L	1		06/23/23 19:48
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 19:48
P & M -Xylene	0.969	J	2.00	0.620	1.00	ug/L	1		06/23/23 19:48
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/23/23 19:48
Surrogates									
1,2-Dichloroethane-D4 (surr)	95		81-118			%	1		06/23/23 19:48
4-Bromofluorobenzene (surr)	100		85-114			%	1		06/23/23 19:48
Toluene-d8 (surr)	96.5		89-112			%	1		06/23/23 19:48

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 19:48
Container ID: 1232801007-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-FS14E-23**

Client Sample ID: **SRF14-FS14E-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801008
Lab Project ID: 1232801

Collection Date: 06/17/23 18:40
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-4E

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	12.6		1.00	0.300	0.500	ug/L	20		07/04/23 01:39
2-Methylnaphthalene	8.87		1.00	0.300	0.500	ug/L	20		07/04/23 01:39
Naphthalene	34.0		2.00	0.620	1.00	ug/L	20		07/04/23 01:39
Surrogates									
2-Methylnaphthalene-d10 (surr)	33.7	*	38-100			%	20		07/04/23 01:39
Fluoranthene-d10 (surr)	61.2		30-111			%	20		07/04/23 01:39

Batch Information

Analytical Batch: XMS13705
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 01:39
Container ID: 1232801008-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-FS14E-23**

Client Sample ID: **SRF14-FS14E-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801008
Lab Project ID: 1232801

Collection Date: 06/17/23 18:40
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-4E

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	106		1.00	0.310	0.500	ug/L	1		06/21/23 22:57
1,3,5-Trimethylbenzene	36.3		1.00	0.310	0.500	ug/L	1		06/21/23 22:57
Benzene	30.8		0.400	0.120	0.200	ug/L	1		06/21/23 22:57
Ethylbenzene	75.2		1.00	0.310	0.500	ug/L	1		06/21/23 22:57
Isopropylbenzene (Cumene)	17.0		1.00	0.310	0.500	ug/L	1		06/21/23 22:57
Naphthalene	116		1.00	0.310	0.500	ug/L	1		06/21/23 22:57
o-Xylene	0.829	J	1.00	0.310	0.500	ug/L	1		06/21/23 22:57
P & M -Xylene	175		2.00	0.620	1.00	ug/L	1		06/21/23 22:57
Xylenes (total)	176		3.00	1.00	1.50	ug/L	1		06/21/23 22:57
Surrogates									
1,2-Dichloroethane-D4 (surr)	98.5		81-118			%	1		06/21/23 22:57
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/21/23 22:57
Toluene-d8 (surr)	96.4		89-112			%	1		06/21/23 22:57

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:57
Container ID: 1232801008-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF215-TS215P-23**

Client Sample ID: **SRF215-TS215P-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801009
Lab Project ID: 1232801

Collection Date: 06/17/23 10:39
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS2-15P

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
2-Methylnaphthalene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Acenaphthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Acenaphthylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		06/26/23 17:35
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Chrysene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		06/26/23 17:35
Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Fluorene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Naphthalene	0.0471	U	0.0943	0.0292	0.0471	ug/L	1		06/26/23 17:35
Phenanthrene	0.0362	J	0.0943	0.0292	0.0471	ug/L	1		06/26/23 17:35
Pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		06/26/23 17:35
Surrogates									
2-Methylnaphthalene-d10 (surr)	45.6		38-100			%	1		06/26/23 17:35
Fluoranthene-d10 (surr)	65.5		30-111			%	1		06/26/23 17:35

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 17:35
Container ID: 1232801009-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF215-TS215P-23**

Client Sample ID: **SRF215-TS215P-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801009
Lab Project ID: 1232801

Collection Date: 06/17/23 10:39
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS2-15P

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/23/23 20:03
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/23/23 20:03
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:03
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/23/23 20:03
Surrogates									
1,2-Dichloroethane-D4 (surr)	107		81-118			%	1		06/23/23 20:03
4-Bromofluorobenzene (surr)	100		85-114			%	1		06/23/23 20:03
Toluene-d8 (surr)	94.2		89-112			%	1		06/23/23 20:03

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 20:03
Container ID: 1232801009-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF127-TS127G-23**

Client Sample ID: **SRF127-TS127G-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801010
Lab Project ID: 1232801

Collection Date: 06/17/23 13:14
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27G

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.240		0.0510	0.0153	0.0255	ug/L	1		06/26/23 17:51
2-Methylnaphthalene	0.112		0.0510	0.0153	0.0255	ug/L	1		06/26/23 17:51
Naphthalene	3.03		0.102	0.0316	0.0510	ug/L	1		06/26/23 17:51
Surrogates									
2-Methylnaphthalene-d10 (surr)	42.3		38-100			%	1		06/26/23 17:51
Fluoranthene-d10 (surr)	57		30-111			%	1		06/26/23 17:51

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 17:51
Container ID: 1232801010-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Results of **SRF127-TS127G-23**

Client Sample ID: **SRF127-TS127G-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801010
Lab Project ID: 1232801

Collection Date: 06/17/23 13:14
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27G

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	38.5		1.00	0.310	0.500	ug/L	1		06/21/23 23:12
1,3,5-Trimethylbenzene	12.4		1.00	0.310	0.500	ug/L	1		06/21/23 23:12
Benzene	3.66		0.400	0.120	0.200	ug/L	1		06/21/23 23:12
Ethylbenzene	3.08		1.00	0.310	0.500	ug/L	1		06/21/23 23:12
Isopropylbenzene (Cumene)	15.5		1.00	0.310	0.500	ug/L	1		06/21/23 23:12
Naphthalene	7.51		1.00	0.310	0.500	ug/L	1		06/21/23 23:12
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:12
P & M -Xylene	123		2.00	0.620	1.00	ug/L	1		06/21/23 23:12
Xylenes (total)	123		3.00	1.00	1.50	ug/L	1		06/21/23 23:12
Surrogates									
1,2-Dichloroethane-D4 (surr)	110		81-118			%	1		06/21/23 23:12
4-Bromofluorobenzene (surr)	99.3		85-114			%	1		06/21/23 23:12
Toluene-d8 (surr)	94.9		89-112			%	1		06/21/23 23:12

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:12
Container ID: 1232801010-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF127-TS127L-23**

Client Sample ID: **SRF127-TS127L-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801011
Lab Project ID: 1232801

Collection Date: 06/17/23 15:01
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27L

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	21.5		1.00	0.300	0.500	ug/L	20		07/04/23 01:56
2-Methylnaphthalene	22.5		1.00	0.300	0.500	ug/L	20		07/04/23 01:56
Naphthalene	29.9		2.00	0.620	1.00	ug/L	20		07/04/23 01:56
Surrogates									
2-Methylnaphthalene-d10 (surr)	33.3	*	38-100			%	20		07/04/23 01:56
Fluoranthene-d10 (surr)	71.5		30-111			%	20		07/04/23 01:56

Batch Information

Analytical Batch: XMS13705
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 01:56
Container ID: 1232801011-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF127-TS127L-23**

Client Sample ID: **SRF127-TS127L-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801011
Lab Project ID: 1232801

Collection Date: 06/17/23 15:01
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27L

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	281		10.0	3.10	5.00	ug/L	10		06/23/23 18:19
1,3,5-Trimethylbenzene	98.8		10.0	3.10	5.00	ug/L	10		06/23/23 18:19
Benzene	4.70		4.00	1.20	2.00	ug/L	10		06/23/23 18:19
Ethylbenzene	61.6		10.0	3.10	5.00	ug/L	10		06/23/23 18:19
Isopropylbenzene (Cumene)	36.6		10.0	3.10	5.00	ug/L	10		06/23/23 18:19
Naphthalene	63.1		10.0	3.10	5.00	ug/L	10		06/23/23 18:19
o-Xylene	89.0		10.0	3.10	5.00	ug/L	10		06/23/23 18:19
P & M -Xylene	157		20.0	6.20	10.0	ug/L	10		06/23/23 18:19
Xylenes (total)	246		30.0	10.0	15.0	ug/L	10		06/23/23 18:19
Surrogates									
1,2-Dichloroethane-D4 (surr)	110		81-118			%	10		06/23/23 18:19
4-Bromofluorobenzene (surr)	98.6		85-114			%	10		06/23/23 18:19
Toluene-d8 (surr)	94.5		89-112			%	10		06/23/23 18:19

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 18:19
Container ID: 1232801011-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133W-23**

Client Sample ID: **SRF133-FS133W-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801012
Lab Project ID: 1232801

Collection Date: 06/17/23 17:10
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33W

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Acenaphthene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Acenaphthylene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Anthracene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	0.00960	ug/L	1		06/26/23 18:23
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Chrysene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	0.00960	ug/L	1		06/26/23 18:23
Fluoranthene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Fluorene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Naphthalene	0.0481	U	0.0962	0.0298	0.0481	ug/L	1		06/26/23 18:23
Phenanthrene	0.0370	J	0.0962	0.0298	0.0481	ug/L	1		06/26/23 18:23
Pyrene	0.0240	U	0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:23
Surrogates									
2-Methylnaphthalene-d10 (surr)	49.4		38-100			%	1		06/26/23 18:23
Fluoranthene-d10 (surr)	66.8		30-111			%	1		06/26/23 18:23

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 18:23
Container ID: 1232801012-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133W-23**

Client Sample ID: **SRF133-FS133W-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801012
Lab Project ID: 1232801

Collection Date: 06/17/23 17:10
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33W

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/21/23 22:50
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 22:50
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:50
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 22:50
Surrogates									
1,2-Dichloroethane-D4 (surr)	102		81-118			%	1		06/21/23 22:50
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/21/23 22:50
Toluene-d8 (surr)	94.8		89-112			%	1		06/21/23 22:50

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:50
Container ID: 1232801012-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133S-23**

Client Sample ID: **SRF133-FS133S-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801013
Lab Project ID: 1232801

Collection Date: 06/17/23 19:03
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0432	J	0.0510	0.0153	0.0255	ug/L	1		06/26/23 18:40
2-Methylnaphthalene	0.0437	J	0.0510	0.0153	0.0255	ug/L	1		06/26/23 18:40
Naphthalene	0.0900	J	0.102	0.0316	0.0510	ug/L	1		06/26/23 18:40
Surrogates									
2-Methylnaphthalene-d10 (surr)	51.8		38-100			%	1		06/26/23 18:40
Fluoranthene-d10 (surr)	53		30-111			%	1		06/26/23 18:40

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 18:40
Container ID: 1232801013-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133S-23**

Client Sample ID: **SRF133-FS133S-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801013
Lab Project ID: 1232801

Collection Date: 06/17/23 19:03
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.343	J	1.00	0.310	0.500	ug/L	1		06/21/23 23:26
1,3,5-Trimethylbenzene	3.36		1.00	0.310	0.500	ug/L	1		06/21/23 23:26
Benzene	0.620		0.400	0.120	0.200	ug/L	1		06/21/23 23:26
Ethylbenzene	0.818	J	1.00	0.310	0.500	ug/L	1		06/21/23 23:26
Isopropylbenzene (Cumene)	2.64		1.00	0.310	0.500	ug/L	1		06/21/23 23:26
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:26
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:26
P & M -Xylene	0.658	J	2.00	0.620	1.00	ug/L	1		06/21/23 23:26
tert-Butylbenzene	0.385	J	1.00	0.310	0.500	ug/L	1		06/21/23 23:26
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 23:26
Surrogates									
1,2-Dichloroethane-D4 (surr)	91.4		81-118			%	1		06/21/23 23:26
4-Bromofluorobenzene (surr)	101		85-114			%	1		06/21/23 23:26
Toluene-d8 (surr)	97.5		89-112			%	1		06/21/23 23:26

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:26
Container ID: 1232801013-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF215-TS215O-23**

Client Sample ID: **SRF215-TS215O-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801014
Lab Project ID: 1232801

Collection Date: 06/17/23 10:42
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	8.91		0.0481	0.0144	0.0240	ug/L	1		06/26/23 18:56
Naphthalene	14.1		0.481	0.149	0.240	ug/L	5		07/04/23 02:12
Surrogates									
2-Methylnaphthalene-d10 (surr)	52.2		38-100			%	1		06/26/23 18:56
Fluoranthene-d10 (surr)	64.3		30-111			%	1		06/26/23 18:56

Batch Information

Analytical Batch: XMS13705
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 02:12
Container ID: 1232801014-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 18:56
Container ID: 1232801014-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 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 **SRF215-TS215O-23**

Client Sample ID: **SRF215-TS215O-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801014
Lab Project ID: 1232801

Collection Date: 06/17/23 10:42
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	211		5.00	1.55	2.50	ug/L	5		06/23/23 18:34
1,3,5-Trimethylbenzene	83.5		1.00	0.310	0.500	ug/L	1		06/21/23 23:41
Benzene	3.37		0.400	0.120	0.200	ug/L	1		06/21/23 23:41
Ethylbenzene	31.1		1.00	0.310	0.500	ug/L	1		06/21/23 23:41
Naphthalene	27.9		1.00	0.310	0.500	ug/L	1		06/21/23 23:41
o-Xylene	2.16	J	5.00	1.55	2.50	ug/L	5		06/23/23 18:34
P & M -Xylene	967		10.0	3.10	5.00	ug/L	5		06/23/23 18:34
Xylenes (total)	969		15.0	5.00	7.50	ug/L	5		06/23/23 18:34
Surrogates									
1,2-Dichloroethane-D4 (surr)	99.5		81-118			%	1		06/21/23 23:41
4-Bromofluorobenzene (surr)	101		85-114			%	1		06/21/23 23:41
Toluene-d8 (surr)	96.8		89-112			%	1		06/21/23 23:41

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 18:34
Container ID: 1232801014-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:41
Container ID: 1232801014-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF215-TS215R-23**

Client Sample ID: **SRF215-TS215R-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801015
Lab Project ID: 1232801

Collection Date: 06/17/23 12:09
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
2-Methylnaphthalene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Acenaphthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Acenaphthylene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Anthracene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	0.00980	ug/L	1		06/26/23 19:12
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Chrysene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	0.00980	ug/L	1		06/26/23 19:12
Fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Fluorene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Naphthalene	0.0490	U	0.0980	0.0304	0.0490	ug/L	1		06/26/23 19:12
Phenanthrene	0.0490	U	0.0980	0.0304	0.0490	ug/L	1		06/26/23 19:12
Pyrene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		06/26/23 19:12
Surrogates									
2-Methylnaphthalene-d10 (surr)	57.8		38-100			%	1		06/26/23 19:12
Fluoranthene-d10 (surr)	73		30-111			%	1		06/26/23 19:12

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 19:12
Container ID: 1232801015-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF215-TS215R-23**

Client Sample ID: **SRF215-TS215R-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801015
Lab Project ID: 1232801

Collection Date: 06/17/23 12:09
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/23/23 20:18
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/23/23 20:18
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:18
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/23/23 20:18
Surrogates									
1,2-Dichloroethane-D4 (surr)	104		81-118			%	1		06/23/23 20:18
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/23/23 20:18
Toluene-d8 (surr)	95		89-112			%	1		06/23/23 20:18

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 20:18
Container ID: 1232801015-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF127-TS127K-23**

Client Sample ID: **SRF127-TS127K-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801016
Lab Project ID: 1232801

Collection Date: 06/17/23 14:02
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27K

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	34.9		0.510	0.153	0.255	ug/L	10		07/08/23 05:23
2-Methylnaphthalene	38.1		0.510	0.153	0.255	ug/L	10		07/08/23 05:23
Naphthalene	96.5		1.02	0.316	0.510	ug/L	10		07/08/23 05:23
Surrogates									
2-Methylnaphthalene-d10 (surr)	46.8		38-100			%	1		07/03/23 21:00
Fluoranthene-d10 (surr)	70.2		30-111			%	1		07/03/23 21:00

Batch Information

Analytical Batch: XMS13728
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/08/23 05:23
Container ID: 1232801016-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/03/23 21:00
Container ID: 1232801016-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Results of **SRF127-TS127K-23**

Client Sample ID: **SRF127-TS127K-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801016
Lab Project ID: 1232801

Collection Date: 06/17/23 14:02
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-27K

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	1130		10.0	3.10	5.00	ug/L	10		06/23/23 18:04
1,3,5-Trimethylbenzene	295		10.0	3.10	5.00	ug/L	10		06/23/23 18:04
Benzene	25.3		4.00	1.20	2.00	ug/L	10		06/23/23 18:04
Ethylbenzene	481		10.0	3.10	5.00	ug/L	10		06/23/23 18:04
Isopropylbenzene (Cumene)	299		10.0	3.10	5.00	ug/L	10		06/23/23 18:04
Naphthalene	296		10.0	3.10	5.00	ug/L	10		06/23/23 18:04
o-Xylene	35.7		10.0	3.10	5.00	ug/L	10		06/23/23 18:04
P & M -Xylene	2050		20.0	6.20	10.0	ug/L	10		06/23/23 18:04
tert-Butylbenzene	+SP		10.0	3.10	5.00	ug/L	10		06/23/23 18:04
Xylenes (total)	2080		30.0	10.0	15.0	ug/L	10		06/23/23 18:04
Surrogates									
1,2-Dichloroethane-D4 (surr)	110		81-118			%	10		06/23/23 18:04
4-Bromofluorobenzene (surr)	103		85-114			%	10		06/23/23 18:04
Toluene-d8 (surr)	95.4		89-112			%	10		06/23/23 18:04

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 18:04
Container ID: 1232801016-A

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF133-TS133JJ-23**

Client Sample ID: **SRF133-TS133JJ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801017
Lab Project ID: 1232801

Collection Date: 06/17/23 16:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33JJ

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0758		0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
2-Methylnaphthalene	0.113		0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Acenaphthene	0.0169	J	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Acenaphthylene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Anthracene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	0.00980	ug/L	1		07/03/23 21:21
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Chrysene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	0.00980	ug/L	1		07/03/23 21:21
Fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Fluorene	0.0653		0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Naphthalene	0.0512	J	0.0980	0.0304	0.0490	ug/L	1		07/03/23 21:21
Phenanthrene	0.0684	J	0.0980	0.0304	0.0490	ug/L	1		07/03/23 21:21
Pyrene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/03/23 21:21
Surrogates									
2-Methylnaphthalene-d10 (surr)	67		38-100			%	1		07/03/23 21:21
Fluoranthene-d10 (surr)	83		30-111			%	1		07/03/23 21:21

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/03/23 21:21
Container ID: 1232801017-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-TS133JJ-23**

Client Sample ID: **SRF133-TS133JJ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801017
Lab Project ID: 1232801

Collection Date: 06/17/23 16:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33JJ

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
Benzene	0.711		0.400	0.120	0.200	ug/L	1		06/28/23 22:56
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/28/23 22:56
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
tert-Butylbenzene	0.426	J	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 22:56
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/28/23 22:56
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		06/28/23 22:56
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/28/23 22:56
Toluene-d8 (surr)	91.8		89-112			%	1		06/28/23 22:56

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 22:56
Container ID: 1232801017-A

Prep Batch: VXX40059
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF133-TS133JJZ-23**

Client Sample ID: **SRF133-TS133JJZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801020
Lab Project ID: 1232801

Collection Date: 06/17/23 15:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33JJ

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0162	J	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
2-Methylnaphthalene	0.0178	J	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Acenaphthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Acenaphthylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Benzo(a)Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Benzo[a]pyrene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		06/26/23 19:28
Benzo[b]Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Benzo[g,h,i]perylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Benzo[k]fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Chrysene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Dibenzo[a,h]anthracene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		06/26/23 19:28
Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Fluorene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Indeno[1,2,3-c,d] pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Naphthalene	0.0369	J	0.104	0.0323	0.0520	ug/L	1		06/26/23 19:28
Phenanthrene	0.0520	U	0.104	0.0323	0.0520	ug/L	1		06/26/23 19:28
Pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		06/26/23 19:28
Surrogates									
2-Methylnaphthalene-d10 (surr)	42.8		38-100			%	1		06/26/23 19:28
Fluoranthene-d10 (surr)	55		30-111			%	1		06/26/23 19:28

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 19:28
Container ID: 1232801020-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-TS133JJZ-23**

Client Sample ID: **SRF133-TS133JJZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801020
Lab Project ID: 1232801

Collection Date: 06/17/23 15:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33JJ

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
Benzene	0.836		0.400	0.120	0.200	ug/L	1		06/23/23 20:33
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
Isopropylbenzene (Cumene)	0.720	J	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/23/23 20:33
sec-Butylbenzene	0.737	J	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
tert-Butylbenzene	0.520	J	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:33
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/23/23 20:33
Surrogates									
1,2-Dichloroethane-D4 (surr)	108		81-118			%	1		06/23/23 20:33
4-Bromofluorobenzene (surr)	98.5		85-114			%	1		06/23/23 20:33
Toluene-d8 (surr)	94.3		89-112			%	1		06/23/23 20:33

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 20:33
Container ID: 1232801020-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-TS133UR-23**

Client Sample ID: **SRF133-TS133UR-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801021
Lab Project ID: 1232801

Collection Date: 06/17/23 18:13
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33UR

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.141		0.0481	0.0144	0.0240	ug/L	1		06/26/23 20:01
2-Methylnaphthalene	0.0600		0.0481	0.0144	0.0240	ug/L	1		06/26/23 20:01
Naphthalene	0.415		0.0962	0.0298	0.0481	ug/L	1		06/26/23 20:01
Surrogates									
2-Methylnaphthalene-d10 (surr)	46.7		38-100			%	1		06/26/23 20:01
Fluoranthene-d10 (surr)	51.8		30-111			%	1		06/26/23 20:01

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 06/26/23 20:01
Container ID: 1232801021-D

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 06/22/23 09:45
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 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 **SRF133-TS133UR-23**

Client Sample ID: **SRF133-TS133UR-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801021
Lab Project ID: 1232801

Collection Date: 06/17/23 18:13
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33UR

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:58
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:58
Benzene	9.68		0.400	0.120	0.200	ug/L	1		06/21/23 21:58
Ethylbenzene	4.15		1.00	0.310	0.500	ug/L	1		06/21/23 21:58
Isopropylbenzene (Cumene)	0.988	J	1.00	0.310	0.500	ug/L	1		06/21/23 21:58
Naphthalene	1.46		1.00	0.310	0.500	ug/L	1		06/21/23 21:58
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:58
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 21:58
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:58
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 21:58
Surrogates									
1,2-Dichloroethane-D4 (surr)	101		81-118			%	1		06/21/23 21:58
4-Bromofluorobenzene (surr)	101		85-114			%	1		06/21/23 21:58
Toluene-d8 (surr)	90.6		89-112			%	1		06/21/23 21:58

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 21:58
Container ID: 1232801021-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-TS14GR-23**

Client Sample ID: **SRF14-TS14GR-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801022
Lab Project ID: 1232801

Collection Date: 06/18/23 12:45
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4GR

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	44.2		0.481	0.144	0.240	ug/L	10		07/15/23 19:35
2-Methylnaphthalene	54.0		0.481	0.144	0.240	ug/L	10		07/15/23 19:35
Naphthalene	71.9		0.962	0.298	0.481	ug/L	10		07/15/23 19:35
Surrogates									
2-Methylnaphthalene-d10 (surr)	57.1		38-100			%	1		07/03/23 22:23
Fluoranthene-d10 (surr)	72.6		30-111			%	1		07/03/23 22:23

Batch Information

Analytical Batch: XMS13740
Analytical Method: 8270D SIM LV (PAH)
Analyst: NGG
Analytical Date/Time: 07/15/23 19:35
Container ID: 1232801022-G

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/03/23 22:23
Container ID: 1232801022-G

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **SRF14-TS14GR-23**

Client Sample ID: **SRF14-TS14GR-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801022
Lab Project ID: 1232801

Collection Date: 06/18/23 12:45
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4GR

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	711		10.0	3.10	5.00	ug/L	10		06/23/23 17:49
1,3,5-Trimethylbenzene	390		10.0	3.10	5.00	ug/L	10		06/23/23 17:49
Benzene	19.0		0.400	0.120	0.200	ug/L	1		06/21/23 23:56
Ethylbenzene	146		1.00	0.310	0.500	ug/L	1		06/21/23 23:56
Isopropylbenzene (Cumene)	109		1.00	0.310	0.500	ug/L	1		06/21/23 23:56
Naphthalene	117		1.00	0.310	0.500	ug/L	1		06/21/23 23:56
o-Xylene	58.1		1.00	0.310	0.500	ug/L	1		06/21/23 23:56
P & M -Xylene	322		2.00	0.620	1.00	ug/L	1		06/21/23 23:56
Xylenes (total)	380		3.00	1.00	1.50	ug/L	1		06/21/23 23:56
Surrogates									
1,2-Dichloroethane-D4 (surr)	91.8		81-118			%	1		06/21/23 23:56
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/21/23 23:56
Toluene-d8 (surr)	98.7		89-112			%	1		06/21/23 23:56

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 17:49
Container ID: 1232801022-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:56
Container ID: 1232801022-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF19-TS19U-23**

Client Sample ID: **SRF19-TS19U-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801023
Lab Project ID: 1232801

Collection Date: 06/18/23 16:10
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9U

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	1.82		0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
2-Methylnaphthalene	1.82		0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Acenaphthene	0.0762		0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Acenaphthylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Benzo(a)Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Benzo[a]pyrene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		07/03/23 22:43
Benzo[b]Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Benzo[g,h,i]perylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Benzo[k]fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Chrysene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Dibenzo[a,h]anthracene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		07/03/23 22:43
Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Fluorene	0.170		0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Indeno[1,2,3-c,d] pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Naphthalene	1.53		0.104	0.0323	0.0520	ug/L	1		07/03/23 22:43
Phenanthrene	0.106		0.104	0.0323	0.0520	ug/L	1		07/03/23 22:43
Pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/03/23 22:43
Surrogates									
2-Methylnaphthalene-d10 (surr)	60.6		38-100			%	1		07/03/23 22:43
Fluoranthene-d10 (surr)	75		30-111			%	1		07/03/23 22:43

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/03/23 22:43
Container ID: 1232801023-A

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF19-TS19U-23**

Client Sample ID: **SRF19-TS19U-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801023
Lab Project ID: 1232801

Collection Date: 06/18/23 16:10
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9U

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	15.7		1.00	0.310	0.500	ug/L	1		06/21/23 22:27
1,3,5-Trimethylbenzene	10.9		1.00	0.310	0.500	ug/L	1		06/21/23 22:27
Benzene	0.450		0.400	0.120	0.200	ug/L	1		06/21/23 22:27
Ethylbenzene	4.42		1.00	0.310	0.500	ug/L	1		06/21/23 22:27
Isopropylbenzene (Cumene)	3.25		1.00	0.310	0.500	ug/L	1		06/21/23 22:27
Naphthalene	4.28		1.00	0.310	0.500	ug/L	1		06/21/23 22:27
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:27
o-Xylene	0.827	J	1.00	0.310	0.500	ug/L	1		06/21/23 22:27
P & M -Xylene	7.33		2.00	0.620	1.00	ug/L	1		06/21/23 22:27
sec-Butylbenzene	1.16		1.00	0.310	0.500	ug/L	1		06/21/23 22:27
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:27
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:27
Xylenes (total)	8.16		3.00	1.00	1.50	ug/L	1		06/21/23 22:27
Surrogates									
1,2-Dichloroethane-D4 (surr)	105		81-118			%	1		06/21/23 22:27
4-Bromofluorobenzene (surr)	92.8		85-114			%	1		06/21/23 22:27
Toluene-d8 (surr)	96.5		89-112			%	1		06/21/23 22:27

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:27
Container ID: 1232801023-C

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF19-TS19UZ-23**

Client Sample ID: **SRF19-TS19UZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801024
Lab Project ID: 1232801

Collection Date: 06/18/23 15:10
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9U

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual		LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	1.39			0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
2-Methylnaphthalene	1.42			0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Acenaphthene	0.0634			0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Acenaphthylene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Anthracene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Benzo(a)Anthracene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Benzo[a]pyrene	0.0100	U		0.0200	0.00620	0.0100	ug/L	1		07/03/23 23:04
Benzo[b]Fluoranthene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Benzo[g,h,i]perylene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Benzo[k]fluoranthene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Chrysene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Dibenzo[a,h]anthracene	0.0100	U		0.0200	0.00620	0.0100	ug/L	1		07/03/23 23:04
Fluoranthene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Fluorene	0.130			0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Indeno[1,2,3-c,d] pyrene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Naphthalene	1.18			0.100	0.0310	0.0500	ug/L	1		07/03/23 23:04
Phenanthrene	0.0870	J		0.100	0.0310	0.0500	ug/L	1		07/03/23 23:04
Pyrene	0.0250	U		0.0500	0.0150	0.0250	ug/L	1		07/03/23 23:04
Surrogates										
2-Methylnaphthalene-d10 (surr)	36.2		*	38-100			%	1		07/03/23 23:04
Fluoranthene-d10 (surr)	60.7			30-111			%	1		07/03/23 23:04

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/03/23 23:04
Container ID: 1232801024-A

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF19-TS19UZ-23**

Client Sample ID: **SRF19-TS19UZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801024
Lab Project ID: 1232801

Collection Date: 06/18/23 15:10
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9U

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	16.9		1.00	0.310	0.500	ug/L	1		06/21/23 22:42
1,3,5-Trimethylbenzene	11.5		1.00	0.310	0.500	ug/L	1		06/21/23 22:42
Benzene	0.458		0.400	0.120	0.200	ug/L	1		06/21/23 22:42
Ethylbenzene	4.59		1.00	0.310	0.500	ug/L	1		06/21/23 22:42
Isopropylbenzene (Cumene)	3.31		1.00	0.310	0.500	ug/L	1		06/21/23 22:42
Naphthalene	4.30		1.00	0.310	0.500	ug/L	1		06/21/23 22:42
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:42
o-Xylene	0.830	J	1.00	0.310	0.500	ug/L	1		06/21/23 22:42
P & M -Xylene	6.95		2.00	0.620	1.00	ug/L	1		06/21/23 22:42
sec-Butylbenzene	1.21		1.00	0.310	0.500	ug/L	1		06/21/23 22:42
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:42
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:42
Xylenes (total)	7.78		3.00	1.00	1.50	ug/L	1		06/21/23 22:42
Surrogates									
1,2-Dichloroethane-D4 (surr)	106		81-118			%	1		06/21/23 22:42
4-Bromofluorobenzene (surr)	95.8		85-114			%	1		06/21/23 22:42
Toluene-d8 (surr)	96.7		89-112			%	1		06/21/23 22:42

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:42
Container ID: 1232801024-C

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF19-TS19HH-23**

Client Sample ID: **SRF19-TS19HH-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801025
Lab Project ID: 1232801

Collection Date: 06/18/23 14:45
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9HH

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.153		0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
2-Methylnaphthalene	0.0885		0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Acenaphthene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Acenaphthylene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Anthracene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Benzo(a)Anthracene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Benzo[a]pyrene	0.0109	U	0.0217	0.00674	0.0109	ug/L	1		07/03/23 23:24
Benzo[b]Fluoranthene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Benzo[g,h,i]perylene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Benzo[k]fluoranthene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Chrysene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Dibenzo[a,h]anthracene	0.0109	U	0.0217	0.00674	0.0109	ug/L	1		07/03/23 23:24
Fluoranthene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Fluorene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Indeno[1,2,3-c,d] pyrene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Naphthalene	0.0970	J	0.109	0.0337	0.0545	ug/L	1		07/03/23 23:24
Phenanthrene	0.0378	J	0.109	0.0337	0.0545	ug/L	1		07/03/23 23:24
Pyrene	0.0272	U	0.0543	0.0163	0.0272	ug/L	1		07/03/23 23:24
Surrogates									
2-Methylnaphthalene-d10 (surr)	57.1		38-100			%	1		07/03/23 23:24
Fluoranthene-d10 (surr)	76.8		30-111			%	1		07/03/23 23:24

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/03/23 23:24
Container ID: 1232801025-A

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF19-TS19HH-23**

Client Sample ID: **SRF19-TS19HH-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801025
Lab Project ID: 1232801

Collection Date: 06/18/23 14:45
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9HH

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.509	J	1.00	0.310	0.500	ug/L	1		06/23/23 20:48
1,3,5-Trimethylbenzene	2.80		1.00	0.310	0.500	ug/L	1		06/23/23 20:48
Benzene	0.227	J	0.400	0.120	0.200	ug/L	1		06/23/23 20:48
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:48
Isopropylbenzene (Cumene)	2.66		1.00	0.310	0.500	ug/L	1		06/23/23 20:48
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:48
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:48
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:48
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/23/23 20:48
sec-Butylbenzene	1.83		1.00	0.310	0.500	ug/L	1		06/23/23 20:48
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:48
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/23/23 20:48
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/23/23 20:48
Surrogates									
1,2-Dichloroethane-D4 (surr)	91.6		81-118			%	1		06/23/23 20:48
4-Bromofluorobenzene (surr)	101		85-114			%	1		06/23/23 20:48
Toluene-d8 (surr)	97.6		89-112			%	1		06/23/23 20:48

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 20:48
Container ID: 1232801025-D

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-TS133O2-23**

Client Sample ID: **SRF133-TS133O2-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801026
Lab Project ID: 1232801

Collection Date: 06/18/23 10:30
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33O2

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	9.75		0.0521	0.0156	0.0261	ug/L	1		07/03/23 23:45
2-Methylnaphthalene	7.32		0.0521	0.0156	0.0261	ug/L	1		07/03/23 23:45
Naphthalene	14.3		0.521	0.161	0.261	ug/L	5		07/15/23 19:56
Surrogates									
2-Methylnaphthalene-d10 (surr)	48.7		38-100			%	1		07/03/23 23:45
Fluoranthene-d10 (surr)	72.7		30-111			%	1		07/03/23 23:45

Batch Information

Analytical Batch: XMS13740
Analytical Method: 8270D SIM LV (PAH)
Analyst: NGG
Analytical Date/Time: 07/15/23 19:56
Container ID: 1232801026-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/03/23 23:45
Container ID: 1232801026-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Results of **SRF133-TS133O2-23**

Client Sample ID: **SRF133-TS133O2-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801026
Lab Project ID: 1232801

Collection Date: 06/18/23 10:30
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-33O2

Results by **Volatile GC/MS**

Parameter	Result	Qual		LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U		1.00	0.310	0.500	ug/L	1		06/23/23 16:54
1,3,5-Trimethylbenzene	0.500	U		1.00	0.310	0.500	ug/L	1		06/23/23 16:54
Benzene	143			0.400	0.120	0.200	ug/L	1		06/22/23 00:11
Ethylbenzene	174			1.00	0.310	0.500	ug/L	1		06/22/23 00:11
Isopropylbenzene (Cumene)	42.6			1.00	0.310	0.500	ug/L	1		06/22/23 00:11
Naphthalene	49.4			1.00	0.310	0.500	ug/L	1		06/22/23 00:11
o-Xylene	1.33			1.00	0.310	0.500	ug/L	1		06/23/23 16:54
P & M -Xylene	0.876	J		2.00	0.620	1.00	ug/L	1		06/23/23 16:54
tert-Butylbenzene	2.14			1.00	0.310	0.500	ug/L	1		06/22/23 00:11
Xylenes (total)	2.21	J		3.00	1.00	1.50	ug/L	1		06/23/23 16:54
Surrogates										
1,2-Dichloroethane-D4 (surr)	80.8		*	81-118			%	1		06/22/23 00:11
4-Bromofluorobenzene (surr)	104			85-114			%	1		06/22/23 00:11
Toluene-d8 (surr)	99.2			89-112			%	1		06/22/23 00:11

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/22/23 00:11
Container ID: 1232801026-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 16:54
Container ID: 1232801026-B

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF34-FS34A-23**

Client Sample ID: **SRF34-FS34A-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801027
Lab Project ID: 1232801

Collection Date: 06/18/23 16:42
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4A

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0265	J	0.0490	0.0147	0.0245	ug/L	1		07/04/23 00:05
Naphthalene	0.0384	J	0.0980	0.0304	0.0490	ug/L	1		07/04/23 00:05
Surrogates									
2-Methylnaphthalene-d10 (surr)	51.1		38-100			%	1		07/04/23 00:05
Fluoranthene-d10 (surr)	69.6		30-111			%	1		07/04/23 00:05

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 00:05
Container ID: 1232801027-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-FS34A-23**

Client Sample ID: **SRF34-FS34A-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801027
Lab Project ID: 1232801

Collection Date: 06/18/23 16:42
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4A

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:06
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:06
Benzene	2.68		0.400	0.120	0.200	ug/L	1		06/21/23 23:06
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:06
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:06
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:06
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 23:06
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 23:06
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		06/21/23 23:06
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/21/23 23:06
Toluene-d8 (surr)	95.5		89-112			%	1		06/21/23 23:06

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:06
Container ID: 1232801027-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
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Member of SGS Group

Results of **SRF34-FS34F-23**

Client Sample ID: **SRF34-FS34F-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801028
Lab Project ID: 1232801

Collection Date: 06/18/23 18:26
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4F

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	1.55		0.0500	0.0150	0.0250	ug/L	1		07/04/23 00:26
Naphthalene	3.10		0.100	0.0310	0.0500	ug/L	1		07/04/23 00:26
Surrogates									
2-Methylnaphthalene-d10 (surr)	51.6		38-100			%	1		07/04/23 00:26
Fluoranthene-d10 (surr)	73.1		30-111			%	1		07/04/23 00:26

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 00:26
Container ID: 1232801028-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-FS34F-23**

Client Sample ID: **SRF34-FS34F-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801028
Lab Project ID: 1232801

Collection Date: 06/18/23 18:26
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4F

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	3.55		1.00	0.310	0.500	ug/L	1		06/21/23 23:20
1,3,5-Trimethylbenzene	2.08		1.00	0.310	0.500	ug/L	1		06/21/23 23:20
Benzene	9.14		0.400	0.120	0.200	ug/L	1		06/21/23 23:20
Ethylbenzene	3.20		1.00	0.310	0.500	ug/L	1		06/21/23 23:20
Naphthalene	9.31		1.00	0.310	0.500	ug/L	1		06/21/23 23:20
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:20
P & M -Xylene	2.64		2.00	0.620	1.00	ug/L	1		06/21/23 23:20
Xylenes (total)	2.64	J	3.00	1.00	1.50	ug/L	1		06/21/23 23:20
Surrogates									
1,2-Dichloroethane-D4 (surr)	98.1		81-118			%	1		06/21/23 23:20
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/21/23 23:20
Toluene-d8 (surr)	94.5		89-112			%	1		06/21/23 23:20

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:20
Container ID: 1232801028-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-TS34CC-23**

Client Sample ID: **SRF34-TS34CC-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801029
Lab Project ID: 1232801

Collection Date: 06/19/23 10:44
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4CC

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.552		0.0481	0.0144	0.0240	ug/L	1		07/04/23 00:46
Naphthalene	1.10		0.0962	0.0298	0.0481	ug/L	1		07/04/23 00:46
Surrogates									
2-Methylnaphthalene-d10 (surr)	52.9		38-100			%	1		07/04/23 00:46
Fluoranthene-d10 (surr)	55.7		30-111			%	1		07/04/23 00:46

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 00:46
Container ID: 1232801029-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-TS34CC-23**

Client Sample ID: **SRF34-TS34CC-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801029
Lab Project ID: 1232801

Collection Date: 06/19/23 10:44
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4CC

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	17.7		1.00	0.310	0.500	ug/L	1		06/21/23 22:13
1,3,5-Trimethylbenzene	9.70		1.00	0.310	0.500	ug/L	1		06/21/23 22:13
Benzene	0.169	J	0.400	0.120	0.200	ug/L	1		06/21/23 22:13
Ethylbenzene	7.51		1.00	0.310	0.500	ug/L	1		06/21/23 22:13
Naphthalene	1.88		1.00	0.310	0.500	ug/L	1		06/21/23 22:13
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:13
P & M -Xylene	17.9		2.00	0.620	1.00	ug/L	1		06/21/23 22:13
Xylenes (total)	17.9		3.00	1.00	1.50	ug/L	1		06/21/23 22:13
Surrogates									
1,2-Dichloroethane-D4 (surr)	101		81-118			%	1		06/21/23 22:13
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/21/23 22:13
Toluene-d8 (surr)	98.8		89-112			%	1		06/21/23 22:13

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:13
Container ID: 1232801029-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF34-TS34MM-23**

Client Sample ID: **SRF34-TS34MM-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801030
Lab Project ID: 1232801

Collection Date: 06/18/23 09:50
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4MM

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0214	J	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
2-Methylnaphthalene	0.0236	J	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Acenaphthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Acenaphthylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Benzo(a)Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Benzo[a]pyrene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		07/04/23 01:07
Benzo[b]Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Benzo[g,h,i]perylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Benzo[k]fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Chrysene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Dibenzo[a,h]anthracene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		07/04/23 01:07
Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Fluorene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Indeno[1,2,3-c,d] pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Naphthalene	0.0520	U	0.104	0.0323	0.0520	ug/L	1		07/04/23 01:07
Phenanthrene	0.0435	J	0.104	0.0323	0.0520	ug/L	1		07/04/23 01:07
Pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/04/23 01:07
Surrogates									
2-Methylnaphthalene-d10 (surr)	62.2		38-100			%	1		07/04/23 01:07
Fluoranthene-d10 (surr)	80.1		30-111			%	1		07/04/23 01:07

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 01:07
Container ID: 1232801030-A

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-TS34MM-23**

Client Sample ID: **SRF34-TS34MM-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801030
Lab Project ID: 1232801

Collection Date: 06/18/23 09:50
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4MM

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/21/23 21:35
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 22:13
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 21:35
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:35
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 21:35
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		06/21/23 21:35
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/21/23 21:35
Toluene-d8 (surr)	96.8		89-112			%	1		06/21/23 21:35

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 21:35
Container ID: 1232801030-C

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22519
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 22:13
Container ID: 1232801030-D

Prep Batch: VXX40056
Prep Method: SW5030B
Prep Date/Time: 06/27/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-TS34OO-23**

Client Sample ID: **SRF34-TS34OO-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801031
Lab Project ID: 1232801

Collection Date: 06/18/23 11:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4OO

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0170	J	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
2-Methylnaphthalene	0.0209	J	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Acenaphthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Acenaphthylene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Anthracene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Benzo(a)Anthracene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Benzo[a]pyrene	0.0102	U	0.0204	0.00633	0.0102	ug/L	1		07/04/23 01:27
Benzo[b]Fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Benzo[g,h,i]perylene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Benzo[k]fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Chrysene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Dibenzo[a,h]anthracene	0.0102	U	0.0204	0.00633	0.0102	ug/L	1		07/04/23 01:27
Fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Fluorene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Indeno[1,2,3-c,d] pyrene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Naphthalene	0.0510	U	0.102	0.0316	0.0510	ug/L	1		07/04/23 01:27
Phenanthrene	0.0340	J	0.102	0.0316	0.0510	ug/L	1		07/04/23 01:27
Pyrene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:27
Surrogates									
2-Methylnaphthalene-d10 (surr)	47.5		38-100			%	1		07/04/23 01:27
Fluoranthene-d10 (surr)	67.4		30-111			%	1		07/04/23 01:27

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 01:27
Container ID: 1232801031-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-TS34OO-23**

Client Sample ID: **SRF34-TS34OO-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801031
Lab Project ID: 1232801

Collection Date: 06/18/23 11:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4OO

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/21/23 23:51
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
Naphthalene	1.11		1.00	0.310	0.500	ug/L	1		06/21/23 23:51
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 23:51
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 23:51
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 23:51
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		06/21/23 23:51
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/21/23 23:51
Toluene-d8 (surr)	96		89-112			%	1		06/21/23 23:51

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:51
Container ID: 1232801031-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF34-TS34P-23**

Client Sample ID: **SRF34-TS34P-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801032
Lab Project ID: 1232801

Collection Date: 06/18/23 13:00
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4P

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	1.34		0.0510	0.0153	0.0255	ug/L	1		07/04/23 01:48
Naphthalene	11.2		0.510	0.158	0.255	ug/L	5		07/15/23 20:16
Surrogates									
2-Methylnaphthalene-d10 (surr)	69.4		38-100			%	1		07/04/23 01:48
Fluoranthene-d10 (surr)	73.1		30-111			%	1		07/04/23 01:48

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 01:48
Container ID: 1232801032-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13740
Analytical Method: 8270D SIM LV (PAH)
Analyst: NGG
Analytical Date/Time: 07/15/23 20:16
Container ID: 1232801032-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Results of **SRF34-TS34P-23**

Client Sample ID: **SRF34-TS34P-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801032
Lab Project ID: 1232801

Collection Date: 06/18/23 13:00
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-4P

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	13.4		10.0	3.10	5.00	ug/L	10		06/21/23 20:59
1,3,5-Trimethylbenzene	39.6		10.0	3.10	5.00	ug/L	10		06/21/23 20:59
Benzene	475		4.00	1.20	2.00	ug/L	10		06/21/23 20:59
Ethylbenzene	250		10.0	3.10	5.00	ug/L	10		06/21/23 20:59
Naphthalene	28.5		10.0	3.10	5.00	ug/L	10		06/21/23 20:59
o-Xylene	5.00	U	10.0	3.10	5.00	ug/L	10		06/21/23 20:59
P & M -Xylene	168		20.0	6.20	10.0	ug/L	10		06/21/23 20:59
Xylenes (total)	168		30.0	10.0	15.0	ug/L	10		06/21/23 20:59
Surrogates									
1,2-Dichloroethane-D4 (surr)	95.5		81-118			%	10		06/21/23 20:59
4-Bromofluorobenzene (surr)	99.3		85-114			%	10		06/21/23 20:59
Toluene-d8 (surr)	96.7		89-112			%	10		06/21/23 20:59

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 20:59
Container ID: 1232801032-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF39-TS39DD-23**

Client Sample ID: **SRF39-TS39DD-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801033
Lab Project ID: 1232801

Collection Date: 06/18/23 17:55
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9DD

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0263	J	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
2-Methylnaphthalene	0.0326	J	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Acenaphthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Acenaphthylene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Anthracene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Benzo(a)Anthracene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Benzo[a]pyrene	0.0107	U	0.0213	0.00660	0.0107	ug/L	1		07/04/23 02:09
Benzo[b]Fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Benzo[g,h,i]perylene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Benzo[k]fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Chrysene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Dibenzo[a,h]anthracene	0.0107	U	0.0213	0.00660	0.0107	ug/L	1		07/04/23 02:09
Fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Fluorene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Indeno[1,2,3-c,d] pyrene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Naphthalene	0.0395	J	0.106	0.0330	0.0530	ug/L	1		07/04/23 02:09
Phenanthrene	0.0368	J	0.106	0.0330	0.0530	ug/L	1		07/04/23 02:09
Pyrene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/04/23 02:09
Surrogates									
2-Methylnaphthalene-d10 (surr)	48.4		38-100			%	1		07/04/23 02:09
Fluoranthene-d10 (surr)	79.1		30-111			%	1		07/04/23 02:09

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 02:09
Container ID: 1232801033-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF39-TS39DD-23**

Client Sample ID: **SRF39-TS39DD-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801033
Lab Project ID: 1232801

Collection Date: 06/18/23 17:55
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9DD

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.393	J	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/21/23 21:50
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 21:50
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 21:50
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 21:50
Surrogates									
1,2-Dichloroethane-D4 (surr)	104		81-118			%	1		06/21/23 21:50
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/21/23 21:50
Toluene-d8 (surr)	96.3		89-112			%	1		06/21/23 21:50

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 21:50
Container ID: 1232801033-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-FS14I-23**

Client Sample ID: **SRF14-FS14I-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801034
Lab Project ID: 1232801

Collection Date: 06/18/23 14:33
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-4I

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0185	J	0.0490	0.0147	0.0245	ug/L	1		07/04/23 02:29
2-Methylnaphthalene	0.0234	J	0.0490	0.0147	0.0245	ug/L	1		07/04/23 02:29
Naphthalene	0.0347	J	0.0980	0.0304	0.0490	ug/L	1		07/04/23 02:29
Surrogates									
2-Methylnaphthalene-d10 (surr)	43.4		38-100			%	1		07/04/23 02:29
Fluoranthene-d10 (surr)	72.9		30-111			%	1		07/04/23 02:29

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 02:29
Container ID: 1232801034-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-FS14I-23**

Client Sample ID: **SRF14-FS14I-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801034
Lab Project ID: 1232801

Collection Date: 06/18/23 14:33
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-4I

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:05
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:05
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/21/23 22:05
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:05
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:05
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:05
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:05
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 22:05
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 22:05
Surrogates									
1,2-Dichloroethane-D4 (surr)	101		81-118			%	1		06/21/23 22:05
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/21/23 22:05
Toluene-d8 (surr)	95.8		89-112			%	1		06/21/23 22:05

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:05
Container ID: 1232801034-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-TS14F-23**

Client Sample ID: **SRF14-TS14F-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801035
Lab Project ID: 1232801

Collection Date: 06/18/23 16:31
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4F

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	15.1		0.500	0.150	0.250	ug/L	10		07/15/23 20:37
2-Methylnaphthalene	16.6		0.500	0.150	0.250	ug/L	10		07/15/23 20:37
Acenaphthene	0.190		0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Acenaphthylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Benzo(a)Anthracene	0.0636		0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Benzo[a]pyrene	0.0205		0.0200	0.00620	0.0100	ug/L	1		07/04/23 02:50
Benzo[b]Fluoranthene	0.0342	J	0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Benzo[g,h,i]perylene	0.0203	J	0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Chrysene	0.0940		0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/04/23 02:50
Fluoranthene	0.0663		0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Fluorene	0.704		0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Naphthalene	49.6		1.00	0.310	0.500	ug/L	10		07/15/23 20:37
Phenanthrene	1.19		0.100	0.0310	0.0500	ug/L	1		07/04/23 02:50
Pyrene	0.107		0.0500	0.0150	0.0250	ug/L	1		07/04/23 02:50
Surrogates									
2-Methylnaphthalene-d10 (surr)	51.5		38-100			%	1		07/04/23 02:50
Fluoranthene-d10 (surr)	83.3		30-111			%	1		07/04/23 02:50

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 02:50
Container ID: 1232801035-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13740
Analytical Method: 8270D SIM LV (PAH)
Analyst: NGG
Analytical Date/Time: 07/15/23 20:37
Container ID: 1232801035-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF14-TS14F-23**

Client Sample ID: **SRF14-TS14F-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801035
Lab Project ID: 1232801

Collection Date: 06/18/23 16:31
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4F

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	5820		50.0	15.5	25.0	ug/L	50		06/23/23 17:34
1,3,5-Trimethylbenzene	4100		50.0	15.5	25.0	ug/L	50		06/23/23 17:34
Benzene	15.0	J	20.0	6.00	10.0	ug/L	50		06/23/23 17:34
Ethylbenzene	149		50.0	15.5	25.0	ug/L	50		06/23/23 17:34
Isopropylbenzene (Cumene)	1300		50.0	15.5	25.0	ug/L	50		06/23/23 17:34
Naphthalene	90.3		50.0	15.5	25.0	ug/L	50		06/23/23 17:34
n-Butylbenzene	25.0	U	50.0	15.5	25.0	ug/L	50		06/23/23 17:34
o-Xylene	739		50.0	15.5	25.0	ug/L	50		06/23/23 17:34
P & M -Xylene	331		100	31.0	50.0	ug/L	50		06/23/23 17:34
sec-Butylbenzene	15.5	J	50.0	15.5	25.0	ug/L	50		06/23/23 17:34
tert-Butylbenzene	25.0	U	50.0	15.5	25.0	ug/L	50		06/23/23 17:34
Toluene	25.0	U	50.0	15.5	25.0	ug/L	50		06/23/23 17:34
Xylenes (total)	1070		150	50.0	75.0	ug/L	50		06/23/23 17:34
Surrogates									
1,2-Dichloroethane-D4 (surr)	111		81-118			%	50		06/23/23 17:34
4-Bromofluorobenzene (surr)	107		85-114			%	50		06/23/23 17:34
Toluene-d8 (surr)	94.4		89-112			%	50		06/23/23 17:34

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/23/23 17:34
Container ID: 1232801035-A

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 06/23/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133F-23**

Client Sample ID: **SRF133-FS133F-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801036
Lab Project ID: 1232801

Collection Date: 06/18/23 12:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33F

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.105		0.0455	0.0136	0.0227	ug/L	1		07/04/23 03:10
2-Methylnaphthalene	0.108		0.0455	0.0136	0.0227	ug/L	1		07/04/23 03:10
Naphthalene	0.276		0.0909	0.0282	0.0454	ug/L	1		07/04/23 03:10
Surrogates									
2-Methylnaphthalene-d10 (surr)	45		38-100			%	1		07/04/23 03:10
Fluoranthene-d10 (surr)	64.7		30-111			%	1		07/04/23 03:10

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 03:10
Container ID: 1232801036-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL

Results of **SRF133-FS133F-23**

Client Sample ID: **SRF133-FS133F-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801036
Lab Project ID: 1232801

Collection Date: 06/18/23 12:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33F

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:13
1,3,5-Trimethylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:13
Benzene	319		0.800	0.240	0.400	ug/L	2		06/21/23 21:13
Ethylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:13
Isopropylbenzene (Cumene)	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:13
Naphthalene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:13
o-Xylene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:13
P & M -Xylene	4.11		4.00	1.24	2.00	ug/L	2		06/21/23 21:13
tert-Butylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:13
Xylenes (total)	4.11	J	6.00	2.00	3.00	ug/L	2		06/21/23 21:13
Surrogates									
1,2-Dichloroethane-D4 (surr)	98.8		81-118			%	2		06/21/23 21:13
4-Bromofluorobenzene (surr)	100		85-114			%	2		06/21/23 21:13
Toluene-d8 (surr)	95		89-112			%	2		06/21/23 21:13

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 21:13
Container ID: 1232801036-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133FZ-23**

Client Sample ID: **SRF133-FS133FZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801037
Lab Project ID: 1232801

Collection Date: 06/18/23 11:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33F

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.154		0.0500	0.0150	0.0250	ug/L	1		07/04/23 03:31
2-Methylnaphthalene	0.160		0.0500	0.0150	0.0250	ug/L	1		07/04/23 03:31
Naphthalene	0.369		0.100	0.0310	0.0500	ug/L	1		07/04/23 03:31
Surrogates									
2-Methylnaphthalene-d10 (surr)	58.2		38-100			%	1		07/04/23 03:31
Fluoranthene-d10 (surr)	67.8		30-111			%	1		07/04/23 03:31

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 03:31
Container ID: 1232801037-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133FZ-23**

Client Sample ID: **SRF133-FS133FZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801037
Lab Project ID: 1232801

Collection Date: 06/18/23 11:20
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33F

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:28
1,3,5-Trimethylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:28
Benzene	322		0.800	0.240	0.400	ug/L	2		06/21/23 21:28
Ethylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:28
Isopropylbenzene (Cumene)	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:28
Naphthalene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:28
o-Xylene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:28
P & M -Xylene	4.37		4.00	1.24	2.00	ug/L	2		06/21/23 21:28
tert-Butylbenzene	1.00	U	2.00	0.620	1.00	ug/L	2		06/21/23 21:28
Xylenes (total)	4.37	J	6.00	2.00	3.00	ug/L	2		06/21/23 21:28
Surrogates									
1,2-Dichloroethane-D4 (surr)	98.2		81-118			%	2		06/21/23 21:28
4-Bromofluorobenzene (surr)	101		85-114			%	2		06/21/23 21:28
Toluene-d8 (surr)	94.7		89-112			%	2		06/21/23 21:28

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 21:28
Container ID: 1232801037-A

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133H-23**

Client Sample ID: **SRF133-FS133H-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801038
Lab Project ID: 1232801

Collection Date: 06/18/23 10:19
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33H

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.416		0.0481	0.0144	0.0240	ug/L	1		07/04/23 03:51
2-Methylnaphthalene	0.310		0.0481	0.0144	0.0240	ug/L	1		07/04/23 03:51
Naphthalene	0.807		0.0962	0.0298	0.0481	ug/L	1		07/04/23 03:51
Surrogates									
2-Methylnaphthalene-d10 (surr)	27	*	38-100			%	1		07/04/23 03:51
Fluoranthene-d10 (surr)	33.5		30-111			%	1		07/04/23 03:51

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/04/23 03:51
Container ID: 1232801038-D

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 06/23/23 10:00
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF133-FS133H-23**

Client Sample ID: **SRF133-FS133H-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801038
Lab Project ID: 1232801

Collection Date: 06/18/23 10:19
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-33H

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	3.06		1.00	0.310	0.500	ug/L	1		06/21/23 23:36
1,3,5-Trimethylbenzene	6.02		1.00	0.310	0.500	ug/L	1		06/21/23 23:36
Benzene	16.9		0.400	0.120	0.200	ug/L	1		06/21/23 23:36
Ethylbenzene	24.9		1.00	0.310	0.500	ug/L	1		06/21/23 23:36
Isopropylbenzene (Cumene)	7.99		1.00	0.310	0.500	ug/L	1		06/21/23 23:36
Naphthalene	3.87		1.00	0.310	0.500	ug/L	1		06/21/23 23:36
o-Xylene	0.369	J	1.00	0.310	0.500	ug/L	1		06/21/23 23:36
P & M -Xylene	7.97		2.00	0.620	1.00	ug/L	1		06/21/23 23:36
tert-Butylbenzene	0.451	J	1.00	0.310	0.500	ug/L	1		06/21/23 23:36
Xylenes (total)	8.34		3.00	1.00	1.50	ug/L	1		06/21/23 23:36
Surrogates									
1,2-Dichloroethane-D4 (surr)	92.8		81-118			%	1		06/21/23 23:36
4-Bromofluorobenzene (surr)	104		85-114			%	1		06/21/23 23:36
Toluene-d8 (surr)	98.1		89-112			%	1		06/21/23 23:36

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 23:36
Container ID: 1232801038-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-FS34B-23**

Client Sample ID: **SRF34-FS34B-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801039
Lab Project ID: 1232801

Collection Date: 06/18/23 18:32
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4B

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
2-Methylnaphthalene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Acenaphthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Acenaphthylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		07/15/23 21:39
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Chrysene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		07/15/23 21:39
Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Fluorene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Naphthalene	0.0471	U	0.0943	0.0292	0.0471	ug/L	1		07/15/23 21:39
Phenanthrene	0.0337	J	0.0943	0.0292	0.0471	ug/L	1		07/15/23 21:39
Pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:39
Surrogates									
2-Methylnaphthalene-d10 (surr)	61.5		38-100			%	1		07/15/23 21:39
Fluoranthene-d10 (surr)	73.5		30-111			%	1		07/15/23 21:39

Batch Information

Analytical Batch: XMS13740
Analytical Method: 8270D SIM LV (PAH)
Analyst: NGG
Analytical Date/Time: 07/15/23 21:39
Container ID: 1232801039-D

Prep Batch: XXX48061
Prep Method: SW3535A
Prep Date/Time: 06/24/23 09:30
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-FS34B-23**

Client Sample ID: **SRF34-FS34B-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801039
Lab Project ID: 1232801

Collection Date: 06/18/23 18:32
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4B

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
Benzene	0.423		0.400	0.120	0.200	ug/L	1		06/21/23 22:20
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 22:20
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:20
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 22:20
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		06/21/23 22:20
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/21/23 22:20
Toluene-d8 (surr)	96.8		89-112			%	1		06/21/23 22:20

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:20
Container ID: 1232801039-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-FS34BZ-23**

Client Sample ID: **SRF34-FS34BZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801040
Lab Project ID: 1232801

Collection Date: 06/18/23 17:32
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4B

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0200	J	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
2-Methylnaphthalene	0.0288	J	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Acenaphthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Acenaphthylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Benzo(a)Anthracene	0.0438	J	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Benzo[a]pyrene	0.0702		0.0189	0.00585	0.00945	ug/L	1		07/15/23 21:59
Benzo[b]Fluoranthene	0.0755		0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Benzo[g,h,i]perylene	0.107		0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Benzo[k]fluoranthene	0.0785		0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Chrysene	0.0482		0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Dibenzo[a,h]anthracene	0.103		0.0189	0.00585	0.00945	ug/L	1		07/15/23 21:59
Fluoranthene	0.0383	J	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Fluorene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Indeno[1,2,3-c,d] pyrene	0.108		0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Naphthalene	0.0325	J	0.0943	0.0292	0.0471	ug/L	1		07/15/23 21:59
Phenanthrene	0.0545	J	0.0943	0.0292	0.0471	ug/L	1		07/15/23 21:59
Pyrene	0.0335	J	0.0472	0.0142	0.0236	ug/L	1		07/15/23 21:59
Surrogates									
2-Methylnaphthalene-d10 (surr)	72		38-100			%	1		07/15/23 21:59
Fluoranthene-d10 (surr)	84.3		30-111			%	1		07/15/23 21:59

Batch Information

Analytical Batch: XMS13740
Analytical Method: 8270D SIM LV (PAH)
Analyst: NGG
Analytical Date/Time: 07/15/23 21:59
Container ID: 1232801040-D

Prep Batch: XXX48061
Prep Method: SW3535A
Prep Date/Time: 06/24/23 09:30
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF34-FS34BZ-23**

Client Sample ID: **SRF34-FS34BZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801040
Lab Project ID: 1232801

Collection Date: 06/18/23 17:32
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-4B

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
Benzene	0.424		0.400	0.120	0.200	ug/L	1		06/21/23 22:35
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/21/23 22:35
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/21/23 22:35
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/21/23 22:35
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		06/21/23 22:35
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/21/23 22:35
Toluene-d8 (surr)	96.1		89-112			%	1		06/21/23 22:35

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/21/23 22:35
Container ID: 1232801040-A

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 06/21/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:23AM

J flagging is activated

Results of **SRF-TB01**

Client Sample ID: **SRF-TB01**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801041
Lab Project ID: 1232801

Collection Date: 06/18/23 08:00
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TB01

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/26/23 23:23
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/26/23 23:23
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:23
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/26/23 23:23
Surrogates									
1,2-Dichloroethane-D4 (surr)	102		81-118			%	1		06/26/23 23:23
4-Bromofluorobenzene (surr)	105		85-114			%	1		06/26/23 23:23
Toluene-d8 (surr)	106		89-112			%	1		06/26/23 23:23

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/26/23 23:23
Container ID: 1232801041-A

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF14-TS14GRZ-23**

Client Sample ID: **SRF14-TS14GRZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801042
Lab Project ID: 1232801

Collection Date: 06/18/23 11:45
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4GR

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	33.1		0.556	0.167	0.278	ug/L	10		07/15/23 21:18
2-Methylnaphthalene	40.7		0.556	0.167	0.278	ug/L	10		07/15/23 21:18
Naphthalene	53.7		1.11	0.344	0.555	ug/L	10		07/15/23 21:18
Surrogates									
2-Methylnaphthalene-d10 (surr)	71.3		38-100			%	1		07/05/23 22:22
Fluoranthene-d10 (surr)	59.6		30-111			%	1		07/05/23 22:22

Batch Information

Analytical Batch: XMS13740
Analytical Method: 8270D SIM LV (PAH)
Analyst: NGG
Analytical Date/Time: 07/15/23 21:18
Container ID: 1232801042-D

Prep Batch: XXX48061
Prep Method: SW3535A
Prep Date/Time: 06/24/23 09:30
Prep Initial Wt./Vol.: 225 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13711
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 22:22
Container ID: 1232801042-D

Prep Batch: XXX48061
Prep Method: SW3535A
Prep Date/Time: 06/24/23 09:30
Prep Initial Wt./Vol.: 225 mL
Prep Extract Vol: 1 mL

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Results of **SRF14-TS14GRZ-23**

Client Sample ID: **SRF14-TS14GRZ-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232801042
Lab Project ID: 1232801

Collection Date: 06/18/23 11:45
Received Date: 06/20/23 10:10
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-4GR

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	528		10.0	3.10	5.00	ug/L	10		06/28/23 00:41
1,3,5-Trimethylbenzene	280		10.0	3.10	5.00	ug/L	10		06/28/23 00:41
Benzene	17.0		0.400	0.120	0.200	ug/L	1		06/27/23 00:54
Ethylbenzene	132		1.00	0.310	0.500	ug/L	1		06/27/23 00:54
Isopropylbenzene (Cumene)	95.3		1.00	0.310	0.500	ug/L	1		06/27/23 00:54
Naphthalene	111		1.00	0.310	0.500	ug/L	1		06/27/23 00:54
o-Xylene	58.4		1.00	0.310	0.500	ug/L	1		06/27/23 00:54
P & M -Xylene	298		2.00	0.620	1.00	ug/L	1		06/27/23 00:54
Xylenes (total)	356		3.00	1.00	1.50	ug/L	1		06/27/23 00:54
Surrogates									
1,2-Dichloroethane-D4 (surr)	94.5		81-118			%	1		06/27/23 00:54
4-Bromofluorobenzene (surr)	101		85-114			%	1		06/27/23 00:54
Toluene-d8 (surr)	104		89-112			%	1		06/27/23 00:54

Batch Information

Analytical Batch: VMS22519
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 00:41
Container ID: 1232801042-B

Prep Batch: VXX40056
Prep Method: SW5030B
Prep Date/Time: 06/27/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 00:54
Container ID: 1232801042-A

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1857557 [VXX/40015]
Blank Lab ID: 1718724

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801008, 1232801010, 1232801013, 1232801014, 1232801021, 1232801022, 1232801023, 1232801024, 1232801026, 1232801029, 1232801032, 1232801036, 1232801037

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	110	81-118		0	%
4-Bromofluorobenzene (surr)	102	85-114		0	%
Toluene-d8 (surr)	94.5	89-112		0	%

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/21/2023 2:52:00PM

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 6/21/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Leaching Blank

Blank ID: LB for HBN 1857395 [TCLP/12425
Blank Lab ID: 1718081

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801008, 1232801010, 1232801013, 1232801014, 1232801021, 1232801022, 1232801023, 1232801024, 1232801026, 1232801029, 1232801032, 1232801036, 1232801037

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
Benzene	10.0U	20.0	6.00	10.0	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	105	81-118		0	%
4-Bromofluorobenzene (surr)	104	85-114		0	%
Toluene-d8 (surr)	94.8	89-112		0	%

Batch Information

Analytical Batch: VMS22489
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/21/2023 7:15:00PM

Prep Batch: VXX40015
Prep Method: SW5030B
Prep Date/Time: 6/21/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [VXX40015]
Blank Spike Lab ID: 1718725
Date Analyzed: 06/21/2023 15:07

Spike Duplicate ID: LCSD for HBN 1232801 [VXX40015]
Spike Duplicate Lab ID: 1718726
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801008, 1232801010, 1232801013, 1232801014, 1232801021, 1232801022, 1232801023, 1232801024, 1232801026, 1232801029, 1232801032, 1232801036, 1232801037

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	30.4	101	30	30.1	100	(79-124)	0.98	(< 20)
1,3,5-Trimethylbenzene	30	30.5	102	30	30.1	100	(75-124)	1.20	(< 20)
Benzene	30	30.8	103	30	29.7	99	(79-120)	3.70	(< 20)
Ethylbenzene	30	30.2	101	30	29.5	98	(79-121)	2.20	(< 20)
Isopropylbenzene (Cumene)	30	30.5	102	30	29.7	99	(72-131)	2.50	(< 20)
Naphthalene	30	31.0	103	30	30.3	101	(61-128)	2.40	(< 20)
n-Butylbenzene	30	26.4	88	30	27.0	90	(75-128)	2.10	(< 20)
o-Xylene	30	30.1	100	30	29.0	97	(78-122)	3.60	(< 20)
P & M -Xylene	60	60.8	101	60	59.2	99	(80-121)	2.80	(< 20)
sec-Butylbenzene	30	29.9	100	30	30.0	100	(77-126)	0.32	(< 20)
tert-Butylbenzene	30	29.7	99	30	29.9	100	(78-124)	0.58	(< 20)
Toluene	30	28.1	94	30	27.3	91	(80-121)	3.00	(< 20)
Xylenes (total)	90	90.9	101	90	88.2	98	(79-121)	3.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		102	30		98	(81-118)	3.40	
4-Bromofluorobenzene (surr)	30		102	30		102	(85-114)	0.11	
Toluene-d8 (surr)	30		99	30		98	(89-112)	0.84	

Batch Information

Analytical Batch: **VMS22489**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40015**
Prep Method: **SW5030B**
Prep Date/Time: **06/21/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:31AM

Method Blank

Blank ID: MB for HBN 1857670 [VXX/40025]
Blank Lab ID: 1719190

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801001, 1232801002, 1232801007, 1232801009, 1232801011, 1232801014, 1232801015, 1232801016, 1232801020, 1232801022, 1232801025, 1232801026, 1232801035

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	107	81-118		0	%
4-Bromofluorobenzene (surr)	102	85-114		0	%
Toluene-d8 (surr)	94	89-112		0	%

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/23/2023 10:03:00AM

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 6/23/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Leaching Blank

Blank ID: LB for HBN 1857518 [TCLP/12432
Blank Lab ID: 1718540

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801001, 1232801002, 1232801007, 1232801009, 1232801011, 1232801014, 1232801015, 1232801016, 1232801020, 1232801022, 1232801025, 1232801026, 1232801035

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
Benzene	10.0U	20.0	6.00	10.0	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	104	81-118		0	%
4-Bromofluorobenzene (surr)	102	85-114		0	%
Toluene-d8 (surr)	94.5	89-112		0	%

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/23/2023 2:40:00PM

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 6/23/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Leaching Blank

Blank ID: LB for HBN 1857571 [TCLP/12436
Blank Lab ID: 1718758

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801001, 1232801002, 1232801007, 1232801009, 1232801011, 1232801014, 1232801015, 1232801016, 1232801020, 1232801022, 1232801025, 1232801026, 1232801035

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
Benzene	10.0U	20.0	6.00	10.0	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	109	81-118		0	%
4-Bromofluorobenzene (surr)	100	85-114		0	%
Toluene-d8 (surr)	94.3	89-112		0	%

Batch Information

Analytical Batch: VMS22500
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/23/2023 2:55:00PM

Prep Batch: VXX40025
Prep Method: SW5030B
Prep Date/Time: 6/23/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [VXX40025]
Blank Spike Lab ID: 1719191
Date Analyzed: 06/23/2023 10:18

Spike Duplicate ID: LCSD for HBN 1232801 [VXX40025]
Spike Duplicate Lab ID: 1719192
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801001, 1232801002, 1232801007, 1232801009, 1232801011, 1232801014, 1232801015, 1232801016, 1232801020, 1232801022, 1232801025, 1232801026, 1232801035

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	31.0	103	30	30.3	101	(79-124)	2.50	(< 20)
1,3,5-Trimethylbenzene	30	30.6	102	30	30.2	101	(75-124)	1.40	(< 20)
Benzene	30	31.2	104	30	30.6	102	(79-120)	1.90	(< 20)
Ethylbenzene	30	30.2	101	30	29.9	100	(79-121)	0.73	(< 20)
Isopropylbenzene (Cumene)	30	30.4	101	30	29.9	100	(72-131)	1.40	(< 20)
Naphthalene	30	31.5	105	30	30.7	102	(61-128)	2.80	(< 20)
n-Butylbenzene	30	27.5	92	30	27.9	93	(75-128)	1.40	(< 20)
o-Xylene	30	30.4	101	30	30.0	100	(78-122)	1.20	(< 20)
P & M -Xylene	60	60.8	101	60	59.7	100	(80-121)	1.80	(< 20)
sec-Butylbenzene	30	30.3	101	30	30.4	101	(77-126)	0.29	(< 20)
tert-Butylbenzene	30	30.2	101	30	30.0	100	(78-124)	0.83	(< 20)
Toluene	30	28.6	95	30	27.6	92	(80-121)	3.40	(< 20)
Xylenes (total)	90	91.2	101	90	89.8	100	(79-121)	1.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		98	30		96	(81-118)	1.70	
4-Bromofluorobenzene (surr)	30		103	30		102	(85-114)	1.10	
Toluene-d8 (surr)	30		98	30		97	(89-112)	0.85	

Batch Information

Analytical Batch: **VMS22500**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40025**
Prep Method: **SW5030B**
Prep Date/Time: **06/23/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:36AM

Method Blank

Blank ID: MB for HBN 1857735 [VXX/40031]
Blank Lab ID: 1719378

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801003, 1232801012, 1232801027, 1232801028, 1232801030, 1232801031, 1232801033, 1232801034, 1232801038, 1232801039, 1232801040

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	105	81-118		0	%
4-Bromofluorobenzene (surr)	102	85-114		0	%
Toluene-d8 (surr)	98.1	89-112		0	%

Batch Information

Analytical Batch: VMS22503
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: PHK
Analytical Date/Time: 6/21/2023 2:52:00PM

Prep Batch: VXX40031
Prep Method: SW5030B
Prep Date/Time: 6/21/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [VXX40031]
Blank Spike Lab ID: 1719379
Date Analyzed: 06/21/2023 15:07

Spike Duplicate ID: LCSD for HBN 1232801 [VXX40031]
Spike Duplicate Lab ID: 1719380
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801003, 1232801012, 1232801027, 1232801028, 1232801030, 1232801031, 1232801033, 1232801034, 1232801038, 1232801039, 1232801040

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	30.6	102	30	29.4	98	(79-124)	4.10	(< 20)
1,3,5-Trimethylbenzene	30	31.0	103	30	29.7	99	(75-124)	4.20	(< 20)
Benzene	30	32.8	109	30	31.3	104	(79-120)	4.70	(< 20)
Ethylbenzene	30	31.5	105	30	29.9	100	(79-121)	5.30	(< 20)
Isopropylbenzene (Cumene)	30	30.6	102	30	29.5	98	(72-131)	3.50	(< 20)
Naphthalene	30	27.9	93	30	30.0	100	(61-128)	7.20	(< 20)
n-Butylbenzene	30	30.9	103	30	29.4	98	(75-128)	4.70	(< 20)
o-Xylene	30	30.9	103	30	29.4	98	(78-122)	4.70	(< 20)
P & M -Xylene	60	62.9	105	60	59.9	100	(80-121)	4.90	(< 20)
sec-Butylbenzene	30	30.0	100	30	28.7	96	(77-126)	4.10	(< 20)
tert-Butylbenzene	30	29.3	98	30	27.9	93	(78-124)	4.70	(< 20)
Toluene	30	29.6	99	30	28.5	95	(80-121)	3.90	(< 20)
Xylenes (total)	90	93.7	104	90	89.3	99	(79-121)	4.80	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		95	30		95	(81-118)	0.36	
4-Bromofluorobenzene (surr)	30		99	30		99	(85-114)	0.12	
Toluene-d8 (surr)	30		96	30		97	(89-112)	0.18	

Batch Information

Analytical Batch: **VMS22503**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **PHK**

Prep Batch: **VXX40031**
Prep Method: **SW5030B**
Prep Date/Time: **06/21/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:42AM

Method Blank

Blank ID: MB for HBN 1857846 [VXX/40045]
Blank Lab ID: 1719758

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801003, 1232801041, 1232801042

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	103	81-118		0	%
4-Bromofluorobenzene (surr)	103	85-114		0	%
Toluene-d8 (surr)	106	89-112		0	%

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: PHK
Analytical Date/Time: 6/26/2023 6:21:00PM

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 6/26/2023 12:00:00PM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [VXX40045]
Blank Spike Lab ID: 1719759
Date Analyzed: 06/26/2023 18:36

Spike Duplicate ID: LCSD for HBN 1232801 [VXX40045]
Spike Duplicate Lab ID: 1719760
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801003, 1232801041, 1232801042

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	33.1	110	30	32.6	109	(79-124)	1.60	(< 20)
1,3,5-Trimethylbenzene	30	33.5	112	30	33.2	111	(75-124)	1.00	(< 20)
Benzene	30	29.3	98	30	28.8	96	(79-120)	1.80	(< 20)
Ethylbenzene	30	31.8	106	30	31.0	103	(79-121)	2.70	(< 20)
Isopropylbenzene (Cumene)	30	31.2	104	30	30.5	102	(72-131)	2.10	(< 20)
Naphthalene	30	31.7	106	30	34.5	115	(61-128)	8.50	(< 20)
n-Butylbenzene	30	32.1	107	30	32.3	108	(75-128)	0.64	(< 20)
o-Xylene	30	31.2	104	30	30.7	102	(78-122)	1.50	(< 20)
P & M -Xylene	60	63.5	106	60	62.3	104	(80-121)	1.90	(< 20)
sec-Butylbenzene	30	32.2	107	30	31.8	106	(77-126)	1.30	(< 20)
tert-Butylbenzene	30	31.8	106	30	31.2	104	(78-124)	1.70	(< 20)
Toluene	30	30.2	101	30	29.7	99	(80-121)	1.50	(< 20)
Xylenes (total)	90	94.7	105	90	93.0	103	(79-121)	1.80	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		96	30		94	(81-118)	2.30	
4-Bromofluorobenzene (surr)	30		101	30		101	(85-114)	0.64	
Toluene-d8 (surr)	30		105	30		105	(89-112)	0.76	

Batch Information

Analytical Batch: **VMS22510**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **PHK**

Prep Batch: **VXX40045**
Prep Method: **SW5030B**
Prep Date/Time: **06/26/2023 12:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:47AM

Method Blank

Blank ID: MB for HBN 1857962 [VXX/40056]
Blank Lab ID: 1720134

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801030, 1232801042

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	110	81-118		0	%
4-Bromofluorobenzene (surr)	99.5	85-114		0	%
Toluene-d8 (surr)	92.4	89-112		0	%

Batch Information

Analytical Batch: VMS22519
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/27/2023 2:08:00PM

Prep Batch: VXX40056
Prep Method: SW5030B
Prep Date/Time: 6/27/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [VXX40056]
Blank Spike Lab ID: 1720135
Date Analyzed: 06/27/2023 14:23

Spike Duplicate ID: LCSD for HBN 1232801 [VXX40056]
Spike Duplicate Lab ID: 1720136
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801030, 1232801042

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	28.8	96	30	29.0	97	(79-124)	0.50	(< 20)
1,3,5-Trimethylbenzene	30	28.1	94	30	28.8	96	(75-124)	2.50	(< 20)
Naphthalene	30	30.8	103	30	30.2	101	(61-128)	1.90	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		104	30		98	(81-118)	5.80	
4-Bromofluorobenzene (surr)	30		99	30		103	(85-114)	4.10	
Toluene-d8 (surr)	30		95	30		96	(89-112)	1.40	

Batch Information

Analytical Batch: **VMS22519**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40056**
Prep Method: **SW5030B**
Prep Date/Time: **06/27/2023 06:00**
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 1857988 [VXX/40059]
Blank Lab ID: 1720245

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801004, 1232801017

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	110	81-118		0	%
4-Bromofluorobenzene (surr)	101	85-114		0	%
Toluene-d8 (surr)	91	89-112		0	%

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/28/2023 6:02:00PM

Prep Batch: VXX40059
Prep Method: SW5030B
Prep Date/Time: 6/28/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [VXX40059]
Blank Spike Lab ID: 1720246
Date Analyzed: 06/28/2023 18:17

Spike Duplicate ID: LCSD for HBN 1232801 [VXX40059]
Spike Duplicate Lab ID: 1720247
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801004, 1232801017

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	27.5	92	30	30.6	102	(79-124)	10.70	(< 20)
1,3,5-Trimethylbenzene	30	27.4	91	30	30.9	103	(75-124)	12.00	(< 20)
Benzene	30	30.3	101	30	32.4	108	(79-120)	6.90	(< 20)
Ethylbenzene	30	28.3	94	30	30.3	101	(79-121)	6.80	(< 20)
Isopropylbenzene (Cumene)	30	28.3	94	30	30.4	101	(72-131)	7.30	(< 20)
Naphthalene	30	27.2	91	30	29.1	97	(61-128)	6.90	(< 20)
n-Butylbenzene	30	24.9	83	30	28.0	93	(75-128)	11.60	(< 20)
o-Xylene	30	27.9	93	30	29.3	98	(78-122)	4.90	(< 20)
P & M -Xylene	60	56.2	94	60	59.7	100	(80-121)	6.00	(< 20)
sec-Butylbenzene	30	27.5	92	30	31.0	103	(77-126)	12.00	(< 20)
tert-Butylbenzene	30	27.1	90	30	30.7	102	(78-124)	12.40	(< 20)
Toluene	30	26.0	87	30	28.0	93	(80-121)	7.20	(< 20)
Xylenes (total)	90	84.2	94	90	89.0	99	(79-121)	5.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		104	30		96	(81-118)	7.80	
4-Bromofluorobenzene (surr)	30		101	30		103	(85-114)	2.20	
Toluene-d8 (surr)	30		95	30		95	(89-112)	0.36	

Batch Information

Analytical Batch: **VMS22521**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40059**
Prep Method: **SW5030B**
Prep Date/Time: **06/28/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:09:58AM

Billable Matrix Spike Summary

Original Sample ID: 1232801004
MS Sample ID: 1232801005 BMS
MSD Sample ID: 1232801006 BMSD

Analysis Date: 06/28/2023 22:41
Analysis Date: 06/29/2023 2:24
Analysis Date: 06/29/2023 2:38
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **SW8260D**

		Matrix Spike (ug/L)				Spike Duplicate (ug/L)						
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	0.500U	30.0	17.5	58	*	30.0	16.1	54	*	79-124	8.20	(< 20)
1,3,5-Trimethylbenzene	0.500U	30.0	17.2	57	*	30.0	16.4	55	*	75-124	4.90	(< 20)
Benzene	0.200U	30.0	19.2	64	*	30.0	18.0	60	*	79-120	6.20	(< 20)
Ethylbenzene	0.500U	30.0	17.7	59	*	30.0	16.6	55	*	79-121	6.40	(< 20)
Isopropylbenzene (Cumene)	0.500U	30.0	17.6	59	*	30.0	16.6	55	*	72-131	5.80	(< 20)
Naphthalene	0.500U	30.0	17.5	58	*	30.0	18.1	60	*	61-128	3.40	(< 20)
o-Xylene	0.500U	30.0	17.2	58	*	30.0	16.4	55	*	78-122	4.90	(< 20)
P & M -Xylene	1.00U	60.0	34.6	58	*	60.0	33.1	55	*	80-121	4.50	(< 20)
Xylenes (total)	1.50U	90.0	51.9	58	*	90.0	49.5	55	*	79-121	4.60	(< 20)
Surrogates												
1,2-Dichloroethane-D4 (surr)		30.0	29.5	98		30.0	29.3	98		81-118	0.43	
4-Bromofluorobenzene (surr)		30.0	30.6	102		30.0	30.8	103		85-114	0.90	
Toluene-d8 (surr)		30.0	27.8	93		30.0	28.0	93		89-112	0.49	

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/29/2023 2:24:00AM

Prep Batch: VXX40059
Prep Method: Volatiles Extraction 8240/8260
Prep Date/Time: 6/28/2023 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 10/03/2023 9:10:00AM

Billable Matrix Spike Summary

Original Sample ID: 1232801017
MS Sample ID: 1232801018 BMS
MSD Sample ID: 1232801019 BMSD

Analysis Date: 06/28/2023 22:56
Analysis Date: 06/29/2023 3:08
Analysis Date: 06/29/2023 3:23
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **SW8260D**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)						
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)		CL	RPD (%)		RPD CL
1,2,4-Trimethylbenzene	0.500U	30.0	28.2	94	30.0	23.0	77	*	79-124	20.40	*	(< 20)
1,3,5-Trimethylbenzene	0.500U	30.0	28.1	94	30.0	23.1	77		75-124	19.60		(< 20)
Benzene	0.711	30.0	29.6	96	30.0	25.2	82		79-120	16.10		(< 20)
Ethylbenzene	0.500U	30.0	26.8	89	30.0	22.4	75	*	79-121	17.70		(< 20)
Isopropylbenzene (Cumene)	0.500U	30.0	27.6	92	30.0	23.4	78		72-131	16.60		(< 20)
Naphthalene	0.500U	30.0	27.8	93	30.0	22.9	77		61-128	19.10		(< 20)
n-Butylbenzene	0.500U	30.0	25.4	85	30.0	20.7	69	*	75-128	20.40	*	(< 20)
o-Xylene	0.500U	30.0	26	87	30.0	22.2	74	*	78-122	15.70		(< 20)
P & M -Xylene	1.00U	60.0	53.2	89	60.0	45.1	75	*	80-121	16.50		(< 20)
sec-Butylbenzene	0.500U	30.0	29.6	99	30.0	24.2	81		77-126	20.20	*	(< 20)
tert-Butylbenzene	0.426J	30.0	28.8	94	30.0	23.6	77	*	78-124	19.60		(< 20)
Toluene	0.500U	30.0	24.9	83	30.0	20.8	69	*	80-121	17.80		(< 20)
Xylenes (total)	1.50U	90.0	79.2	88	90.0	67.3	75	*	79-121	16.20		(< 20)
Surrogates												
1,2-Dichloroethane-D4 (surr)		30.0	28.1	94	30.0	28.1	94		81-118	0.18		
4-Bromofluorobenzene (surr)		30.0	31.6	105	30.0	31.6	105		85-114	0.06		
Toluene-d8 (surr)		30.0	28.2	94	30.0	28.0	93		89-112	0.66		

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/29/2023 3:08:00AM

Prep Batch: VXX40059
Prep Method: Volatiles Extraction 8240/8260
Prep Date/Time: 6/28/2023 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 10/03/2023 9:10:00AM

Method Blank

Blank ID: MB for HBN 1857547 [XXX/48044]
Blank Lab ID: 1718661

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801001, 1232801002, 1232801003, 1232801004, 1232801007, 1232801008, 1232801009, 1232801010, 1232801011, 1232801012, 1232801013, 1232801014, 1232801015, 1232801020, 1232801021

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	LOD	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	0.0250	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	0.0100	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Chrysene	0.0250U	0.0500	0.0150	0.0250	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	0.0100	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Fluorene	0.0250U	0.0500	0.0150	0.0250	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Naphthalene	0.0500U	0.100	0.0310	0.0500	ug/L
Phenanthrene	0.0327J	0.100	0.0310	0.0500	ug/L
Pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Surrogates					
2-Methylnaphthalene-d10 (surr)	44.7	38-100		0	%
Fluoranthene-d10 (surr)	59.2	30-111		0	%

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent 8890 GC/MS SYA
Analyst: HMW
Analytical Date/Time: 6/26/2023 2:37:00PM

Prep Batch: XXX48044
Prep Method: SW3535A
Prep Date/Time: 6/22/2023 9:45:00AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [XXX48044]
Blank Spike Lab ID: 1718662
Date Analyzed: 06/26/2023 14:53

Spike Duplicate ID: LCSD for HBN 1232801 [XXX48044]
Spike Duplicate Lab ID: 1718663
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801001, 1232801002, 1232801003, 1232801004, 1232801007, 1232801008, 1232801009, 1232801010, 1232801011, 1232801012, 1232801013, 1232801014, 1232801015, 1232801020, 1232801021

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.05	53	2	0.896	45	(41-115)	16.10	(< 20)
2-Methylnaphthalene	2	1.01	51	2	0.868	43	(39-114)	15.50	(< 20)
Acenaphthene	2	1.24	62	2	1.12	56	(48-114)	9.60	(< 20)
Acenaphthylene	2	1.37	69	2	1.28	64	(35-121)	6.60	(< 20)
Anthracene	2	1.41	71	2	1.33	67	(53-119)	6.00	(< 20)
Benzo(a)Anthracene	2	1.26	63	2	1.06	53	* (59-120)	17.30	(< 20)
Benzo[a]pyrene	2	1.37	68	2	1.22	61	(53-120)	11.10	(< 20)
Benzo[b]Fluoranthene	2	1.28	64	2	1.08	54	(53-126)	16.50	(< 20)
Benzo[g,h,i]perylene	2	1.48	74	2	1.42	71	(44-128)	4.20	(< 20)
Benzo[k]fluoranthene	2	1.41	71	2	1.22	61	(54-125)	14.70	(< 20)
Chrysene	2	1.25	62	2	1.08	54	* (57-120)	13.90	(< 20)
Dibenzo[a,h]anthracene	2	1.48	74	2	1.42	71	(44-131)	3.80	(< 20)
Fluoranthene	2	1.29	65	2	1.25	62	(58-120)	3.70	(< 20)
Fluorene	2	1.32	66	2	1.20	60	(50-118)	9.30	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.41	70	2	1.33	67	(48-130)	5.60	(< 20)
Naphthalene	2	1.06	53	2	0.894	45	(43-114)	16.80	(< 20)
Phenanthrene	2	1.37	68	2	1.32	66	(53-115)	3.90	(< 20)
Pyrene	2	1.33	66	2	1.27	64	(53-121)	4.00	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		50	2		42	(38-100)	17.60	
Fluoranthene-d10 (surr)	2		68	2		66	(30-111)	2.70	

Batch Information

Analytical Batch: **XMS13689**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent 8890 GC/MS SYA**
Analyst: **HMW**

Prep Batch: **XXX48044**
Prep Method: **SW3535A**
Prep Date/Time: **06/22/2023 09:45**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 10/03/2023 9:10:05AM

Billable Matrix Spike Summary

Original Sample ID: 1232801004
MS Sample ID: 1232801005 BMS
MSD Sample ID: 1232801006 BMSD

Analysis Date: 06/26/2023 16:14
Analysis Date: 06/26/2023 16:30
Analysis Date: 06/26/2023 16:46
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **8270D SIM LV (PAH)**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.0255U	2.04	1.3	64	2.13	1.17	55	41-115	10.70	(< 20)
2-Methylnaphthalene	0.0255U	2.04	1.29	63	2.13	1.15	54	39-114	11.30	(< 20)
Naphthalene	0.0510U	2.04	1.34	66	2.13	1.25	59	43-114	6.70	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		2.04	1.17	58	2.13	1.06	50	38-100	10.20	
Fluoranthene-d10 (surr)		2.04	1.47	72	2.13	1.36	64	30-111	7.30	

Batch Information

Analytical Batch: XMS13689
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent 8890 GC/MS SYA
Analyst: HMW
Analytical Date/Time: 6/26/2023 4:30:00PM

Prep Batch: XXX48044
Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
Prep Date/Time: 6/22/2023 9:45:00AM
Prep Initial Wt./Vol.: 245.00mL
Prep Extract Vol: 1.00mL

Print Date: 10/03/2023 9:10:07AM

Method Blank

Blank ID: MB for HBN 1857597 [XXX/48055]
Blank Lab ID: 1718869

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801016, 1232801017, 1232801022, 1232801023, 1232801024, 1232801025, 1232801026, 1232801027, 1232801028, 1232801029, 1232801030, 1232801031, 1232801032, 1232801033, 1232801034, 1232801035, 1232801036, 1232801037, 1232801038

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	LOD	Units
1-Methylnaphthalene	0.0208J	0.0500	0.0150	0.0250	ug/L
2-Methylnaphthalene	0.0273J	0.0500	0.0150	0.0250	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	0.0100	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Chrysene	0.0250U	0.0500	0.0150	0.0250	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	0.0100	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Fluorene	0.0250U	0.0500	0.0150	0.0250	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Naphthalene	0.0500U	0.100	0.0310	0.0500	ug/L
Phenanthrene	0.0320J	0.100	0.0310	0.0500	ug/L
Pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Surrogates					
2-Methylnaphthalene-d10 (surr)	47.1	38-100		0	%
Fluoranthene-d10 (surr)	81.8	30-111		0	%

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/3/2023 7:59:00PM

Prep Batch: XXX48055
Prep Method: SW3535A
Prep Date/Time: 6/23/2023 10:00:00AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [XXX48055]
Blank Spike Lab ID: 1718870
Date Analyzed: 07/03/2023 20:19

Spike Duplicate ID: LCSD for HBN 1232801 [XXX48055]
Spike Duplicate Lab ID: 1718871
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801016, 1232801017, 1232801022, 1232801023, 1232801024, 1232801025, 1232801026, 1232801027, 1232801028, 1232801029, 1232801030, 1232801031, 1232801032, 1232801033, 1232801034, 1232801035, 1232801036, 1232801037, 1232801038

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.19	60	2	1.07	54	(41-115)	10.70	(< 20)
2-Methylnaphthalene	2	1.16	58	2	1.05	52	(39-114)	10.30	(< 20)
Acenaphthene	2	1.45	72	2	1.34	67	(48-114)	7.60	(< 20)
Acenaphthylene	2	1.52	76	2	1.42	71	(35-121)	7.10	(< 20)
Anthracene	2	1.68	84	2	1.53	77	(53-119)	9.20	(< 20)
Benzo(a)Anthracene	2	1.63	82	2	1.37	69	(59-120)	17.30	(< 20)
Benzo[a]pyrene	2	1.66	83	2	1.35	68	(53-120)	20.90	* (< 20)
Benzo[b]Fluoranthene	2	1.65	83	2	1.38	69	(53-126)	17.70	(< 20)
Benzo[g,h,i]perylene	2	1.84	92	2	1.58	79	(44-128)	15.10	(< 20)
Benzo[k]fluoranthene	2	1.79	90	2	1.35	68	(54-125)	28.10	* (< 20)
Chrysene	2	1.69	85	2	1.41	71	(57-120)	18.00	(< 20)
Dibenzo[a,h]anthracene	2	1.79	90	2	1.52	76	(44-131)	16.40	(< 20)
Fluoranthene	2	1.77	89	2	1.58	79	(58-120)	11.40	(< 20)
Fluorene	2	1.63	81	2	1.53	77	(50-118)	6.20	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.77	89	2	1.47	74	(48-130)	18.60	(< 20)
Naphthalene	2	1.20	60	2	1.08	54	(43-114)	10.60	(< 20)
Phenanthrene	2	1.71	86	2	1.57	79	(53-115)	8.60	(< 20)
Pyrene	2	1.80	90	2	1.60	80	(53-121)	11.40	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		58	2		51	(38-100)	13.10	
Fluoranthene-d10 (surr)	2		86	2		80	(30-111)	7.90	

Batch Information

Analytical Batch: **XMS13704**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **HMW**

Prep Batch: **XXX48055**
Prep Method: **SW3535A**
Prep Date/Time: **06/23/2023 10:00**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

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Billable Matrix Spike Summary

Original Sample ID: 1232801017
MS Sample ID: 1232801018 BMS
MSD Sample ID: 1232801019 BMSD

Analysis Date: 07/03/2023 21:21
Analysis Date: 07/03/2023 21:42
Analysis Date: 07/03/2023 22:02
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **8270D SIM LV (PAH)**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.0758	1.96	1.35	65	2.08	1.40	64	41-115	3.80	(< 20)
2-Methylnaphthalene	0.113	1.96	1.35	63	2.08	1.40	62	39-114	3.70	(< 20)
Acenaphthene	0.0169J	1.96	1.51	76	2.08	1.54	73	48-114	1.40	(< 20)
Acenaphthylene	0.0245U	1.96	1.57	80	2.08	1.61	77	35-121	2.10	(< 20)
Anthracene	0.0245U	1.96	1.66	85	2.08	1.62	78	53-119	2.80	(< 20)
Benzo(a)Anthracene	0.0245U	1.96	1.55	79	2.08	1.28	61	59-120	19.10	(< 20)
Benzo[a]pyrene	0.00980U	1.96	1.59	81	2.08	1.28	61	53-120	21.90 *	(< 20)
Benzo[b]Fluoranthene	0.0245U	1.96	1.6	82	2.08	1.26	60	53-126	23.90 *	(< 20)
Benzo[g,h,i]perylene	0.0245U	1.96	1.64	84	2.08	1.52	73	44-128	7.80	(< 20)
Benzo[k]fluoranthene	0.0245U	1.96	1.69	86	2.08	1.37	66	54-125	21.40 *	(< 20)
Chrysene	0.0245U	1.96	1.65	84	2.08	1.38	66	57-120	17.80	(< 20)
Dibenzo[a,h]anthracene	0.00980U	1.96	1.59	81	2.08	1.51	73	44-131	5.30	(< 20)
Fluoranthene	0.0245U	1.96	1.63	83	2.08	1.51	73	58-120	7.80	(< 20)
Fluorene	0.0653	1.96	1.69	83	2.08	1.69	78	50-118	0.05	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0245U	1.96	1.62	83	2.08	1.39	67	48-130	15.60	(< 20)
Naphthalene	0.0512J	1.96	1.39	68	2.08	1.49	69	43-114	7.40	(< 20)
Phenanthrene	0.0684J	1.96	1.68	82	2.08	1.69	78	53-115	0.94	(< 20)
Pyrene	0.0245U	1.96	1.62	83	2.08	1.48	71	53-121	9.30	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.96	1.4	71	2.08	1.34	64	38-100	4.40	
Fluoranthene-d10 (surr)		1.96	1.64	84	2.08	1.51	73	30-111	8.00	

Batch Information

Analytical Batch: XMS13704
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/3/2023 9:42:00PM

Prep Batch: XXX48055
Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
Prep Date/Time: 6/23/2023 10:00:00AM
Prep Initial Wt./Vol.: 255.00mL
Prep Extract Vol: 1.00mL

Print Date: 10/03/2023 9:10:13AM

Method Blank

Blank ID: MB for HBN 1857623 [XXX/48061]
Blank Lab ID: 1718978

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232801039, 1232801040, 1232801042

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	LOD	Units
1-Methylnaphthalene	0.0193J	0.0500	0.0150	0.0250	ug/L
2-Methylnaphthalene	0.0236J	0.0500	0.0150	0.0250	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	0.0100	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Chrysene	0.0250U	0.0500	0.0150	0.0250	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	0.0100	ug/L
Fluoranthene	0.0192J	0.0500	0.0150	0.0250	ug/L
Fluorene	0.0250U	0.0500	0.0150	0.0250	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Naphthalene	0.0500U	0.100	0.0310	0.0500	ug/L
Phenanthrene	0.0508J	0.100	0.0310	0.0500	ug/L
Pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Surrogates					
2-Methylnaphthalene-d10 (surr)	55.7	38-100		0	%
Fluoranthene-d10 (surr)	82.1	30-111		0	%

Batch Information

Analytical Batch: XMS13734
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/14/2023 4:42:00PM

Prep Batch: XXX48061
Prep Method: SW3535A
Prep Date/Time: 6/24/2023 9:30:00AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232801 [XXX48061]
Blank Spike Lab ID: 1718979
Date Analyzed: 07/14/2023 17:02

Spike Duplicate ID: LCSD for HBN 1232801 [XXX48061]
Spike Duplicate Lab ID: 1718980
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232801039, 1232801040, 1232801042

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.01	51	2	1.14	57	(41-115)	12.10	(< 20)
2-Methylnaphthalene	2	0.971	49	2	1.12	56	(39-114)	13.90	(< 20)
Acenaphthene	2	1.29	65	2	1.35	67	(48-114)	4.20	(< 20)
Acenaphthylene	2	1.41	71	2	1.46	73	(35-121)	3.60	(< 20)
Anthracene	2	1.49	75	2	1.49	75	(53-119)	0.17	(< 20)
Benzo(a)Anthracene	2	1.25	63	2	1.23	61	(59-120)	2.20	(< 20)
Benzo[a]pyrene	2	1.39	70	2	1.38	69	(53-120)	0.76	(< 20)
Benzo[b]Fluoranthene	2	1.26	63	2	1.23	61	(53-126)	2.50	(< 20)
Benzo[g,h,i]perylene	2	1.69	84	2	1.71	85	(44-128)	0.97	(< 20)
Benzo[k]fluoranthene	2	1.43	72	2	1.47	73	(54-125)	2.30	(< 20)
Chrysene	2	1.36	68	2	1.39	70	(57-120)	2.40	(< 20)
Dibenzo[a,h]anthracene	2	1.66	83	2	1.68	84	(44-131)	1.10	(< 20)
Fluoranthene	2	1.52	76	2	1.50	75	(58-120)	1.40	(< 20)
Fluorene	2	1.50	75	2	1.52	76	(50-118)	1.30	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.60	80	2	1.61	80	(48-130)	0.49	(< 20)
Naphthalene	2	1.05	53	2	1.18	59	(43-114)	11.60	(< 20)
Phenanthrene	2	1.52	76	2	1.53	76	(53-115)	0.48	(< 20)
Pyrene	2	1.54	77	2	1.52	76	(53-121)	1.20	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		51	2		57	(38-100)	11.30	
Fluoranthene-d10 (surr)	2		76	2		73	(30-111)	3.90	

Batch Information

Analytical Batch: **XMS13734**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **HMW**

Prep Batch: **XXX48061**
Prep Method: **SW3535A**
Prep Date/Time: **06/24/2023 09:30**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

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

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ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD

Profile #37367397

Revised Report - Revision 1

Laboratory:	SGS Anchorage	COC ID:	SRF-1	Cooler Name:	Bangladesh	Report To:	Kelly Carson
Project Name:	Hilcorp 2023 Groundwater Monitoring	Contact:	Kelly Carson	Contact Email:	kelly.carson@hilcorp.com	Invoice To:	Hilcorp Alaska, LLC
						P.O. Number:	

Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes
FS2-15B	SRF215-FS215B-23	2023-06-17	1105	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 3: VOCs SW8260D	Std	(1) A-C
FS1-27C	SRF127-FS127C-23	2023-06-17	1240	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 3: VOCs SW8260D	Std	(2) A-C
TS1-27M	SRF127-TS127M-23	2023-06-17	1400	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 1: VOCs SW8260D	Std	(3) A-C
TS1-4EE	SRF14-TS14EE-23	2023-06-17	1600	JB,KT	GW	MS/MSD	9	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 2: VOCs SW8260D / Glycols SW8015M	Std	Added volume for MS/MSD (4) (5) (6)
FS1-4H	SRF14-FS14H-23	2023-06-17	1730	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 1: VOCs SW8260D	Std	(7) A-C
FS1-4E	SRF14-FS14E-23	2023-06-17	1840	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 1: VOCs SW8260D	Std	(8) A-C
TS2-15P	SRF215-TS215P-23	2023-06-17	1039	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 3: VOCs SW8260D	Std	(9) A-C
TS1-27G	SRF127-TS127G-23	2023-06-17	1314	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 1: VOCs SW8260D	Std	(10) A-C
TS1-27L	SRF127-TS127L-23	2023-06-17	1501	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 1: VOCs SW8260D	Std	(11) A-C
FS1-33W	SRF133-FS133W-23	2023-06-17	1710	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 3: VOCs SW8260D	Std	(12) A-C
FS1-33S	SRF133-FS133S-23	2023-06-17	1903	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 4: VOCs SW8260D	Std	(13) A-C
TS2-15O	SRF215-TS215O-23	2023-06-17	1042	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 5: VOCs SW8260D	Std	(14) A-C
TS2-15R	SRF215-TS215R-23	2023-06-17	1209	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 3: VOCs SW8260D	Std	(15) A-C
TS1-27K	SRF127-TS127K-23	2023-06-17	1402	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 1: VOCs SW8260D	Std	(16) A-C
TS1-33JJ	SRF133-TS133JJ-23	2023-06-17	1620	KP	GW	MS/MSD	9	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 3: VOCs SW8260D	Std	Added volume for MS/MSD (17) (18) (19) A-C
TS1-33JJ	SRF133-TS133JJZ-23	2023-06-17	1520	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 3: VOCs SW8260D	Std	(20) A-C
TS1-33UR	SRF133-TS133UR-23	2023-06-17	1813	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	List 4: VOCs SW8260D	Std	(21) A-C
TS1-4GR	SRF14-TS14GR-23	2023-06-18	1245	KP	GW		6	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D / Glycols SW8015M	Std	(22) A-F Analyte List 2
TS1-9U	SRF19-TS19U-23	2023-06-18	1610	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(23) A-C Analyte List 3
TS1-9U	SRF19-TS19UZ-23	2023-06-18	1510	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(24) A-C Analyte List 3
TS1-9HH	SRF19-TS19HH-23	2023-06-18	1445	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(25) A-C Analyte List 3
TS1-33O2	SRF133-TS133O2-23	2023-06-18	1030	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(26) A-C Analyte List 4
FS3-4A	SRF34-FS34A-23	2023-06-18	1642	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(27) A-C Analyte List 5
FS3-4F	SRF34-FS34F-23	2023-06-18	1826	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(28) A-C Analyte List 5
TS3-4CC	SRF34-TS34CC-23	2023-06-19	1044	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(29) A-C Analyte List 5
TS3-4MM	SRF34-TS34MM-23	2023-06-18	0950	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(30) A-C Analyte List 3
TS3-4OO	SRF34-TS34OO-23	2023-06-18	1120	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(31) A-C Analyte List 3
TS3-4P	SRF34-TS34P-23	2023-06-18	1300	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(32) A-C Analyte List 5
TS3-9DD	SRF39-TS39DD-23	2023-06-18	1755	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(33) A-C Analyte List 3
FS1-4I	SRF14-FS14I-23	2023-06-18	1433	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(34) A-C Analyte List 1
TS1-4F	SRF14-TS14F-23	2023-06-18	1631	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(35) A-C Analyte List 3, sheen on surface
FS1-33F	SRF133-FS133F-23	2023-06-18	1220	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(36) A-C Analyte List 4
FS1-33F	SRF133-FS133FZ-23	2023-06-18	1120	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(37) A-C Analyte List 4
FS1-33H	SRF133-FS133H-23	2023-06-18	1019	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(38) A-C Analyte List 4
FS3-4B	SRF34-FS34B-23	2023-06-18	1832	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(39) A-C Analyte List 3
FS3-4B	SRF34-FS34BZ-23	2023-06-18	1732	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(40) A-C Analyte List 3
SRF	SRF-TB01	2023-06-17	0800	B,KT,KP,BI	GW	TB	3	NA	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	Std	(41) A-C

Special Instuctions:

Sample Receipt:
Temperature Blank: 3.2 D59
Custody Seals:

Cooler Temperature: 3.2 D58

Relinquished By / Affiliation:
Nick Matte / ALEUT
Signature / Printed Name / Affiliation — Date 6/15/23 Time 1700

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Curtis Whisman SGS 6.2023 1010
Signature / Printed Name / Affiliation — Date — Time

1232801

CHAIN OF CUSTODY RECORD

Laboratory:	SGS Anchorage	COC ID:	SRF-1	Cooler Name:	Chile	Report To:	Kelly Carson
Project Name:	Hilcorp 2023 Groundwater Monitoring	Contact:	Kelly Carson	Contact Email:	kelly.carson@hilcorp.com	Invoice To:	Hilcorp Alaska, LLC
						P.O. Number:	

Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes
FS1-4E	SRF14-FS14E-23	2023-06-17	1840	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 1 (2) D-E
FS1-4H	SRF14-FS14H-23	2023-06-17	1730	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 1 (7) D-E
FS1-4I	SRF14-FS14I-23	2023-06-18	1433	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 1 (34) D-E
TS1-4EE	SRF14-TS14EE-23	2023-06-17	1600	JB,KT	GW	MSD	6	Grab	250mL	amber glass	Chill 0-6 deg C	PAH SW8270D SIM	Std	Analyte List 2, MS/MSD (4)(36) D-E
TS1-4F	SRF14-TS14F-23	2023-06-18	1631	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3, sheen on surface (35) D-E
TS1-4GR	SRF14-TS14GR-23	2023-06-18	1245	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 2 (32) G-H
TS1-4GR	SRF14-TS14GRZ-23	2023-06-18	1145	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 2 (42) A-H
TS1-9HH	SRF19-TS19HH-23	2023-06-18	1445	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (26) D-E
TS1-9U	SRF19-TS19U-23	2023-06-18	1610	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (23) A-C-D-F
TS1-9U	SRF19-TS19UZ-23	2023-06-18	1510	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (24) D-E
FS1-27C	SRF127-FS127C-23	2023-06-17	1240	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (2) D-E
TS1-27G	SRF127-TS127G-23	2023-06-17	1314	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 1 (11) D-E
TS1-27K	SRF127-TS127K-23	2023-06-17	1402	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 1 (16) D-E
TS1-27L	SRF127-TS127L-23	2023-06-17	1501	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 1 (19) D-E
TS1-27M	SRF127-TS127M-23	2023-06-17	1400	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 4 (3) D-F
TS3-9DD	SRF39-TS39DD-23	2023-06-18	1755	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (33) D-E

Special Instuctions:

Sample Receipt:
Temperature Blank:
Custody Seals:
Cooler Temperature: 2.0 DSG

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation: ALEUT DATE 6/19/2023 Time 1700

Received By / Affiliation:
Signature / Printed Name / Affiliation Date Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation Date Time

Received By / Affiliation:
Signature / Printed Name / Affiliation: Curtis Whisman SGS Date: 6.20.23 Time: 1010

1232801

CHAIN OF CUSTODY RECORD

Laboratory:	SGS Anchorage		COC ID:	SRF-1				Cooler Name:	Egypt			Report To:		Kelly Carson
Project Name:	Hilcorp 2023 Groundwater Monitoring		Contact:	Kelly Carson				Contact Email:	kelly.carson@hilcorp.com			Invoice To:		Hilcorp Alaska, LLC
												P.O. Number:		
Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes
FS3-4A	SRF34-FS34A-23	2023-06-18	1642	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 5 (27)D-E
FS3-4F	SRF34-FS34F-23	2023-06-18	1826	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 5 (28)D-E
TS3-4CC	SRF34-TS34CC-23	2023-06-19	1044	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 5 (29)D-E
TS3-4MM	SRF34-TS34MM-23	2023-06-18	0950	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (30)D-E
TS3-4OO	SRF34-TS34OO-23	2023-06-18	1120	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (31)D-E
TS3-4P	SRF34-TS34P-23	2023-06-18	1300	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 5 (32)D-E

Special Instuctions:

Sample Receipt:
Temperature Blank: 2.0 D58
Custody Seals:

Cooler Temperature: 2.0 D58

Relinquished By / Affiliation:
Nicole Mathis / ALEUT
Signature / Printed Name / Affiliation — Date 6/19/2023 — Time 1658

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Curtis Whisman SGS 6.20.23 1010
Signature / Printed Name / Affiliation — Date — Time

1232801

CHAIN OF CUSTODY RECORD

Laboratory:	SGS Anchorage		COC ID:	SRF-1				Cooler Name:	Djibouti			Report To:	Kelly Carson	
Project Name:	Hilcorp 2023 Groundwater Monitoring		Contact:	Kelly Carson				Contact Email:	kelly.carson@hilcorp.com			Invoice To:	Hilcorp Alaska, LLC	
												P.O. Number:		
Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes
FS1-33F	SRF133-FS133F-23	2023-06-18	1220	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 4 (30) D-E
FS1-33F	SRF133-FS133FZ-23	2023-06-18	1120	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 4 (31) D-E
FS1-33H	SRF133-FS133H-23	2023-06-18	1019	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 4 (32) D-E
FS1-33S	SRF133-FS133S-23	2023-06-17	1903	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 4 (13) D-E
FS1-33W	SRF133-FS133W-23	2023-06-17	1710	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (12) D-E
TS1-33JJ	SRF133-TS133JJ-23	2023-06-17	1620	KP	GW	MSD	6	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3, MS/MSD (11) (19) (20) D-E
TS1-33JJ	SRF133-TS133JJZ-23	2023-06-17	1520	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (28) D-E
TS1-33O2	SRF133-TS133O2-23	2023-06-18	1030	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 4 (26) D-E
TS1-33UR	SRF133-TS133UR-23	2023-06-17	1813	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 4 (27) D-E
FS2-15B	SRF215-FS215B-23	2023-06-17	1105	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (1) D-E
TS2-15O	SRF215-TS215O-23	2023-06-17	1042	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 5 (14) D-E
TS2-15P	SRF215-TS215P-23	2023-06-17	1039	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (9) D-E
TS2-15R	SRF215-TS215R-23	2023-06-17	1209	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (15) D-E
FS3-4B	SRF34-FS34B-23	2023-06-18	1832	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (33) D-E
FS3-4B	SRF34-FS34BZ-23	2023-06-18	1732	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	Std	Analyte List 3 (10) D-E

Special Instuctions:

Sample Receipt:
Temperature Blank:
Custody Seals:

Cooler Temperature: 3.7 DSB

Relinquished By / Affiliation:
Nicole Matt / ALEUT
Signature / Printed Name / Affiliation — Date 6/19/2023 — Time 1300

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Curtis Whisman SGS
Signature / Printed Name / Affiliation — Date 6.20.23 — Time 1010

1232801

SGS

1232801

SAMPLE RECEIPT FORM

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	Yes	No	N/A	
Was temperature between 0-6° C?	Yes	No	N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time*?	Yes	No	N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	Yes	No	N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	Yes	No	N/A	
If rush was requested by the client, was the requested TAT approved?	Yes	No	N/A	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPDL Number provided?	Yes	No	N/A	*If "NO", contact client for information.*
Sample Login Completion				
Do ID's on sample containers match COC?	Yes	No	N/A	
If provided on containers, do dates/times collected match COC?	Yes	No	N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	Yes	No	N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? **See form F-083 "Sample Guide"*	Yes	No	N/A	*Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here: If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve. For all non-metals methods, inform Project Manager.*
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	Yes	No	N/A	
Were all VOA vials free of headspace >6mm?	Yes	No	N/A	*
Were all soil VOA samples received field extracted with Methanol?	Yes	No	N/A	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	Yes	No	N/A	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	Yes	No	N/A	SPIKE, Limited Volume, Ref Lab
For Rush/Short Holding time, was the lab notified?	Yes	No	N/A	
For any question answered "NO", was the Project Manager notified?	Yes	No	N/A	PM Initials:
Was Peer Review of sample numbering/labelling completed?	Yes	No	N/A	Reviewer Initials: JC.

Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:

* 1B, 1C, 9C, 14B, 14C, 21C, 16A, 16B, 16C, 28C, 39B, 39C, 40C 6mm headspace X/C

Proceed w/ -016 VOC. Sample appears foamy.

Bio-Chem LABORATORIES, INC.

1049 - 28th Street SE
Grand Rapids, MI 49508
Ph: 616/248-4900
Toll Free: 800/362-LABS
Fax: 616/248-4904

July 06, 2023

Justin Nelson
SGS North America Inc
200 W. Potter Drive
Anchorage, AK 99518

TEL: (907) 562-2343
FAX (907) 561-5301

RE: 1232801

Dear Justin Nelson: Order No.: 2306109

BIO-CHEM Laboratories, Inc. received 3 samples on 6/28/2023 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Please note that unless otherwise instructed, residual samples will be held for sixty (60) days from the original report date. At that time, all non-hazardous samples will be disposed of in accordance with federal, state and local regulations and ordinances, and hazardous samples shall be returned to you. Please contact the laboratory within thirty (30) days if other arrangements for sample retention need to be made.

Sincerely,

Cindy Euwema

Cindy Euwema
Office Manager

Working with you to ensure a better tomorrow.

SGS North America Inc.
CHAIN OF CUSTODY RECORD

Locations Nationwide
Alaska Florida
New Jersey Colorado
Texas North Carolina
Virginia Louisiana
www.us.sgs.com

Z306109

CLIENT:	SGS North America Inc. - Alaska Division	SGS Reference:	Bio-Chem
CONTACT:	Justin Nelson	PHONE NO: (907) 562-2343	Additional Comments: All soils report out in dry weight unless
PROJECT NAME:	1232801	PWSID#: / NPDL#:	Page 1 of 1
REPORTS TO:	Justin.Nelson	E-MAIL: Justin.Nelson@sgs.com; Env.Alaska.RefLabTeam@sgs.com	
INVOICE TO:	SGS - Alaska; env.alaska.accounting@sgs.com	QUOTE #: / P.O. #: 1232801	

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HHMM	MATRIX/ MATRIX CODE	# CONTAINERS	Preservative Used: HCl	Ethylene Glycol 8015M				MS	MSD	SGS lab #	Location ID
						TYPE C = COMP G = GRAB MI = Multi Incremental Soils								
	SRF14-TS14EE-23	06/17/2023	16:00:00	Water	3		X						1232801004	TS1-4EE
01	SRF14-TS14EE-23	06/17/2023	16:00:00	Water	3		X				X		1232801005	TS1-4EE
	SRF14-TS14EE-23	06/17/2023	16:00:00	Water	3		X					X	1232801006	TS1-4EE
02	SRF14-TS14GR-23	06/18/2023	12:45:00	Water	3		X						1232801022	TS1-4GR
03	SRF14-TS14GRZ-23	06/18/2023	11:45:00	Water	3		X						1232801042	TS1-4GR

Relinquished By: (1)	Date	Time	Received By:	DOD Project?	NO
	6/27	11am		Report to DL (J Flags)? If J- Report as DL/LOD/LOQ.	YES
Relinquished By: (2)	Date	Time	Received By:	Data Deliverable Requirements:	Level 2 + SGS EDD
				Cooler ID:	
Relinquished By: (3)	Date	Time	Received By:	Requested Turnaround Time and-or Special Instructions:	
				Temp Blank °C: 3.9°	Chain of Custody Seal: (Circle)
Relinquished By: (4)	Date	Time	Received For Laboratory By:	or Ambient [ ]	INTACT BROKEN ABSENT
			Fed Ex / Cindy Emerson 6-28-23 9:15		

[X 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms_and_conditions.htm

REVIEWED

Revised Report - Revision 1

BIO-CHEM Laboratories, Inc.

Date: *06-Jul-23*

CLIENT: SGS North America Inc
Project: 1232801
Lab Order: 2306109

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received
2306109-01A	SRF14-TS14EE-23	Water	6/17/2023	6/28/2023
2306109-02A	SRF14-TS14GR-23	Water	6/18/2023	6/28/2023
2306109-03A	SRF14-TS14GRZ-23	Water	6/18/2023	6/28/2023

BIO-CHEM Laboratories, Inc.

Date: *06-Jul-23*

CLIENT: SGS North America Inc
Project: 1232801
Lab Order: 2306109

CASE NARRATIVE

Samples are routinely analyzed using methods outlined in the following references:

(SW) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Ed.
(E) Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020.
(A) Standard Methods for the Examination of Water and Wastewater, APHA, 18th Ed.
(D) Annual Book of ASTM Standards.

Specific methods utilized for this project are provided in the analytical report and are identified by the reference document abbreviation ( ) followed by the method number.

All QA/QC and sample analyses met method, laboratory and/or regulatory data quality objectives unless otherwise specified below.

No data qualifications required and there are no "J" flags to report.

BIO-CHEM Laboratories, Inc.

Date: *7/6/2023*

ANALYTICAL REPORT

CLIENT: SGS North America Inc
Lab Order: 2306109
Project: 1232801
Lab Sample ID: 2306109-01A

Project Number: 1232801
Client Sample ID: SRF14-TS14EE-23
Collection Date: 6/17/2023
Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	6/29/2023

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

This report shall not be reproduced except in full, without the written approval of BIO-CHEM Laboratories, Inc.

Note: The sample results reported are based on the sample aliquot(s) tested.

BIO-CHEM Laboratories, Inc.

Date: *7/6/2023*

ANALYTICAL REPORT

CLIENT: SGS North America Inc
Lab Order: 2306109
Project: 1232801
Lab Sample ID: 2306109-02A

Project Number: 1232801
Client Sample ID: SRF14-TS14GR-23
Collection Date: 6/18/2023
Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	55		10	mg/L	1	LEB	6/29/2023

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

This report shall not be reproduced except in full, without the written approval of BIO-CHEM Laboratories, Inc.

Note: The sample results reported are based on the sample aliquot(s) tested.

BIO-CHEM Laboratories, Inc.

Date: *7/6/2023*

ANALYTICAL REPORT

CLIENT: SGS North America Inc
Lab Order: 2306109
Project: 1232801
Lab Sample ID: 2306109-03A

Project Number: 1232801
Client Sample ID: SRF14-TS14GRZ-23
Collection Date: 6/18/2023
Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	64		10	mg/L	1	LEB	6/29/2023

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

This report shall not be reproduced except in full, without the written approval of BIO-CHEM Laboratories, Inc.

Note: The sample results reported are based on the sample aliquot(s) tested.

Lab Order: 2306109
Client: SGS North America Inc
Project: 1232801

ANALYTICAL DETAIL REPORT

Sample ID	Client Sample ID	Matrix	Test Name	Date Sampled	TCLP/SPLP Date	Prep Date	QC Batch	Analysis Date	Analytical Batch
2306109-01A	SRF14-TS14EE-23	Water	Alcohols by GC/FID	6/17/2023		6/30/2023	49251	6/29/2023	GC_B_FID_230629B
2306109-02A	SRF14-TS14GR-23	Water	Alcohols by GC/FID	6/18/2023		6/30/2023	49251	6/29/2023	GC_B_FID_230629B
2306109-03A	SRF14-TS14GRZ-23	Water	Alcohols by GC/FID	6/18/2023		6/30/2023	49251	6/29/2023	GC_B_FID_230629B

Revised Report - Revision 1

CLIENT: SGS North America Inc
Work Order: 2306109
Project: 1232801

ANALYTICAL QC SUMMARY REPORT

TestCode: ALCOHOL_W

Sample ID	**MB-49251**	SampType:	**MBLK**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**ZZZZZ**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191320**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	< 10	10									

Sample ID	**LCS-49251**	SampType:	**LCS**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**ZZZZZ**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	47.94	10	50	0	95.9	67.7	127	0	0		

Sample ID	**2306109-01AMS**	SampType:	**MS**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**SRF14-TS14EE-23**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191327**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	89.48	10	100	0	89.5	46	148	0	0		

Sample ID	**2306109-01AMSD**	SampType:	**MSD**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**SRF14-TS14EE-23**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191328**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	89.58	10	100	0	89.6	46	148	89.48	0.114	20	

Revised Report - Revision 1

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

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Laboratory Report of Analysis

To: Hilcorp Alaska, LLC
3800 Centerpoint Drive Suite 417
Anchorage, AK 99503
(907)277-7297

Report Number: **1232892**

Client Project: **Hilcorp 2023 Kenai Groundwater**

Dear Kelly Carson,

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 Justin 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.

Justin Nelson
2023.11.15
15:20:19 -09'00'

Justin Nelson Date
Project Manager
Justin.Nelson@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

Member of SGS Group

Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
SGS Project: **1232892**
Project Name/Site: **Hilcorp 2023 Kenai Groundwater**
Project Contact: **Kelly Carson**

Refer to sample receipt form for information on sample condition.

SRF19-FS19I-23(1232892002BMS) (1232892003) BMS

8260D - BMS recoveries for multiple analytes do not meet QC criteria. See LCS for accuracy requirements.

SRF19-FS19I-23(1232892002BMSD) (1232892004) BMSD

8260D - BMSD recoveries for multiple analytes do not meet QC criteria. See LCS for accuracy requirements.
8270D SIM - PAH BMS/BMSD RPD's for Dibenzo[a,h]anthracene and Benzo[g,h,i]perylene do not meet QC criteria. See LCS for accuracy requirements.

Revised Report - Multiple sample ID's have been corrected.

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

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
SW8260D				
1232892008	SRF19-TS19A-23	VMS22517	tert-Butylbenzene	SP
1232892015	SRF39-TS39AA-23	VMS22510	n-Butylbenzene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 11/15/2023 3:16:50PM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. 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, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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
TNTC	Too Numerous To Count
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

Member of SGS Group

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SRF19-FS19D-23	1232892001	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-FS19I-23	1232892002	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-FS19I-23(1232892002BM	1232892003	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-FS19I-23(1232892002BM	1232892004	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-FS19M-23	1232892005	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-FS19N-23	1232892006	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-FS19NZ-23	1232892007	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-TS19A-23	1232892008	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-TS19B-23	1232892009	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-TS19C-23	1232892010	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF19-TS19D-23	1232892011	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-FS39B-23	1232892012	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-FS39E-23	1232892013	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-FS39G-23	1232892014	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-TS39AA-23	1232892015	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-TS39BB-23	1232892016	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-TS39U-23	1232892017	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-TS39V-23	1232892018	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF-TB02	1232892019	06/19/2023	06/22/2023	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV-Custom
SW8260D	Volatile Organic Compounds(W)Custom List

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Detectable Results Summary

Client Sample ID: **SRF19-FS19D-23**
Lab Sample ID: 1232892001

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.376	ug/L
	2-Methylnaphthalene	0.317	ug/L
	Naphthalene	0.868	ug/L
	Phenanthrene	0.0311J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	2.91	ug/L
	1,3,5-Trimethylbenzene	1.16	ug/L
	Benzene	0.688	ug/L
	Ethylbenzene	1.15	ug/L
	Isopropylbenzene (Cumene)	0.790J	ug/L
	Naphthalene	1.05	ug/L
	o-Xylene	2.41	ug/L
	P & M -Xylene	2.12	ug/L
	Xylenes (total)	4.53	ug/L

Client Sample ID: **SRF19-FS19I-23**
Lab Sample ID: 1232892002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0170J	ug/L
	2-Methylnaphthalene	0.0213J	ug/L
	Phenanthrene	0.0319J	ug/L

Client Sample ID: **SRF19-FS19M-23**
Lab Sample ID: 1232892005

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0251J	ug/L
	2-Methylnaphthalene	0.0284J	ug/L
	Naphthalene	0.0371J	ug/L
	Phenanthrene	0.0344J	ug/L

Client Sample ID: **SRF19-FS19N-23**
Lab Sample ID: 1232892006

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.258	ug/L
	2-Methylnaphthalene	0.205	ug/L
	Naphthalene	0.668	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	2.23	ug/L
	Benzene	0.684	ug/L
	Isopropylbenzene (Cumene)	0.695J	ug/L
	Naphthalene	1.27	ug/L
	P & M -Xylene	1.38J	ug/L
	Xylenes (total)	1.38J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF19-FS19NZ-23**
Lab Sample ID: 1232892007

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.229	ug/L
	2-Methylnaphthalene	0.178	ug/L
	Naphthalene	0.581	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	2.31	ug/L
	Benzene	0.684	ug/L
	Isopropylbenzene (Cumene)	0.692J	ug/L
	Naphthalene	1.20	ug/L
	P & M -Xylene	1.35J	ug/L
	Xylenes (total)	1.35J	ug/L

Client Sample ID: **SRF19-TS19A-23**
Lab Sample ID: 1232892008

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	12.1	ug/L
	2-Methylnaphthalene	11.3	ug/L
	Acenaphthene	0.281	ug/L
	Anthracene	0.0308J	ug/L
	Chrysene	0.0175J	ug/L
	Fluorene	0.828	ug/L
	Naphthalene	17.9	ug/L
	Phenanthrene	0.505	ug/L
	Pyrene	0.0227J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	168	ug/L
	1,3,5-Trimethylbenzene	85.8	ug/L
	Benzene	4.78	ug/L
	Ethylbenzene	93.3	ug/L
	Isopropylbenzene (Cumene)	38.2	ug/L
	Naphthalene	38.9	ug/L
	o-Xylene	173	ug/L
	P & M -Xylene	508	ug/L
	sec-Butylbenzene	8.51	ug/L
	tert-Butylbenzene	1.52	ug/L
	Toluene	1.49	ug/L
	Xylenes (total)	681	ug/L

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Detectable Results Summary

Client Sample ID: **SRF19-TS19B-23**
Lab Sample ID: 1232892009

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	9.61	ug/L
	2-Methylnaphthalene	9.41	ug/L
	Acenaphthene	0.230	ug/L
	Anthracene	0.0213J	ug/L
	Chrysene	0.0158J	ug/L
	Fluorene	0.565	ug/L
	Naphthalene	31.8	ug/L
	Phenanthrene	0.348	ug/L
	Pyrene	0.0348J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	804	ug/L
	1,3,5-Trimethylbenzene	721	ug/L
	Benzene	104	ug/L
	Ethylbenzene	217	ug/L
	Isopropylbenzene (Cumene)	73.7	ug/L
	Naphthalene	74.3	ug/L
	o-Xylene	621	ug/L
	P & M -Xylene	934	ug/L
	sec-Butylbenzene	4.76	ug/L
	tert-Butylbenzene	8.20	ug/L
	Toluene	5.42	ug/L
	Xylenes (total)	1560	ug/L

Client Sample ID: **SRF19-TS19C-23**
Lab Sample ID: 1232892010

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	17.8	ug/L
	2-Methylnaphthalene	20.2	ug/L
	Naphthalene	18.6	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	543	ug/L
	1,3,5-Trimethylbenzene	458	ug/L
	Benzene	0.596	ug/L
	Ethylbenzene	34.5	ug/L
	Isopropylbenzene (Cumene)	30.5	ug/L
	Naphthalene	42.9	ug/L
	o-Xylene	3450	ug/L
	P & M -Xylene	299	ug/L
	Xylenes (total)	3750	ug/L

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Detectable Results Summary

Client Sample ID: **SRF19-TS19D-23**
Lab Sample ID: 1232892011

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0865	ug/L
	2-Methylnaphthalene	0.0298J	ug/L
	Naphthalene	0.149	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	60.3	ug/L
	1,3,5-Trimethylbenzene	39.6	ug/L
	Benzene	0.599	ug/L
	Ethylbenzene	12.7	ug/L
	Isopropylbenzene (Cumene)	6.11	ug/L
	Naphthalene	3.95	ug/L
	o-Xylene	10.2	ug/L
	P & M -Xylene	47.1	ug/L
	Xylenes (total)	57.3	ug/L

Client Sample ID: **SRF39-FS39B-23**
Lab Sample ID: 1232892012

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	2-Methylnaphthalene	0.0253J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF39-FS39E-23**
Lab Sample ID: 1232892013

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	1.34	ug/L
	2-Methylnaphthalene	0.911	ug/L
	Acenaphthene	0.224	ug/L
	Benzo(a)Anthracene	0.0969	ug/L
	Benzo[a]pyrene	0.0533	ug/L
	Benzo[b]Fluoranthene	0.0825	ug/L
	Benzo[g,h,i]perylene	0.0487J	ug/L
	Benzo[k]fluoranthene	0.0227J	ug/L
	Chrysene	0.147	ug/L
	Dibenzo[a,h]anthracene	0.0336	ug/L
	Fluoranthene	0.0859	ug/L
	Fluorene	0.244	ug/L
	Indeno[1,2,3-c,d] pyrene	0.0329J	ug/L
	Naphthalene	7.42	ug/L
	Phenanthrene	0.166	ug/L
	Pyrene	0.147	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	58.5	ug/L
	1,3,5-Trimethylbenzene	54.3	ug/L
	Benzene	142	ug/L
	Ethylbenzene	74.5	ug/L
	Isopropylbenzene (Cumene)	5.25	ug/L
	Naphthalene	27.0	ug/L
	o-Xylene	9.08	ug/L
	P & M -Xylene	176	ug/L
	sec-Butylbenzene	1.29	ug/L
	tert-Butylbenzene	2.89	ug/L
	Toluene	1.51	ug/L
	Xylenes (total)	186	ug/L

Client Sample ID: **SRF39-FS39G-23**
Lab Sample ID: 1232892014

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	2-Methylnaphthalene	0.0232J	ug/L
	Naphthalene	0.0323J	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	0.408J	ug/L
	Benzene	0.211J	ug/L
	sec-Butylbenzene	0.588J	ug/L
	tert-Butylbenzene	0.549J	ug/L

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Detectable Results Summary

Client Sample ID: **SRF39-TS39AA-23**
Lab Sample ID: 1232892015

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0391J	ug/L
	2-Methylnaphthalene	0.0405J	ug/L
	Naphthalene	0.158	ug/L
Volatile GC/MS	1,3,5-Trimethylbenzene	0.442J	ug/L
	Benzene	0.519	ug/L
	Ethylbenzene	1.64	ug/L
	Isopropylbenzene (Cumene)	2.85	ug/L
	n-Butylbenzene	0.747J	ug/L
	sec-Butylbenzene	3.33	ug/L
	tert-Butylbenzene	0.363J	ug/L

Client Sample ID: **SRF39-TS39BB-23**
Lab Sample ID: 1232892016

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0531	ug/L
	Naphthalene	0.719	ug/L
Volatile GC/MS	1,3,5-Trimethylbenzene	2.32	ug/L
	Benzene	3.34	ug/L
	Ethylbenzene	23.2	ug/L
	Naphthalene	1.98	ug/L

Client Sample ID: **SRF39-TS39U-23**
Lab Sample ID: 1232892017

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.489	ug/L
	Naphthalene	0.816	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	10.5	ug/L
	1,3,5-Trimethylbenzene	3.76	ug/L
	Benzene	3.50	ug/L
	Ethylbenzene	6.31	ug/L
	Naphthalene	4.07	ug/L
	o-Xylene	0.334J	ug/L
	P & M -Xylene	12.0	ug/L
	Xylenes (total)	12.3	ug/L

Client Sample ID: **SRF39-TS39V-23**
Lab Sample ID: 1232892018

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	2.75	ug/L
	Naphthalene	6.68	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	16.6	ug/L
	Benzene	18.2	ug/L
	Ethylbenzene	7.22	ug/L
	Naphthalene	17.5	ug/L
	P & M -Xylene	17.5	ug/L
	Xylenes (total)	17.5	ug/L

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Results of **SRF19-FS19D-23**

Client Sample ID: **SRF19-FS19D-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892001
Lab Project ID: 1232892

Collection Date: 06/19/23 14:36
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9D

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.376		0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
2-Methylnaphthalene	0.317		0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Acenaphthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Acenaphthylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		07/05/23 19:42
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Chrysene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		07/05/23 19:42
Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Fluorene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Naphthalene	0.868		0.0943	0.0292	0.0471	ug/L	1		07/05/23 19:42
Phenanthrene	0.0311	J	0.0943	0.0292	0.0471	ug/L	1		07/05/23 19:42
Pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 19:42
Surrogates									
2-Methylnaphthalene-d10 (surr)	69.6		38-100			%	1		07/05/23 19:42
Fluoranthene-d10 (surr)	86.9		30-111			%	1		07/05/23 19:42

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 19:42
Container ID: 1232892001-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19D-23**

Client Sample ID: **SRF19-FS19D-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892001
Lab Project ID: 1232892

Collection Date: 06/19/23 14:36
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9D

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	2.91		1.00	0.310	0.500	ug/L	1		06/27/23 00:55
1,3,5-Trimethylbenzene	1.16		1.00	0.310	0.500	ug/L	1		06/27/23 00:55
Benzene	0.688		0.400	0.120	0.200	ug/L	1		06/27/23 00:55
Ethylbenzene	1.15		1.00	0.310	0.500	ug/L	1		06/27/23 00:55
Isopropylbenzene (Cumene)	0.790	J	1.00	0.310	0.500	ug/L	1		06/27/23 00:55
Naphthalene	1.05		1.00	0.310	0.500	ug/L	1		06/27/23 00:55
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 00:55
o-Xylene	2.41		1.00	0.310	0.500	ug/L	1		06/27/23 00:55
P & M -Xylene	2.12		2.00	0.620	1.00	ug/L	1		06/27/23 00:55
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 00:55
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 00:55
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 00:55
Xylenes (total)	4.53		3.00	1.00	1.50	ug/L	1		06/27/23 00:55
Surrogates									
1,2-Dichloroethane-D4 (surr)	109		81-118			%	1		06/27/23 00:55
4-Bromofluorobenzene (surr)	98.5		85-114			%	1		06/27/23 00:55
Toluene-d8 (surr)	93.4		89-112			%	1		06/27/23 00:55

Batch Information

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 00:55
Container ID: 1232892001-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19I-23**

Client Sample ID: **SRF19-FS19I-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892002
Lab Project ID: 1232892

Collection Date: 06/19/23 13:15
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9I

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0170	J	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
2-Methylnaphthalene	0.0213	J	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Acenaphthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Acenaphthylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		07/05/23 20:02
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Chrysene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	0.00945	ug/L	1		07/05/23 20:02
Fluoranthene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Fluorene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Naphthalene	0.0471	U	0.0943	0.0292	0.0471	ug/L	1		07/05/23 20:02
Phenanthrene	0.0319	J	0.0943	0.0292	0.0471	ug/L	1		07/05/23 20:02
Pyrene	0.0236	U	0.0472	0.0142	0.0236	ug/L	1		07/05/23 20:02
Surrogates									
2-Methylnaphthalene-d10 (surr)	66.9		38-100			%	1		07/05/23 20:02
Fluoranthene-d10 (surr)	83.6		30-111			%	1		07/05/23 20:02

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 20:02
Container ID: 1232892002-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19I-23**

Client Sample ID: **SRF19-FS19I-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892002
Lab Project ID: 1232892

Collection Date: 06/19/23 13:15
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9I

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/29/23 00:25
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/29/23 00:25
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 00:25
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/29/23 00:25
Surrogates									
1,2-Dichloroethane-D4 (surr)	112		81-118			%	1		06/29/23 00:25
4-Bromofluorobenzene (surr)	99		85-114			%	1		06/29/23 00:25
Toluene-d8 (surr)	90.7		89-112			%	1		06/29/23 00:25

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/29/23 00:25
Container ID: 1232892002-A

Prep Batch: VXX40059
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19M-23**

Client Sample ID: **SRF19-FS19M-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892005
Lab Project ID: 1232892

Collection Date: 06/19/23 11:05
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9M

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0251	J	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
2-Methylnaphthalene	0.0284	J	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Acenaphthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Acenaphthylene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Anthracene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Benzo(a)Anthracene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Benzo[a]pyrene	0.0102	U	0.0204	0.00633	0.0102	ug/L	1		07/05/23 21:04
Benzo[b]Fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Benzo[g,h,i]perylene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Benzo[k]fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Chrysene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Dibenzo[a,h]anthracene	0.0102	U	0.0204	0.00633	0.0102	ug/L	1		07/05/23 21:04
Fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Fluorene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Indeno[1,2,3-c,d] pyrene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Naphthalene	0.0371	J	0.102	0.0316	0.0510	ug/L	1		07/05/23 21:04
Phenanthrene	0.0344	J	0.102	0.0316	0.0510	ug/L	1		07/05/23 21:04
Pyrene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:04
Surrogates									
2-Methylnaphthalene-d10 (surr)	66.9		38-100			%	1		07/05/23 21:04
Fluoranthene-d10 (surr)	83.6		30-111			%	1		07/05/23 21:04

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 21:04
Container ID: 1232892005-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19M-23**

Client Sample ID: **SRF19-FS19M-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892005
Lab Project ID: 1232892

Collection Date: 06/19/23 11:05
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9M

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/27/23 01:10
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/27/23 01:10
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:10
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/27/23 01:10
Surrogates									
1,2-Dichloroethane-D4 (surr)	110		81-118			%	1		06/27/23 01:10
4-Bromofluorobenzene (surr)	101		85-114			%	1		06/27/23 01:10
Toluene-d8 (surr)	92.4		89-112			%	1		06/27/23 01:10

Batch Information

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 01:10
Container ID: 1232892005-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19N-23**

Client Sample ID: **SRF19-FS19N-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892006
Lab Project ID: 1232892

Collection Date: 06/19/23 12:40
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9N

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.258		0.0521	0.0156	0.0261	ug/L	1		07/05/23 21:24
2-Methylnaphthalene	0.205		0.0521	0.0156	0.0261	ug/L	1		07/05/23 21:24
Naphthalene	0.668		0.104	0.0323	0.0520	ug/L	1		07/05/23 21:24
Surrogates									
2-Methylnaphthalene-d10 (surr)	72.4		38-100			%	1		07/05/23 21:24
Fluoranthene-d10 (surr)	83.7		30-111			%	1		07/05/23 21:24

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 21:24
Container ID: 1232892006-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19N-23**

Client Sample ID: **SRF19-FS19N-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892006
Lab Project ID: 1232892

Collection Date: 06/19/23 12:40
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9N

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	2.23		1.00	0.310	0.500	ug/L	1		06/27/23 01:25
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:25
Benzene	0.684		0.400	0.120	0.200	ug/L	1		06/27/23 01:25
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:25
Isopropylbenzene (Cumene)	0.695	J	1.00	0.310	0.500	ug/L	1		06/27/23 01:25
Naphthalene	1.27		1.00	0.310	0.500	ug/L	1		06/27/23 01:25
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:25
P & M -Xylene	1.38	J	2.00	0.620	1.00	ug/L	1		06/27/23 01:25
Xylenes (total)	1.38	J	3.00	1.00	1.50	ug/L	1		06/27/23 01:25
Surrogates									
1,2-Dichloroethane-D4 (surr)	113		81-118			%	1		06/27/23 01:25
4-Bromofluorobenzene (surr)	96.1		85-114			%	1		06/27/23 01:25
Toluene-d8 (surr)	92.6		89-112			%	1		06/27/23 01:25

Batch Information

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 01:25
Container ID: 1232892006-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19NZ-23**

Client Sample ID: **SRF19-FS19NZ-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892007
Lab Project ID: 1232892

Collection Date: 06/19/23 11:40
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9N

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.229		0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:45
2-Methylnaphthalene	0.178		0.0510	0.0153	0.0255	ug/L	1		07/05/23 21:45
Naphthalene	0.581		0.102	0.0316	0.0510	ug/L	1		07/05/23 21:45
Surrogates									
2-Methylnaphthalene-d10 (surr)	66.7		38-100			%	1		07/05/23 21:45
Fluoranthene-d10 (surr)	80.2		30-111			%	1		07/05/23 21:45

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 21:45
Container ID: 1232892007-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-FS19NZ-23**

Client Sample ID: **SRF19-FS19NZ-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892007
Lab Project ID: 1232892

Collection Date: 06/19/23 11:40
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS1-9N

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	2.31		1.00	0.310	0.500	ug/L	1		06/27/23 01:40
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:40
Benzene	0.684		0.400	0.120	0.200	ug/L	1		06/27/23 01:40
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:40
Isopropylbenzene (Cumene)	0.692	J	1.00	0.310	0.500	ug/L	1		06/27/23 01:40
Naphthalene	1.20		1.00	0.310	0.500	ug/L	1		06/27/23 01:40
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:40
P & M -Xylene	1.35	J	2.00	0.620	1.00	ug/L	1		06/27/23 01:40
Xylenes (total)	1.35	J	3.00	1.00	1.50	ug/L	1		06/27/23 01:40
Surrogates									
1,2-Dichloroethane-D4 (surr)	105		81-118			%	1		06/27/23 01:40
4-Bromofluorobenzene (surr)	99.9		85-114			%	1		06/27/23 01:40
Toluene-d8 (surr)	93.5		89-112			%	1		06/27/23 01:40

Batch Information

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 01:40
Container ID: 1232892007-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-TS19A-23**

Client Sample ID: **SRF19-TS19A-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892008
Lab Project ID: 1232892

Collection Date: 06/19/23 16:34
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9A

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	12.1		0.245	0.0735	0.123	ug/L	5		07/08/23 04:21
2-Methylnaphthalene	11.3		0.245	0.0735	0.123	ug/L	5		07/08/23 04:21
Acenaphthene	0.281		0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Acenaphthylene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Anthracene	0.0308	J	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	0.00980	ug/L	1		07/05/23 22:05
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Chrysene	0.0175	J	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	0.00980	ug/L	1		07/05/23 22:05
Fluoranthene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Fluorene	0.828		0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Naphthalene	17.9		0.490	0.152	0.245	ug/L	5		07/08/23 04:21
Phenanthrene	0.505		0.0980	0.0304	0.0490	ug/L	1		07/05/23 22:05
Pyrene	0.0227	J	0.0490	0.0147	0.0245	ug/L	1		07/05/23 22:05
Surrogates									
2-Methylnaphthalene-d10 (surr)	70.3		38-100			%	1		07/05/23 22:05
Fluoranthene-d10 (surr)	78.6		30-111			%	1		07/05/23 22:05

Batch Information

Analytical Batch: XMS13728
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/08/23 04:21
Container ID: 1232892008-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 22:05
Container ID: 1232892008-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-TS19A-23**

Client Sample ID: **SRF19-TS19A-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892008
Lab Project ID: 1232892

Collection Date: 06/19/23 16:34
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9A

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	168		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
1,3,5-Trimethylbenzene	85.8		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
Benzene	4.78		0.400	0.120	0.200	ug/L	1		06/27/23 01:55
Ethylbenzene	93.3		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
Isopropylbenzene (Cumene)	38.2		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
Naphthalene	38.9		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 01:55
o-Xylene	173		10.0	3.10	5.00	ug/L	10		06/28/23 00:56
P & M -Xylene	508		20.0	6.20	10.0	ug/L	10		06/28/23 00:56
sec-Butylbenzene	8.51		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
tert-Butylbenzene	1.52		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
Toluene	1.49		1.00	0.310	0.500	ug/L	1		06/27/23 01:55
Xylenes (total)	681		30.0	10.0	15.0	ug/L	10		06/28/23 00:56
Surrogates									
1,2-Dichloroethane-D4 (surr)	90.8		81-118			%	1		06/27/23 01:55
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/27/23 01:55
Toluene-d8 (surr)	95.9		89-112			%	1		06/27/23 01:55

Batch Information

Analytical Batch: VMS22519
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 00:56
Container ID: 1232892008-B

Prep Batch: VXX40056
Prep Method: SW5030B
Prep Date/Time: 06/27/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 01:55
Container ID: 1232892008-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-TS19B-23**

Client Sample ID: **SRF19-TS19B-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892009
Lab Project ID: 1232892

Collection Date: 06/19/23 18:35
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9B

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	9.61		0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
2-Methylnaphthalene	9.41		0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Acenaphthene	0.230		0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Acenaphthylene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Anthracene	0.0213	J	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Benzo(a)Anthracene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Benzo[a]pyrene	0.0102	U	0.0204	0.00633	0.0102	ug/L	1		07/05/23 22:26
Benzo[b]Fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Benzo[g,h,i]perylene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Benzo[k]fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Chrysene	0.0158	J	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Dibenzo[a,h]anthracene	0.0102	U	0.0204	0.00633	0.0102	ug/L	1		07/05/23 22:26
Fluoranthene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Fluorene	0.565		0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Indeno[1,2,3-c,d] pyrene	0.0255	U	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Naphthalene	31.8		0.510	0.158	0.255	ug/L	5		07/08/23 04:42
Phenanthrene	0.348		0.102	0.0316	0.0510	ug/L	1		07/05/23 22:26
Pyrene	0.0348	J	0.0510	0.0153	0.0255	ug/L	1		07/05/23 22:26
Surrogates									
2-Methylnaphthalene-d10 (surr)	47.9		38-100			%	1		07/05/23 22:26
Fluoranthene-d10 (surr)	64.2		30-111			%	1		07/05/23 22:26

Batch Information

Analytical Batch: XMS13728
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/08/23 04:42
Container ID: 1232892009-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 22:26
Container ID: 1232892009-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-TS19B-23**

Client Sample ID: **SRF19-TS19B-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892009
Lab Project ID: 1232892

Collection Date: 06/19/23 18:35
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9B

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	804		5.00	1.55	2.50	ug/L	5		06/28/23 01:10
1,3,5-Trimethylbenzene	721		5.00	1.55	2.50	ug/L	5		06/28/23 01:10
Benzene	104		0.400	0.120	0.200	ug/L	1		06/27/23 02:09
Ethylbenzene	217		5.00	1.55	2.50	ug/L	5		06/28/23 01:10
Isopropylbenzene (Cumene)	73.7		1.00	0.310	0.500	ug/L	1		06/27/23 02:09
Naphthalene	74.3		1.00	0.310	0.500	ug/L	1		06/27/23 02:09
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:09
o-Xylene	621		5.00	1.55	2.50	ug/L	5		06/28/23 01:10
P & M -Xylene	934		10.0	3.10	5.00	ug/L	5		06/28/23 01:10
sec-Butylbenzene	4.76		1.00	0.310	0.500	ug/L	1		06/27/23 02:09
tert-Butylbenzene	8.20		1.00	0.310	0.500	ug/L	1		06/27/23 02:09
Toluene	5.42		1.00	0.310	0.500	ug/L	1		06/27/23 02:09
Xylenes (total)	1560		15.0	5.00	7.50	ug/L	5		06/28/23 01:10
Surrogates									
1,2-Dichloroethane-D4 (surr)	82.1		81-118			%	1		06/27/23 02:09
4-Bromofluorobenzene (surr)	99.6		85-114			%	1		06/27/23 02:09
Toluene-d8 (surr)	97.4		89-112			%	1		06/27/23 02:09

Batch Information

Analytical Batch: VMS22519
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 01:10
Container ID: 1232892009-B

Prep Batch: VXX40056
Prep Method: SW5030B
Prep Date/Time: 06/27/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 02:09
Container ID: 1232892009-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-TS19C-23**

Client Sample ID: **SRF19-TS19C-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892010
Lab Project ID: 1232892

Collection Date: 06/19/23 16:26
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9C

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	17.8		0.240	0.0721	0.120	ug/L	5		07/08/23 05:02
2-Methylnaphthalene	20.2		0.240	0.0721	0.120	ug/L	5		07/08/23 05:02
Naphthalene	18.6		0.481	0.149	0.240	ug/L	5		07/08/23 05:02
Surrogates									
2-Methylnaphthalene-d10 (surr)	71.6		38-100			%	1		07/05/23 22:46
Fluoranthene-d10 (surr)	79		30-111			%	1		07/05/23 22:46

Batch Information

Analytical Batch: XMS13728
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/08/23 05:02
Container ID: 1232892010-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 22:46
Container ID: 1232892010-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Results of **SRF19-TS19C-23**

Client Sample ID: **SRF19-TS19C-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892010
Lab Project ID: 1232892

Collection Date: 06/19/23 16:26
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9C

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	543		20.0	6.20	10.0	ug/L	20		06/28/23 00:11
1,3,5-Trimethylbenzene	458		20.0	6.20	10.0	ug/L	20		06/28/23 00:11
Benzene	0.596		0.400	0.120	0.200	ug/L	1		06/27/23 02:24
Ethylbenzene	34.5		1.00	0.310	0.500	ug/L	1		06/27/23 02:24
Isopropylbenzene (Cumene)	30.5		1.00	0.310	0.500	ug/L	1		06/27/23 02:24
Naphthalene	42.9		1.00	0.310	0.500	ug/L	1		06/27/23 02:24
o-Xylene	3450		20.0	6.20	10.0	ug/L	20		06/28/23 00:11
P & M -Xylene	299		40.0	12.4	20.0	ug/L	20		06/28/23 00:11
Xylenes (total)	3750		60.0	20.0	30.0	ug/L	20		06/28/23 00:11
Surrogates									
1,2-Dichloroethane-D4 (surr)	102		81-118			%	1		06/27/23 02:24
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/27/23 02:24
Toluene-d8 (surr)	96.6		89-112			%	1		06/27/23 02:24

Batch Information

Analytical Batch: VMS22519
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 00:11
Container ID: 1232892010-B

Prep Batch: VXX40056
Prep Method: SW5030B
Prep Date/Time: 06/27/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 02:24
Container ID: 1232892010-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF19-TS19D-23**

Client Sample ID: **SRF19-TS19D-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892011
Lab Project ID: 1232892

Collection Date: 06/19/23 14:45
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9D

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0865		0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:07
2-Methylnaphthalene	0.0298	J	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:07
Naphthalene	0.149		0.100	0.0310	0.0500	ug/L	1		07/05/23 23:07
Surrogates									
2-Methylnaphthalene-d10 (surr)	57		38-100			%	1		07/05/23 23:07
Fluoranthene-d10 (surr)	82.6		30-111			%	1		07/05/23 23:07

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 23:07
Container ID: 1232892011-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF19-TS19D-23**

Client Sample ID: **SRF19-TS19D-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892011
Lab Project ID: 1232892

Collection Date: 06/19/23 14:45
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS1-9D

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	60.3		1.00	0.310	0.500	ug/L	1		06/29/23 01:14
1,3,5-Trimethylbenzene	39.6		1.00	0.310	0.500	ug/L	1		06/29/23 01:14
Benzene	0.599		0.400	0.120	0.200	ug/L	1		06/27/23 02:39
Ethylbenzene	12.7		1.00	0.310	0.500	ug/L	1		06/27/23 02:39
Isopropylbenzene (Cumene)	6.11		1.00	0.310	0.500	ug/L	1		06/27/23 02:39
Naphthalene	3.95		1.00	0.310	0.500	ug/L	1		06/27/23 02:39
o-Xylene	10.2		1.00	0.310	0.500	ug/L	1		06/29/23 01:14
P & M -Xylene	47.1		2.00	0.620	1.00	ug/L	1		06/29/23 01:14
Xylenes (total)	57.3		3.00	1.00	1.50	ug/L	1		06/29/23 01:14
Surrogates									
1,2-Dichloroethane-D4 (surr)	98.1		81-118			%	1		06/27/23 02:39
4-Bromofluorobenzene (surr)	105		85-114			%	1		06/27/23 02:39
Toluene-d8 (surr)	94.9		89-112			%	1		06/27/23 02:39

Batch Information

Analytical Batch: VMS22524
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/29/23 01:14
Container ID: 1232892011-B

Prep Batch: VXX40063
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 02:39
Container ID: 1232892011-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF39-FS39B-23**

Client Sample ID: **SRF39-FS39B-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892012
Lab Project ID: 1232892

Collection Date: 06/19/23 18:34
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-9B

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
2-Methylnaphthalene	0.0253	J	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Acenaphthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Acenaphthylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/05/23 23:27
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Chrysene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/05/23 23:27
Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Fluorene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Naphthalene	0.0500	U	0.100	0.0310	0.0500	ug/L	1		07/05/23 23:27
Phenanthrene	0.0500	U	0.100	0.0310	0.0500	ug/L	1		07/05/23 23:27
Pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/05/23 23:27
Surrogates									
2-Methylnaphthalene-d10 (surr)	66.5		38-100			%	1		07/05/23 23:27
Fluoranthene-d10 (surr)	80.3		30-111			%	1		07/05/23 23:27

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 23:27
Container ID: 1232892012-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-FS39B-23**

Client Sample ID: **SRF39-FS39B-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892012
Lab Project ID: 1232892

Collection Date: 06/19/23 18:34
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-9B

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 16:38
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 16:38
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/27/23 02:40
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:40
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:40
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 16:38
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:40
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:40
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/27/23 02:40
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:40
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:40
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:40
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/27/23 02:40
Surrogates									
1,2-Dichloroethane-D4 (surr)	104		81-118			%	1		06/27/23 02:40
4-Bromofluorobenzene (surr)	103		85-114			%	1		06/27/23 02:40
Toluene-d8 (surr)	106		89-112			%	1		06/27/23 02:40

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 02:40
Container ID: 1232892012-A

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22537
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 16:38
Container ID: 1232892012-B

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-FS39E-23**

Client Sample ID: **SRF39-FS39E-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892013
Lab Project ID: 1232892

Collection Date: 06/19/23 10:45
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-9E

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	1.34		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
2-Methylnaphthalene	0.911		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Acenaphthene	0.224		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Acenaphthylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Benzo(a)Anthracene	0.0969		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Benzo[a]pyrene	0.0533		0.0208	0.00646	0.0104	ug/L	1		07/05/23 23:48
Benzo[b]Fluoranthene	0.0825		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Benzo[g,h,i]perylene	0.0487	J	0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Benzo[k]fluoranthene	0.0227	J	0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Chrysene	0.147		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Dibenzo[a,h]anthracene	0.0336		0.0208	0.00646	0.0104	ug/L	1		07/05/23 23:48
Fluoranthene	0.0859		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Fluorene	0.244		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Indeno[1,2,3-c,d] pyrene	0.0329	J	0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Naphthalene	7.42		0.104	0.0323	0.0520	ug/L	1		07/05/23 23:48
Phenanthrene	0.166		0.104	0.0323	0.0520	ug/L	1		07/05/23 23:48
Pyrene	0.147		0.0521	0.0156	0.0261	ug/L	1		07/05/23 23:48
Surrogates									
2-Methylnaphthalene-d10 (surr)	68.7		38-100			%	1		07/05/23 23:48
Fluoranthene-d10 (surr)	67		30-111			%	1		07/05/23 23:48

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/05/23 23:48
Container ID: 1232892013-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-FS39E-23**

Client Sample ID: **SRF39-FS39E-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892013
Lab Project ID: 1232892

Collection Date: 06/19/23 10:45
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-9E

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	58.5		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
1,3,5-Trimethylbenzene	54.3		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
Benzene	142		0.400	0.120	0.200	ug/L	1		06/27/23 02:55
Ethylbenzene	74.5		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
Isopropylbenzene (Cumene)	5.25		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
Naphthalene	27.0		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 02:55
o-Xylene	9.08		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
P & M -Xylene	176		2.00	0.620	1.00	ug/L	1		06/27/23 02:55
sec-Butylbenzene	1.29		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
tert-Butylbenzene	2.89		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
Toluene	1.51		1.00	0.310	0.500	ug/L	1		06/27/23 02:55
Xylenes (total)	186		3.00	1.00	1.50	ug/L	1		06/27/23 02:55
Surrogates									
1,2-Dichloroethane-D4 (surr)	92.4		81-118			%	1		06/27/23 02:55
4-Bromofluorobenzene (surr)	107		85-114			%	1		06/27/23 02:55
Toluene-d8 (surr)	105		89-112			%	1		06/27/23 02:55

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 02:55
Container ID: 1232892013-A

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-FS39G-23**

Client Sample ID: **SRF39-FS39G-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892014
Lab Project ID: 1232892

Collection Date: 06/19/23 16:50
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-9G

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
2-Methylnaphthalene	0.0232	J	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Acenaphthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Acenaphthylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Benzo(a)Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Benzo[a]pyrene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		07/06/23 00:08
Benzo[b]Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Benzo[g,h,i]perylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Benzo[k]fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Chrysene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Dibenzo[a,h]anthracene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		07/06/23 00:08
Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Fluorene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Indeno[1,2,3-c,d] pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Naphthalene	0.0323	J	0.104	0.0323	0.0520	ug/L	1		07/06/23 00:08
Phenanthrene	0.0520	U	0.104	0.0323	0.0520	ug/L	1		07/06/23 00:08
Pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 00:08
Surrogates									
2-Methylnaphthalene-d10 (surr)	65.1		38-100			%	1		07/06/23 00:08
Fluoranthene-d10 (surr)	77.5		30-111			%	1		07/06/23 00:08

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 00:08
Container ID: 1232892014-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-FS39G-23**

Client Sample ID: **SRF39-FS39G-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892014
Lab Project ID: 1232892

Collection Date: 06/19/23 16:50
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: FS3-9G

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.408	J	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
Benzene	0.211	J	0.400	0.120	0.200	ug/L	1		06/27/23 03:10
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 23:26
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/27/23 03:10
sec-Butylbenzene	0.588	J	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
tert-Butylbenzene	0.549	J	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:10
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/27/23 03:10
Surrogates									
1,2-Dichloroethane-D4 (surr)	102		81-118			%	1		06/27/23 03:10
4-Bromofluorobenzene (surr)	104		85-114			%	1		06/27/23 03:10
Toluene-d8 (surr)	106		89-112			%	1		06/27/23 03:10

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 03:10
Container ID: 1232892014-A

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22521
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 23:26
Container ID: 1232892014-B

Prep Batch: VXX40059
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-TS39AA-23**

Client Sample ID: **SRF39-TS39AA-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892015
Lab Project ID: 1232892

Collection Date: 06/19/23 14:40
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9AA

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0391	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
2-Methylnaphthalene	0.0405	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Acenaphthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Acenaphthylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/06/23 00:29
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Chrysene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/06/23 00:29
Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Fluorene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Naphthalene	0.158		0.100	0.0310	0.0500	ug/L	1		07/06/23 00:29
Phenanthrene	0.0500	U	0.100	0.0310	0.0500	ug/L	1		07/06/23 00:29
Pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 00:29
Surrogates									
2-Methylnaphthalene-d10 (surr)	43.4		38-100			%	1		07/06/23 00:29
Fluoranthene-d10 (surr)	58.8		30-111			%	1		07/06/23 00:29

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 00:29
Container ID: 1232892015-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-TS39AA-23**

Client Sample ID: **SRF39-TS39AA-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892015
Lab Project ID: 1232892

Collection Date: 06/19/23 14:40
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9AA

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:25
1,3,5-Trimethylbenzene	0.442	J	1.00	0.310	0.500	ug/L	1		06/27/23 03:25
Benzene	0.519		0.400	0.120	0.200	ug/L	1		06/27/23 03:25
Ethylbenzene	1.64		1.00	0.310	0.500	ug/L	1		06/28/23 23:41
Isopropylbenzene (Cumene)	2.85		1.00	0.310	0.500	ug/L	1		06/28/23 23:41
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 23:41
n-Butylbenzene	0.747	J	1.00	0.310	0.500	ug/L	1		06/27/23 03:25
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 23:41
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/28/23 23:41
sec-Butylbenzene	3.33		1.00	0.310	0.500	ug/L	1		06/27/23 03:25
tert-Butylbenzene	0.363	J	1.00	0.310	0.500	ug/L	1		06/27/23 03:25
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/28/23 23:41
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/27/23 03:25
Surrogates									
1,2-Dichloroethane-D4 (surr)	92.6		81-118			%	1		06/27/23 03:25
4-Bromofluorobenzene (surr)	106		85-114			%	1		06/27/23 03:25
Toluene-d8 (surr)	96.2		89-112			%	1		06/28/23 23:41

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 03:25
Container ID: 1232892015-A

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22521
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/28/23 23:41
Container ID: 1232892015-B

Prep Batch: VXX40059
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-TS39BB-23**

Client Sample ID: **SRF39-TS39BB-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892016
Lab Project ID: 1232892

Collection Date: 06/19/23 13:35
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9BB

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0531		0.0510	0.0153	0.0255	ug/L	1		07/06/23 00:49
Naphthalene	0.719		0.102	0.0316	0.0510	ug/L	1		07/06/23 00:49
Surrogates									
2-Methylnaphthalene-d10 (surr)	52.3		38-100			%	1		07/06/23 00:49
Fluoranthene-d10 (surr)	59.4		30-111			%	1		07/06/23 00:49

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 00:49
Container ID: 1232892016-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-TS39BB-23**

Client Sample ID: **SRF39-TS39BB-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892016
Lab Project ID: 1232892

Collection Date: 06/19/23 13:35
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9BB

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:40
1,3,5-Trimethylbenzene	2.32		1.00	0.310	0.500	ug/L	1		06/27/23 03:40
Benzene	3.34		0.400	0.120	0.200	ug/L	1		06/27/23 03:40
Ethylbenzene	23.2		1.00	0.310	0.500	ug/L	1		06/27/23 03:40
Naphthalene	1.98		1.00	0.310	0.500	ug/L	1		06/27/23 03:40
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/27/23 03:40
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/27/23 03:40
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/27/23 03:40
Surrogates									
1,2-Dichloroethane-D4 (surr)	93.9		81-118			%	1		06/27/23 03:40
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/27/23 03:40
Toluene-d8 (surr)	105		89-112			%	1		06/27/23 03:40

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/27/23 03:40
Container ID: 1232892016-A

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 06/26/23 12:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF39-TS39U-23**

Client Sample ID: **SRF39-TS39U-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892017
Lab Project ID: 1232892

Collection Date: 06/19/23 18:30
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9U

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.489		0.0532	0.0160	0.0266	ug/L	1		07/06/23 01:10
Naphthalene	0.816		0.106	0.0330	0.0530	ug/L	1		07/06/23 01:10
Surrogates									
2-Methylnaphthalene-d10 (surr)	49.1		38-100			%	1		07/06/23 01:10
Fluoranthene-d10 (surr)	55.8		30-111			%	1		07/06/23 01:10

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 01:10
Container ID: 1232892017-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-TS39U-23**

Client Sample ID: **SRF39-TS39U-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892017
Lab Project ID: 1232892

Collection Date: 06/19/23 18:30
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9U

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	10.5		1.00	0.310	0.500	ug/L	1		06/29/23 01:29
1,3,5-Trimethylbenzene	3.76		1.00	0.310	0.500	ug/L	1		06/29/23 01:29
Benzene	3.50		0.400	0.120	0.200	ug/L	1		06/29/23 01:29
Ethylbenzene	6.31		1.00	0.310	0.500	ug/L	1		06/29/23 01:29
Naphthalene	4.07		1.00	0.310	0.500	ug/L	1		06/29/23 01:29
o-Xylene	0.334	J	1.00	0.310	0.500	ug/L	1		06/29/23 01:29
P & M -Xylene	12.0		2.00	0.620	1.00	ug/L	1		06/29/23 01:29
Xylenes (total)	12.3		3.00	1.00	1.50	ug/L	1		06/29/23 01:29
Surrogates									
1,2-Dichloroethane-D4 (surr)	97.6		81-118			%	1		06/29/23 01:29
4-Bromofluorobenzene (surr)	104		85-114			%	1		06/29/23 01:29
Toluene-d8 (surr)	104		89-112			%	1		06/29/23 01:29

Batch Information

Analytical Batch: VMS22524
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/29/23 01:29
Container ID: 1232892017-A

Prep Batch: VXX40063
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-TS39V-23**

Client Sample ID: **SRF39-TS39V-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892018
Lab Project ID: 1232892

Collection Date: 06/19/23 11:55
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9V

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	2.75		0.0510	0.0153	0.0255	ug/L	1		07/06/23 01:30
Naphthalene	6.68		0.102	0.0316	0.0510	ug/L	1		07/06/23 01:30
Surrogates									
2-Methylnaphthalene-d10 (surr)	46.4		38-100			%	1		07/06/23 01:30
Fluoranthene-d10 (surr)	64.8		30-111			%	1		07/06/23 01:30

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 01:30
Container ID: 1232892018-D

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 06/25/23 08:23
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Results of **SRF39-TS39V-23**

Client Sample ID: **SRF39-TS39V-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892018
Lab Project ID: 1232892

Collection Date: 06/19/23 11:55
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9V

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	16.6		1.00	0.310	0.500	ug/L	1		06/29/23 01:44
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 01:44
Benzene	18.2		0.400	0.120	0.200	ug/L	1		06/29/23 01:44
Ethylbenzene	7.22		1.00	0.310	0.500	ug/L	1		06/29/23 01:44
Naphthalene	17.5		1.00	0.310	0.500	ug/L	1		06/29/23 01:44
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/29/23 01:44
P & M -Xylene	17.5		2.00	0.620	1.00	ug/L	1		06/29/23 01:44
Xylenes (total)	17.5		3.00	1.00	1.50	ug/L	1		06/29/23 01:44
Surrogates									
1,2-Dichloroethane-D4 (surr)	102		81-118			%	1		06/29/23 01:44
4-Bromofluorobenzene (surr)	104		85-114			%	1		06/29/23 01:44
Toluene-d8 (surr)	102		89-112			%	1		06/29/23 01:44

Batch Information

Analytical Batch: VMS22524
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/29/23 01:44
Container ID: 1232892018-A

Prep Batch: VXX40063
Prep Method: SW5030B
Prep Date/Time: 06/28/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF-TB02**

Client Sample ID: **SRF-TB02**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232892019
Lab Project ID: 1232892

Collection Date: 06/19/23 08:00
Received Date: 06/22/23 15:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TB02

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		06/26/23 23:41
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		06/26/23 23:41
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		06/26/23 23:41
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		06/26/23 23:41
Surrogates									
1,2-Dichloroethane-D4 (surr)	105		81-118			%	1		06/26/23 23:41
4-Bromofluorobenzene (surr)	102		85-114			%	1		06/26/23 23:41
Toluene-d8 (surr)	93.9		89-112			%	1		06/26/23 23:41

Batch Information

Analytical Batch: VMS22517
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 06/26/23 23:41
Container ID: 1232892019-A

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 06/26/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:16:57PM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1857838 [VXX/40043]
Blank Lab ID: 1719720

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232892001, 1232892005, 1232892006, 1232892007, 1232892008, 1232892009, 1232892010, 1232892011, 1232892019

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	115	81-118		0	%
4-Bromofluorobenzene (surr)	99.3	85-114		0	%
Toluene-d8 (surr)	92.5	89-112		0	%

Batch Information

Analytical Batch: VMS22517
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/26/2023 6:24:00PM

Prep Batch: VXX40043
Prep Method: SW5030B
Prep Date/Time: 6/26/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232892 [VXX40043]
Blank Spike Lab ID: 1719721
Date Analyzed: 06/26/2023 18:39

Spike Duplicate ID: LCSD for HBN 1232892 [VXX40043]
Spike Duplicate Lab ID: 1719722
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232892001, 1232892005, 1232892006, 1232892007, 1232892008, 1232892009, 1232892010, 1232892011, 1232892019

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	30.2	101	30	28.7	96	(79-124)	5.40	(< 20)
1,3,5-Trimethylbenzene	30	29.9	100	30	28.4	95	(75-124)	5.20	(< 20)
Benzene	30	31.6	105	30	30.2	101	(79-120)	4.50	(< 20)
Ethylbenzene	30	29.7	99	30	29.1	97	(79-121)	2.00	(< 20)
Isopropylbenzene (Cumene)	30	29.9	100	30	28.7	96	(72-131)	4.00	(< 20)
Naphthalene	30	30.5	102	30	28.8	96	(61-128)	5.50	(< 20)
n-Butylbenzene	30	26.2	87	30	24.9	83	(75-128)	5.10	(< 20)
o-Xylene	30	29.5	98	30	28.7	96	(78-122)	2.80	(< 20)
P & M -Xylene	60	59.6	99	60	57.9	96	(80-121)	3.10	(< 20)
sec-Butylbenzene	30	29.0	97	30	28.0	93	(77-126)	3.60	(< 20)
tert-Butylbenzene	30	29.0	97	30	27.8	93	(78-124)	4.10	(< 20)
Toluene	30	27.6	92	30	26.8	89	(80-121)	2.90	(< 20)
Xylenes (total)	90	89.1	99	90	86.5	96	(79-121)	3.00	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		102	30		102	(81-118)	0.10	
4-Bromofluorobenzene (surr)	30		102	30		101	(85-114)	1.10	
Toluene-d8 (surr)	30		95	30		96	(89-112)	1.10	

Batch Information

Analytical Batch: **VMS22517**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40043**
Prep Method: **SW5030B**
Prep Date/Time: **06/26/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/15/2023 3:17:03PM

Method Blank

Blank ID: MB for HBN 1857846 [VXX/40045]
Blank Lab ID: 1719758

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232892012, 1232892013, 1232892014, 1232892015, 1232892016

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	103	81-118		0	%
4-Bromofluorobenzene (surr)	103	85-114		0	%
Toluene-d8 (surr)	106	89-112		0	%

Batch Information

Analytical Batch: VMS22510
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: PHK
Analytical Date/Time: 6/26/2023 6:21:00PM

Prep Batch: VXX40045
Prep Method: SW5030B
Prep Date/Time: 6/26/2023 12:00:00PM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232892 [VXX40045]
Blank Spike Lab ID: 1719759
Date Analyzed: 06/26/2023 18:36

Spike Duplicate ID: LCSD for HBN 1232892 [VXX40045]
Spike Duplicate Lab ID: 1719760
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232892012, 1232892013, 1232892014, 1232892015, 1232892016

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	33.1	110	30	32.6	109	(79-124)	1.60	(< 20)
1,3,5-Trimethylbenzene	30	33.5	112	30	33.2	111	(75-124)	1.00	(< 20)
Benzene	30	29.3	98	30	28.8	96	(79-120)	1.80	(< 20)
Ethylbenzene	30	31.8	106	30	31.0	103	(79-121)	2.70	(< 20)
Isopropylbenzene (Cumene)	30	31.2	104	30	30.5	102	(72-131)	2.10	(< 20)
Naphthalene	30	31.7	106	30	34.5	115	(61-128)	8.50	(< 20)
n-Butylbenzene	30	32.1	107	30	32.3	108	(75-128)	0.64	(< 20)
o-Xylene	30	31.2	104	30	30.7	102	(78-122)	1.50	(< 20)
P & M -Xylene	60	63.5	106	60	62.3	104	(80-121)	1.90	(< 20)
sec-Butylbenzene	30	32.2	107	30	31.8	106	(77-126)	1.30	(< 20)
tert-Butylbenzene	30	31.8	106	30	31.2	104	(78-124)	1.70	(< 20)
Toluene	30	30.2	101	30	29.7	99	(80-121)	1.50	(< 20)
Xylenes (total)	90	94.7	105	90	93.0	103	(79-121)	1.80	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		96	30		94	(81-118)	2.30	
4-Bromofluorobenzene (surr)	30		101	30		101	(85-114)	0.64	
Toluene-d8 (surr)	30		105	30		105	(89-112)	0.76	

Batch Information

Analytical Batch: **VMS22510**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **PHK**

Prep Batch: **VXX40045**
Prep Method: **SW5030B**
Prep Date/Time: **06/26/2023 12:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/15/2023 3:17:09PM

Method Blank

Blank ID: MB for HBN 1857962 [VXX/40056]
Blank Lab ID: 1720134

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232892008, 1232892009, 1232892010

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	110	81-118		0	%
4-Bromofluorobenzene (surr)	99.5	85-114		0	%
Toluene-d8 (surr)	92.4	89-112		0	%

Batch Information

Analytical Batch: VMS22519
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/27/2023 2:08:00PM

Prep Batch: VXX40056
Prep Method: SW5030B
Prep Date/Time: 6/27/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232892 [VXX40056]
Blank Spike Lab ID: 1720135
Date Analyzed: 06/27/2023 14:23

Spike Duplicate ID: LCSD for HBN 1232892 [VXX40056]
Spike Duplicate Lab ID: 1720136
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232892008, 1232892009, 1232892010

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	28.8	96	30	29.0	97	(79-124)	0.50	(< 20)
1,3,5-Trimethylbenzene	30	28.1	94	30	28.8	96	(75-124)	2.50	(< 20)
Ethylbenzene	30	29.2	98	30	28.5	95	(79-121)	2.60	(< 20)
o-Xylene	30	29.4	98	30	28.6	96	(78-122)	2.80	(< 20)
P & M -Xylene	60	58.5	98	60	57.2	95	(80-121)	2.30	(< 20)
Xylenes (total)	90	88.0	98	90	85.9	95	(79-121)	2.40	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		104	30		98	(81-118)	5.80	
4-Bromofluorobenzene (surr)	30		99	30		103	(85-114)	4.10	
Toluene-d8 (surr)	30		95	30		96	(89-112)	1.40	

Batch Information

Analytical Batch: **VMS22519**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40056**
Prep Method: **SW5030B**
Prep Date/Time: **06/27/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/15/2023 3:17:14PM

Method Blank

Blank ID: MB for HBN 1857988 [VXX/40059]
Blank Lab ID: 1720245

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232892002, 1232892014, 1232892015

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	110	81-118		0	%
4-Bromofluorobenzene (surr)	101	85-114		0	%
Toluene-d8 (surr)	91	89-112		0	%

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/28/2023 6:02:00PM

Prep Batch: VXX40059
Prep Method: SW5030B
Prep Date/Time: 6/28/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232892 [VXX40059]
Blank Spike Lab ID: 1720246
Date Analyzed: 06/28/2023 18:17

Spike Duplicate ID: LCSD for HBN 1232892 [VXX40059]
Spike Duplicate Lab ID: 1720247
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232892002, 1232892014, 1232892015

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	27.5	92	30	30.6	102	(79-124)	10.70	(< 20)
1,3,5-Trimethylbenzene	30	27.4	91	30	30.9	103	(75-124)	12.00	(< 20)
Benzene	30	30.3	101	30	32.4	108	(79-120)	6.90	(< 20)
Ethylbenzene	30	28.3	94	30	30.3	101	(79-121)	6.80	(< 20)
Isopropylbenzene (Cumene)	30	28.3	94	30	30.4	101	(72-131)	7.30	(< 20)
Naphthalene	30	27.2	91	30	29.1	97	(61-128)	6.90	(< 20)
n-Butylbenzene	30	24.9	83	30	28.0	93	(75-128)	11.60	(< 20)
o-Xylene	30	27.9	93	30	29.3	98	(78-122)	4.90	(< 20)
P & M -Xylene	60	56.2	94	60	59.7	100	(80-121)	6.00	(< 20)
sec-Butylbenzene	30	27.5	92	30	31.0	103	(77-126)	12.00	(< 20)
tert-Butylbenzene	30	27.1	90	30	30.7	102	(78-124)	12.40	(< 20)
Toluene	30	26.0	87	30	28.0	93	(80-121)	7.20	(< 20)
Xylenes (total)	90	84.2	94	90	89.0	99	(79-121)	5.60	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		104	30		96	(81-118)	7.80	
4-Bromofluorobenzene (surr)	30		101	30		103	(85-114)	2.20	
Toluene-d8 (surr)	30		95	30		95	(89-112)	0.36	

Batch Information

Analytical Batch: **VMS22521**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40059**
Prep Method: **SW5030B**
Prep Date/Time: **06/28/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/15/2023 3:17:19PM

Billable Matrix Spike Summary

Original Sample ID: 1232892002
MS Sample ID: 1232892003 BMS
MSD Sample ID: 1232892004 BMSD

Analysis Date: 06/29/2023 0:25
Analysis Date: 06/29/2023 0:40
Analysis Date: 06/29/2023 0:55
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **SW8260D**

		Matrix Spike (ug/L)				Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	0.500U	30.0	22.1	74	*	30.0	20.7	69	*	79-124	6.80	(< 20)
1,3,5-Trimethylbenzene	0.500U	30.0	22.1	74	*	30.0	20.7	69	*	75-124	6.40	(< 20)
Benzene	0.200U	30.0	24.1	80		30.0	22.5	75	*	79-120	6.80	(< 20)
Ethylbenzene	0.500U	30.0	22.5	75	*	30.0	21.0	70	*	79-121	6.90	(< 20)
Isopropylbenzene (Cumene)	0.500U	30.0	22.3	74		30.0	21.1	70	*	72-131	5.50	(< 20)
Naphthalene	0.500U	30.0	22.3	74		30.0	20.7	69		61-128	7.50	(< 20)
n-Butylbenzene	0.500U	30.0	20	67	*	30.0	18.8	63	*	75-128	6.20	(< 20)
o-Xylene	0.500U	30.0	22.1	74	*	30.0	20.5	68	*	78-122	7.70	(< 20)
P & M -Xylene	1.00U	60.0	44.9	75	*	60.0	41.7	70	*	80-121	7.50	(< 20)
sec-Butylbenzene	0.500U	30.0	22	73	*	30.0	21.1	70	*	77-126	3.90	(< 20)
tert-Butylbenzene	0.500U	30.0	21.7	72	*	30.0	20.7	69	*	78-124	4.50	(< 20)
Toluene	0.500U	30.0	20.9	70	*	30.0	19.4	65	*	80-121	7.60	(< 20)
Xylenes (total)	1.50U	90.0	67	75	*	90.0	62.2	69	*	79-121	7.50	(< 20)
Surrogates												
1,2-Dichloroethane-D4 (surr)		30.0	29.4	98		30.0	28.8	96		81-118	2.20	
4-Bromofluorobenzene (surr)		30.0	31.1	104		30.0	30.6	102		85-114	1.60	
Toluene-d8 (surr)		30.0	28.4	95		30.0	28.3	94		89-112	0.50	

Batch Information

Analytical Batch: VMS22521
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 6/29/2023 12:40:00AM

Prep Batch: VXX40059
Prep Method: Volatiles Extraction 8240/8260
Prep Date/Time: 6/28/2023 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 11/15/2023 3:17:23PM

Method Blank

Blank ID: MB for HBN 1858006 [VXX/40063]
Blank Lab ID: 1720334

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232892011, 1232892017, 1232892018

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	105	81-118		0	%
4-Bromofluorobenzene (surr)	103	85-114		0	%
Toluene-d8 (surr)	106	89-112		0	%

Batch Information

Analytical Batch: VMS22524
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: PHK
Analytical Date/Time: 6/28/2023 7:23:00PM

Prep Batch: VXX40063
Prep Method: SW5030B
Prep Date/Time: 6/28/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232892 [VXX40063]
Blank Spike Lab ID: 1720335
Date Analyzed: 06/28/2023 19:38

Spike Duplicate ID: LCSD for HBN 1232892 [VXX40063]
Spike Duplicate Lab ID: 1720336
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232892011, 1232892017, 1232892018

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	34.5	115	30	33.3	111	(79-124)	3.70	(< 20)
1,3,5-Trimethylbenzene	30	34.9	116	30	33.8	113	(75-124)	3.10	(< 20)
Benzene	30	29.8	99	30	28.2	94	(79-120)	5.50	(< 20)
Ethylbenzene	30	32.8	109	30	31.8	106	(79-121)	3.20	(< 20)
Naphthalene	30	32.2	107	30	35.7	119	(61-128)	10.30	(< 20)
o-Xylene	30	32.4	108	30	31.3	104	(78-122)	3.40	(< 20)
P & M -Xylene	60	65.2	109	60	63.3	106	(80-121)	2.90	(< 20)
Xylenes (total)	90	97.6	108	90	94.6	105	(79-121)	3.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		96	30		95	(81-118)	1.10	
4-Bromofluorobenzene (surr)	30		101	30		102	(85-114)	0.39	
Toluene-d8 (surr)	30		104	30		104	(89-112)	0.04	

Batch Information

Analytical Batch: **VMS22524**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **PHK**

Prep Batch: **VXX40063**
Prep Method: **SW5030B**
Prep Date/Time: **06/28/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 11/15/2023 3:17:28PM

Method Blank

Blank ID: MB for HBN 1858279 [VXX/40082]
Blank Lab ID: 1720855

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232892012

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	102	81-118		0	%
4-Bromofluorobenzene (surr)	102	85-114		0	%
Toluene-d8 (surr)	105	89-112		0	%

Batch Information

Analytical Batch: VMS22537
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: PHK
Analytical Date/Time: 7/1/2023 2:27:00PM

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 7/1/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 11/15/2023 3:17:31PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232892 [VXX40082]
Blank Spike Lab ID: 1720856
Date Analyzed: 07/01/2023 14:42

Spike Duplicate ID: LCSD for HBN 1232892 [VXX40082]
Spike Duplicate Lab ID: 1720857
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232892012

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	33.5	112	30	32.9	110	(79-124)	1.70	(< 20)
1,3,5-Trimethylbenzene	30	33.5	112	30	33.2	111	(75-124)	0.78	(< 20)
Naphthalene	30	33.5	112	30	35.6	119	(61-128)	5.90	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		95	30		95	(81-118)	0.81	
4-Bromofluorobenzene (surr)	30		100	30		99	(85-114)	0.53	
Toluene-d8 (surr)	30		105	30		105	(89-112)	0.09	

Batch Information

Analytical Batch: **VMS22537**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **PHK**

Prep Batch: **VXX40082**
Prep Method: **SW5030B**
Prep Date/Time: **07/01/2023 06:00**
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 1857633 [XXX/48064]
Blank Lab ID: 1719005

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232892001, 1232892002, 1232892005, 1232892006, 1232892007, 1232892008, 1232892009, 1232892010, 1232892011, 1232892012, 1232892013, 1232892014, 1232892015, 1232892016, 1232892017, 1232892018

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	LOD	Units
1-Methylnaphthalene	0.0169J	0.0500	0.0150	0.0250	ug/L
2-Methylnaphthalene	0.0233J	0.0500	0.0150	0.0250	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	0.0100	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Chrysene	0.0250U	0.0500	0.0150	0.0250	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	0.0100	ug/L
Fluoranthene	0.0208J	0.0500	0.0150	0.0250	ug/L
Fluorene	0.0250U	0.0500	0.0150	0.0250	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Naphthalene	0.0500U	0.100	0.0310	0.0500	ug/L
Phenanthrene	0.0389J	0.100	0.0310	0.0500	ug/L
Pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Surrogates					
2-Methylnaphthalene-d10 (surr)	69.5	38-100		0	%
Fluoranthene-d10 (surr)	83.4	30-111		0	%

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/5/2023 6:40:00PM

Prep Batch: XXX48064
Prep Method: SW3535A
Prep Date/Time: 6/25/2023 8:23:24AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 11/15/2023 3:17:37PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232892 [XXX48064]
Blank Spike Lab ID: 1719006
Date Analyzed: 07/05/2023 19:01

Spike Duplicate ID: LCSD for HBN 1232892 [XXX48064]
Spike Duplicate Lab ID: 1719007
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232892001, 1232892002, 1232892005, 1232892006, 1232892007, 1232892008, 1232892009, 1232892010, 1232892011, 1232892012, 1232892013, 1232892014, 1232892015, 1232892016, 1232892017, 1232892018

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.10	55	2	1.21	61	(41-115)	9.30	(< 20)
2-Methylnaphthalene	2	1.07	54	2	1.21	60	(39-114)	11.70	(< 20)
Acenaphthene	2	1.36	68	2	1.38	69	(48-114)	1.60	(< 20)
Acenaphthylene	2	1.43	72	2	1.44	72	(35-121)	0.67	(< 20)
Anthracene	2	1.54	77	2	1.50	75	(53-119)	2.90	(< 20)
Benzo(a)Anthracene	2	1.47	74	2	1.40	70	(59-120)	5.30	(< 20)
Benzo[a]pyrene	2	1.55	77	2	1.48	74	(53-120)	4.80	(< 20)
Benzo[b]Fluoranthene	2	1.49	75	2	1.42	71	(53-126)	4.60	(< 20)
Benzo[g,h,i]perylene	2	1.73	87	2	1.67	84	(44-128)	3.40	(< 20)
Benzo[k]fluoranthene	2	1.62	81	2	1.55	78	(54-125)	4.20	(< 20)
Chrysene	2	1.55	78	2	1.48	74	(57-120)	4.80	(< 20)
Dibenzo[a,h]anthracene	2	1.72	86	2	1.65	83	(44-131)	4.00	(< 20)
Fluoranthene	2	1.58	79	2	1.52	76	(58-120)	4.00	(< 20)
Fluorene	2	1.52	76	2	1.51	76	(50-118)	0.90	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.67	83	2	1.62	81	(48-130)	2.80	(< 20)
Naphthalene	2	1.12	56	2	1.24	62	(43-114)	10.10	(< 20)
Phenanthrene	2	1.58	79	2	1.54	77	(53-115)	2.50	(< 20)
Pyrene	2	1.59	80	2	1.56	78	(53-121)	1.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		57	2		62	(38-100)	7.90	
Fluoranthene-d10 (surr)	2		81	2		77	(30-111)	4.80	

Batch Information

Analytical Batch: **XMS13713**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **HMW**

Prep Batch: **XXX48064**
Prep Method: **SW3535A**
Prep Date/Time: **06/25/2023 08:23**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 11/15/2023 3:17:40PM

Billable Matrix Spike Summary

Original Sample ID: 1232892002
MS Sample ID: 1232892003 BMS
MSD Sample ID: 1232892004 BMSD

Analysis Date: 07/05/2023 20:02
Analysis Date: 07/05/2023 20:23
Analysis Date: 07/05/2023 20:43
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **8270D SIM LV (PAH)**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.0170J	1.89	1.25	66	1.89	1.07	56	41-115	15.90	(< 20)
2-Methylnaphthalene	0.0213J	1.89	1.26	66	1.89	1.07	55	39-114	16.50	(< 20)
Acenaphthene	0.0236U	1.89	1.37	73	1.89	1.23	65	48-114	10.60	(< 20)
Acenaphthylene	0.0236U	1.89	1.39	74	1.89	1.28	68	35-121	8.70	(< 20)
Anthracene	0.0236U	1.89	1.49	79	1.89	1.36	72	53-119	8.60	(< 20)
Benzo(a)Anthracene	0.0236U	1.89	1.46	77	1.89	1.37	72	59-120	6.40	(< 20)
Benzo[a]pyrene	0.00945U	1.89	1.45	77	1.89	1.32	70	53-120	9.50	(< 20)
Benzo[b]Fluoranthene	0.0236U	1.89	1.53	81	1.89	1.34	71	53-126	13.60	(< 20)
Benzo[g,h,i]perylene	0.0236U	1.89	1.55	82	1.89	1.26	67	44-128	20.90 *	(< 20)
Benzo[k]fluoranthene	0.0236U	1.89	1.47	78	1.89	1.40	74	54-125	4.40	(< 20)
Chrysene	0.0236U	1.89	1.54	81	1.89	1.47	78	57-120	4.50	(< 20)
Dibenzo[a,h]anthracene	0.00945U	1.89	1.52	81	1.89	1.23	65	44-131	21.30 *	(< 20)
Fluoranthene	0.0236U	1.89	1.49	79	1.89	1.41	75	58-120	5.00	(< 20)
Fluorene	0.0236U	1.89	1.51	80	1.89	1.35	72	50-118	11.00	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0236U	1.89	1.48	79	1.89	1.28	68	48-130	14.70	(< 20)
Naphthalene	0.0471U	1.89	1.28	68	1.89	1.09	58	43-114	16.10	(< 20)
Phenanthrene	0.0319J	1.89	1.52	79	1.89	1.38	71	53-115	9.80	(< 20)
Pyrene	0.0236U	1.89	1.51	80	1.89	1.43	76	53-121	5.20	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.89	1.23	65	1.89	1.09	58	38-100	11.50	
Fluoranthene-d10 (surr)		1.89	1.49	79	1.89	1.44	76	30-111	3.60	

Batch Information

Analytical Batch: XMS13713
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/5/2023 8:23:00PM

Prep Batch: XXX48064
Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
Prep Date/Time: 6/25/2023 8:23:24AM
Prep Initial Wt./Vol.: 265.00mL
Prep Extract Vol: 1.00mL

Print Date: 11/15/2023 3:17:42PM

ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD

Revised Report - Revision 3

Prod'c # 373673 M

Laboratory:	SGS Anchorage	COC ID:	SRF-2	Cooler Name:	Fiji	Report To:	Kelly Carson
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring	Contact:	Kelly Carson	Contact Email:	kelly.carson@hilcorp.com	Invoice To:	HAK, ananderson@hilcorp.com
						P.O. Number:	235-02465.15.10.28

Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes
FS1-9D	SRF19-FS19D-23	2023-06-19	1436	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3 (1)AC
FS1-9I	SRF19-FS19I-23	2023-06-19	1315	BR	GW	MSD	9	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3, MS/MSD (2AC)(3AC)(4AC)
FS1-9M	SRF19-FS19M-23	2023-06-19	1105	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3 (5)AC
FS1-9N	SRF19-FS19N-23	2023-06-19	1240	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 1 (6)AC
FS1-9N	SRF19-FS19NZ-23	2023-06-19	1140	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 1 (7)AC
TS1-9A	SRF19-TS19A-23	2023-06-19	1634	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3 (8)AC
TS1-9B	SRF19-TS19B-23	2023-06-19	1835	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3, sheen on surface (9)AC
TS1-9C	SRF19-TS19C-23	2023-06-19	1626	BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 1 (10)AC
TS1-9D	SRF19-TS19D-23	2023-06-19	1445	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 1 (11)AC
FS3-9B	SRF39-FS39B-23	2023-06-19	1834	KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3 (12)AC
FS3-9E	SRF39-FS39E-23	2023-06-19	1045	JB,KT	GW		3	Grab	40mL	VOAs	HCl 0-6 C	VOCs SW8260D	30	Analytical List 3 (13)AC
FS3-9G	SRF39-FS39G-23	2023-06-19	1650	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3 (14)AC
TS3-9AA	SRF39-TS39AA-23	2023-06-19	1440	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3 (15)AC
TS3-9BB	SRF39-TS39BB-23	2023-06-19	1335	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 5 (16)AC
TS3-9U	SRF39-TS39U-23	2023-06-19	1830	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 5 (17)AC
TS3-9V	SRF39-TS39V-23	2023-06-19	1155	JB,KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 5 (18)AC
TB02	SRF-TB02	2023-06-19	0800	B,KT,KP,BI	GW	TB	3	NA	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	(19)AC
FS1-9D	SRF19-FS19D-23	2023-06-19	1436	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3 (1)DE
FS1-9I	SRF19-FS19I-23	2023-06-19	1315	BR	GW	MSD	6	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3, MS/MSD (2)DE (3)DE (4)DE
FS1-9M	SRF19-FS19M-23	2023-06-19	1105	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3 (5)DE
FS1-9N	SRF19-FS19N-23	2023-06-19	1240	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 1 (6)DE
FS1-9N	SRF19-FS19NZ-23	2023-06-19	1140	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 1 (7)DE
TS1-9A	SRF19-TS19A-23	2023-06-19	1634	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3 (8)DE
TS1-9B	SRF19-TS19B-23	2023-06-19	1835	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3, sheen on surface (9)DE

Special Instuctions:

Sample Receipt:
Temperature Blank:
Custody Seals: Intact

Cooler Temperature: 6.0°C DS8

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date: 6/20/2023 — Time: 1700

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date: 6/21/23 — Time: 15:30

Alert

1232892

ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD

Revised Report - Revision 3

Laboratory:	SGS Anchorage		**COC ID:**	SRF-2			**Cooler Name:**	Guatemala			**Report To:**	Kelly Carson	
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring		**Contact:**	Kelly Carson			**Contact Email:**	kelly.carson@hilcorp.com			**Invoice To:**	HAK, ananderson@hilcorp.com	
											AFE Number	235-02465.15.10.28	
Location ID	**Sample ID**	**Collection Date**	**Collection Time**	**Sampler**	**Matrix**	**QC Type**	**Qty**	**Sample Type**	**Container Type**	**Container Vol**	**Preservative**	**Method**	**TAT**	**Notes**
TS1-9C	SRF19-TS19C-23	2023-06-19	1626	BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 1 (10) DE
TS1-9D	SRF19-TS19D-23	2023-06-19	1445	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 1 (11) DE
FS3-9B	SRF39-FS39B-23	2023-06-19	1834	KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3 (12) DE
FS3-9E	SRF39-FS39E-23	2023-06-19	1045	JB,KT	GW		2	Grab	250 mL	amber Glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3 (13) DE
FS3-9G	SRF39-FS39G-23	2023-06-19	1650	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3 (14) DE
TS3-9AA	SRF39-TS39AA-23	2023-06-19	1440	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3 (15) DE
TS3-9BB	SRF39-TS39BB-23	2023-06-19	1335	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 5 (16) DE
TS3-9U	SRF39-TS39U-23	2023-06-19	1830	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 5 (17) DE
TS3-9V	SRF39-TS39V-23	2023-06-19	1155	JB,KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 5 (18) DE

Special Instuctions:

Sample Receipt:
Temperature Blank:
Custody Seals: Intact

Cooler Temperature: 6.3 DSS

Relinquished By / Affiliation:
[signature] / ALEUT
Signature / Printed Name / Affiliation — Date: 6/20/2023 — Time: 1200

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
[signature]
Signature / Printed Name / Affiliation — Date: 6/21/23 — Time: 15:30

Alert

1232892

1232892

SGS

SAMPLE RECEIPT FORM

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	Yes	No	N/A	
Was temperature between 0-6° C?	Yes	No	N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time*?	Yes	No	N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	Yes	No	N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	Yes	No	N/A	
If rush was requested by the client, was the requested TAT approved?	Yes	No	N/A	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPDL Number provided?	Yes	No	N/A	*If "NO", contact client for information.*
Sample Login Completion				
Do ID's on sample containers match COC?	Yes	No	N/A	
If provided on containers, do dates/times collected match COC?	Yes	No	N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	Yes	No	N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? **See form F-083 "Sample Guide"*	Yes	No	N/A	*Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here: If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve. For all non-metals methods, inform Project Manager.*
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	Yes	No	N/A	
Were all VOA vials free of headspace >6mm?	Yes	No	N/A	
Were all soil VOA samples received field extracted with Methanol?	Yes	No	N/A	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	Yes	No	N/A	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	Yes	No	N/A	
For Rush/Short Holding time, was the lab notified?	Yes	No	N/A	
For any question answered "NO", was the Project Manager notified?	Yes	No	N/A	PM Initials:
Was Peer Review of sample numbering/labelling completed?	Yes	No	N/A	Reviewer Initials:

Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1232892001-A	HCL to pH < 2	OK	1232892010-E	No Preservative Required	OK
1232892001-B	HCL to pH < 2	OK	1232892011-A	HCL to pH < 2	OK
1232892001-C	HCL to pH < 2	OK	1232892011-B	HCL to pH < 2	OK
1232892001-D	No Preservative Required	OK	1232892011-C	HCL to pH < 2	OK
1232892001-E	No Preservative Required	OK	1232892011-D	No Preservative Required	OK
1232892002-A	HCL to pH < 2	OK	1232892011-E	No Preservative Required	OK
1232892002-B	HCL to pH < 2	OK	1232892012-A	HCL to pH < 2	OK
1232892002-C	HCL to pH < 2	OK	1232892012-B	HCL to pH < 2	OK
1232892002-D	No Preservative Required	OK	1232892012-C	HCL to pH < 2	OK
1232892002-E	No Preservative Required	OK	1232892012-D	No Preservative Required	OK
1232892003-A	HCL to pH < 2	OK	1232892012-E	No Preservative Required	OK
1232892003-B	HCL to pH < 2	OK	1232892013-A	HCL to pH < 2	OK
1232892003-C	HCL to pH < 2	OK	1232892013-B	HCL to pH < 2	OK
1232892003-D	No Preservative Required	OK	1232892013-C	HCL to pH < 2	OK
1232892003-E	No Preservative Required	OK	1232892013-D	No Preservative Required	OK
1232892004-A	HCL to pH < 2	OK	1232892013-E	No Preservative Required	OK
1232892004-B	HCL to pH < 2	OK	1232892014-A	HCL to pH < 2	OK
1232892004-C	HCL to pH < 2	OK	1232892014-B	HCL to pH < 2	OK
1232892004-D	No Preservative Required	OK	1232892014-C	HCL to pH < 2	OK
1232892004-E	No Preservative Required	OK	1232892014-D	No Preservative Required	OK
1232892005-A	HCL to pH < 2	OK	1232892014-E	No Preservative Required	OK
1232892005-B	HCL to pH < 2	OK	1232892015-A	HCL to pH < 2	OK
1232892005-C	HCL to pH < 2	OK	1232892015-B	HCL to pH < 2	OK
1232892005-D	No Preservative Required	OK	1232892015-C	HCL to pH < 2	OK
1232892005-E	No Preservative Required	OK	1232892015-D	No Preservative Required	OK
1232892006-A	HCL to pH < 2	OK	1232892015-E	No Preservative Required	OK
1232892006-B	HCL to pH < 2	OK	1232892016-A	HCL to pH < 2	OK
1232892006-C	HCL to pH < 2	OK	1232892016-B	HCL to pH < 2	OK
1232892006-D	No Preservative Required	OK	1232892016-C	HCL to pH < 2	OK
1232892006-E	No Preservative Required	OK	1232892016-D	No Preservative Required	OK
1232892007-A	HCL to pH < 2	OK	1232892016-E	No Preservative Required	OK
1232892007-B	HCL to pH < 2	OK	1232892017-A	HCL to pH < 2	OK
1232892007-C	HCL to pH < 2	OK	1232892017-B	HCL to pH < 2	OK
1232892007-D	No Preservative Required	OK	1232892017-C	HCL to pH < 2	OK
1232892007-E	No Preservative Required	OK	1232892017-D	No Preservative Required	OK
1232892008-A	HCL to pH < 2	OK	1232892017-E	No Preservative Required	OK
1232892008-B	HCL to pH < 2	OK	1232892018-A	HCL to pH < 2	OK
1232892008-C	HCL to pH < 2	OK	1232892018-B	HCL to pH < 2	OK
1232892008-D	No Preservative Required	OK	1232892018-C	HCL to pH < 2	OK
1232892008-E	No Preservative Required	OK	1232892018-D	No Preservative Required	OK
1232892009-A	HCL to pH < 2	OK	1232892018-E	No Preservative Required	OK
1232892009-B	HCL to pH < 2	OK	1232892019-A	HCL to pH < 2	OK
1232892009-C	HCL to pH < 2	OK	1232892019-B	HCL to pH < 2	OK
1232892009-D	No Preservative Required	OK	1232892019-C	HCL to pH < 2	OK
1232892009-E	No Preservative Required	OK			
1232892010-A	HCL to pH < 2	OK			
1232892010-B	HCL to pH < 2	OK			
1232892010-C	HCL to pH < 2	OK			
1232892010-D	No Preservative Required	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.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
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.
QN - Insufficient sample quantity provided.

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Laboratory Report of Analysis

To: Hilcorp Alaska, LLC
3800 Centerpoint Drive Suite 417
Anchorage, AK 99503
(907)277-7297

Report Number: **1232967**

Client Project: **Hilcorp 2023 Groundwater Monit**

Dear Kelly Carson,

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 Justin 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.

Justin Nelson
2023.08.18
14:04:39 -08'00'

Justin Nelson Date
Project Manager
Justin.Nelson@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

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Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
SGS Project: **1232967**
Project Name/Site: **Hilcorp 2023 Groundwater Monit**
Project Contact: **Kelly Carson**

Refer to sample receipt form for information on sample condition.

SRF14-SW1-23 (1232967001) PS

8260D SIM - Sample was re-analyzed outside of hold time to confirm results. Original results are being reported.

SRF14-SW1-23(1232967001BMS) (1232967002) BMS

8260D SIM - Sample was re-analyzed outside of hold time to confirm results. Original results are being reported.

SRF14-SW1-23(1232967001BMSD) (1232967003) BMSD

8260D SIM - Sample was re-analyzed outside of hold time to confirm results. Original results are being reported.

SRF14-SW1Z-23 (1232967004) PS

8260D SIM - Sample was re-analyzed outside of hold time to confirm results. Original results are being reported.

MB for HBN 1859233 [VXX/40126] (1722467) MB

8260D SIM - Surrogate recovery for 4-Bromofluorobenzene does not meet QC criteria. All associated analytes are not being reported in all associated samples.

LCSD for HBN 1859233 [VXX/4012 (1722469) LCSD

8260D SIM - LSCD recovery for 1,4 Dioxane does not meet QC criteria. This analyte is not being reported above LOQ in all associated samples.
8260D SIM - LSC/LCSD RPD for 1,4 Dioxane does not meet QC criteria. This analyte is not being reported above LOQ in all associated samples.
8260D SIM - Surrogate recovery for 4-Bromofluorobenzene does not meet QC criteria. All associated analytes are not being reported in all associated samples.

Ethylene Glycol 8015M was analyzed by Bio-Chem of Grand Rapids, MI.

Revised report: Report revised to report one 1,4 Dioxane result, best result only, per client request.

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

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t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

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Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. 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 (Provisionally Certified as of 7/12/2023 for Nitrate-N and Nitrate-Nitrite as N EPA300.0 & SM4500NO3-F) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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
TNTC	Too Numerous To Count
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

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SRF14-SW1-23	1232967001	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF14-SW1-23(1232967001BMS	1232967002	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF14-SW1-23(1232967001BMS	1232967003	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF14-SW1Z-23	1232967004	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF-TB04	1232967005	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)

Method	Method Description
SW8260D-SIM	SW8260-SIM (W)

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

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Detectable Results Summary

Client Sample ID: **SRF14-SW1-23**
Lab Sample ID: 1232967001

	Parameter	Result	Units
Volatile-SIM	1,4 Dioxane	3.13	ug/L

Client Sample ID: **SRF14-SW1Z-23**
Lab Sample ID: 1232967004

	Parameter	Result	Units
Volatile-SIM	1,4 Dioxane	3.61	ug/L

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

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Results of **SRF14-SW1-23**

Client Sample ID: **SRF14-SW1-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232967001
Lab Project ID: 1232967

Collection Date: 06/20/23 15:30
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: SW-1

Results by **Volatile-SIM**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,4 Dioxane	3.13		0.400	0.100	0.200	ug/L	1		07/04/23 00:04
Surrogates									
4-Bromofluorobenzene (surr)	100		85-114			%	1		07/04/23 00:04
Toluene-d8 (surr)	102		89-112			%	1		07/04/23 00:04

Batch Information

Analytical Batch: VMS22573
Analytical Method: SW8260D-SIM
Analyst: PHK
Analytical Date/Time: 07/04/23 00:04
Container ID: 1232967001-D

Prep Batch: VXX40126
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 08/18/2023 11:45:53AM

J flagging is activated

Results of **SRF14-SW1Z-23**

Client Sample ID: **SRF14-SW1Z-23**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232967004
Lab Project ID: 1232967

Collection Date: 06/20/23 14:30
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: SW-1

Results by **Volatile-SIM**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,4 Dioxane	3.61		0.400	0.100	0.200	ug/L	1		07/03/23 21:57
Surrogates									
4-Bromofluorobenzene (surr)	110		85-114			%	1		07/03/23 21:57
Toluene-d8 (surr)	103		89-112			%	1		07/03/23 21:57

Batch Information

Analytical Batch: VMS22573
Analytical Method: SW8260D-SIM
Analyst: PHK
Analytical Date/Time: 07/03/23 21:57
Container ID: 1232967004-A

Prep Batch: VXX40126
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 08/18/2023 11:45:53AM

J flagging is activated

Results of **SRF-TB04**

Client Sample ID: **SRF-TB04**
Client Project ID: **Hilcorp 2023 Groundwater Monit**
Lab Sample ID: 1232967005
Lab Project ID: 1232967

Collection Date: 06/20/23 08:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TB04

Results by **Volatile-SIM**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,4 Dioxane	0.200	U	0.400	0.100	0.200	ug/L	1		07/03/23 21:41
Surrogates									
4-Bromofluorobenzene (surr)	111		85-114			%	1		07/03/23 21:41
Toluene-d8 (surr)	102		89-112			%	1		07/03/23 21:41

Batch Information

Analytical Batch: VMS22573
Analytical Method: SW8260D-SIM
Analyst: PHK
Analytical Date/Time: 07/03/23 21:41
Container ID: 1232967005-A

Prep Batch: VXX40126
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

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

Method Blank

Blank ID: MB for HBN 1859233 [VXX/40126]
Blank Lab ID: 1722467

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232967001, 1232967004, 1232967005

Results by **SW8260D-SIM**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,4 Dioxane	0.200U	0.400	0.100	0.200	ug/L
Surrogates					
4-Bromofluorobenzene (surr)	122*	85-114		0	%
Toluene-d8 (surr)	101	89-112		0	%

Batch Information

Analytical Batch: VMS22573
Analytical Method: SW8260D-SIM
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: PHK
Analytical Date/Time: 7/3/2023 4:39:00PM

Prep Batch: VXX40126
Prep Method: SW5030B
Prep Date/Time: 7/3/2023 6:00:00AM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

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

Member of SGS Group

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232967 [VXX40126]
Blank Spike Lab ID: 1722468
Date Analyzed: 07/03/2023 16:56

Spike Duplicate ID: LCSD for HBN 1232967 [VXX40126]
Spike Duplicate Lab ID: 1722469
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232967001, 1232967004, 1232967005

Results by **SW8260D-SIM**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,4 Dioxane	4	4.41	110	4	7.93	198	* (59-139)	57.10	* (< 20)
Surrogates									
4-Bromofluorobenzene (surr)	30		113	30		117	* (85-114)	4.10	(< 20)
Toluene-d8 (surr)	30		103	30		102	(89-112)	0.66	(< 20)

Batch Information

Analytical Batch: **VMS22573**
Analytical Method: **SW8260D-SIM**
Instrument: **VSA Agilent GC/MS 7890B/5977A**
Analyst: **PHK**

Prep Batch: **VXX40126**
Prep Method: **SW5030B**
Prep Date/Time: **07/03/2023 06:00**
Spike Init Wt./Vol.: 4 ug/L Extract Vol: 25 mL
Dupe Init Wt./Vol.: 4 ug/L Extract Vol: 25 mL

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

Member of SGS Group

Billable Matrix Spike Summary

Original Sample ID: 1232967001
MS Sample ID: 1232967002 BMS
MSD Sample ID: 1232967003 BMSD

Analysis Date: 07/04/2023 0:04
Analysis Date: 07/04/2023 2:00
Analysis Date: 07/04/2023 2:16
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **SW8260D-SIM**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,4 Dioxane	3.13	4.00	6.45	83	4.00	12.5	235 *	59-139	64.00 *	(< 20)
Surrogates										
4-Bromofluorobenzene (surr)		30.0	30.2	101	30.0	30.4	101	85-114	0.68	
Toluene-d8 (surr)		30.0	31	103	30.0	31.0	103	89-112	0.02	

Batch Information

Analytical Batch: VMS22573
Analytical Method: SW8260D-SIM
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: PHK
Analytical Date/Time: 7/4/2023 2:00:00AM

Prep Batch: VXX40126
Prep Method: 8260SIM (W) SW5030 Prep
Prep Date/Time: 7/3/2023 6:00:00AM
Prep Initial Wt./Vol.: 25.00mL
Prep Extract Vol: 25.00mL

Print Date: 08/18/2023 11:46:00AM

1232967

ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD

Revised Report - Revision 1

Profile# 373673 RER

Laboratory:	SGS Anchorage	COC ID:	SRF-TS14	Cooler Name:	Honduras	Report To:	Kel
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring	Contact:	Kelly Carson	Contact Email:	kelly.carson@hilcorp.com	Invoice To:	HAK, ananderson@hilcorp.com
						AFE #:	235-02465.15.10.28

Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes	Cooler
SRF14-SW1	SRF14-SW1-23	2023-06-20	1530	KP,BR	SW	MSD	18	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	Glycols SW8015M / LL VOCs SW8260D SIM	30	MS/MSD, Ethylene glycol/1,4-dioxane	Honduras
SRF14-SW1	SRF14-SW1Z-23	2023-06-20	1430	KP,BR	SW		6	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	Glycols SW8015M / LL VOCs SW8260D SIM	30	Ethylene glycol/1,4-dioxane	Honduras
TB04	SRF-TB04	2023-06-20	0800	JB,KT,KP,BR	GW	TB	3	NA	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	1,4-dioxane only	Honduras

AF 2AF 3AF 4AC

List 6 on SAC

Special Instructions:	Sample Receipt:	Cooler Temperature:
Deliverables: Level 2 PDF, EFWEDD, DataView	Temperature Blank:	
	Custody Seals:	

Relinquished By / Affiliation:	Date	Time	Received By / Affiliation:	Date	Time
Nicole Water / ALEUT	6/21/2023	1200	Alexandra Carnes SGS	6/22/23	1025
Relinquished By / Affiliation:	Date	Time	Received By / Affiliation:	Date	Time

Indonesia: 1.4°C DSS CS: 1F 1B

Honduras: 3.5°C DSS CS: 1F 1B

ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD DUPLICATE

Revised Report - Revision 1

Laboratory:	SGS Anchorage		COC ID:	SRF-TS14				Cooler Name:	Honduras			Report To:	Kelly Carson		
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring		Contact:	Kelly Carson				Contact Email:	kelly.carson@hilcorp.com			Invoice To:	HAK, ananderson@hilcorp.com		
												AFE #:	235-02465.15.10.28		
Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes	Cooler
SRF14-SW1	SRF14-SW1-23	2023-06-20	1530	KP,BR	SW	MSD	18	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	Glycols SW8015M / LL VOCs SW8260D SIM	30	MS/MSD, Ethylene glycol/1,4-dioxane	Honduras
SRF14-SW1	SRF14-SW1Z-23	2023-06-20	1430	KP,BR	SW		6	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	Glycols SW8015M / LL VOCs SW8260D SIM	30	Ethylene glycol/1,4-dioxane	Honduras
TB04	SRF-TB04	2023-06-20	0800	JB,KT,KP,BR	GW	TB	3	NA	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	1,4-dioxane only	Honduras

Special Instuctions:
Deliverables: Level 2 PDF, EFWEDD, DataView

Sample Receipt:
Temperature Blank:
Custody Seals:

Cooler Temperature:

Relinquished By / Affiliation:
Nicole Mahrer / ALEUT
Signature / Printed Name / Affiliation — Date 6/21/2023 Time 1200

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Alexandra J Carnes SGS
Signature / Printed Name / Affiliation — Date 6/22/23 Time 1025

Indonesia: 1.4 DSS CS: 1F1B
Honduras: 3.5 DSS CS: 1F1B

1232967

List Number	Analytes
1	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
2	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, ethylene glycol
3	petroleum VOCs (including BTEX) and PAHs
4	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, tert-butylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
5	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene
6	ethylene glycol, 1,4-dioxane
7	DRO/RRO, petroleum VOCs (specific list for SCU 23B-03 and SCU 312-09), PAHs

Report naphthalene by SW8260 and SW8270 SIM for lists 1-5

Petroleum-related VOCs by SW8260D for List 3 (SRF TS sites):

1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (cumene)
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Petroleum VOCs by SW8260D for List 7 (SCU 23B-03 and SCU 312-09):

1,2,4-Trimethylbenzene
1,2-Dibromoethane
1,2-Dichloroethane
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (Cumene)
Methyl-t-butyl ether
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Please report m & p-xylenes and total xylenes for all samples requiring xylenes

1232967

SGS

SAMPLE RECEIPT FORM

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	(Yes)	No	N/A	
Was temperature between 0-6° C?	(Yes)	No	N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time*?	(Yes)	No	N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	(Yes)	No	N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	(Yes)	No	N/A	Attached
If rush was requested by the client, was the requested TAT approved?	Yes	No	(N/A)	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPDL Number provided?	Yes	No	(N/A)	*If "NO", contact client for information.*
Sample Login Completion				
Do ID's on sample containers match COC?	(Yes)	No	N/A	
If provided on containers, do dates/times collected match COC?	(Yes)	No	N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	(Yes)	No	N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? **See form F-083 "Sample Guide"*	(Yes)	No	N/A	*Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here: If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve. For all non-metals methods, inform Project Manager.*
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	Yes	(No)	N/A	
Were all VOA vials free of headspace >6mm?	Yes	No	(N/A)	
Were all soil VOA samples received field extracted with Methanol?	Yes	No	(N/A)	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	Yes	No	(N/A)	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	Yes	No	(N/A)	
For Rush/Short Holding time, was the lab notified?	Yes	No	(N/A)	
For any question answered "NO", was the Project Manager notified?	Yes	No	(N/A)	PM Initials:
Was Peer Review of sample numbering/labelling completed?	Yes	No	N/A	Reviewer Initials:
Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:				

Alert Expeditors Inc.

#426261

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 6-22-23

From H.I.Corp

To SGS Labs Anc

Collect ❐	Prepay ❐	Advance Charges ❐
Job #	PO# Justin	

Five Coolers

1232967

Shipped Signature

Total Charge

Received By:

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1232967001-A	HCL to pH < 2	OK			
1232967001-B	HCL to pH < 2	OK			
1232967001-C	HCL to pH < 2	OK			
1232967001-D	HCL to pH < 2	OK			
1232967001-E	HCL to pH < 2	OK			
1232967001-F	HCL to pH < 2	OK			
1232967002-A	HCL to pH < 2	OK			
1232967002-B	HCL to pH < 2	OK			
1232967002-C	HCL to pH < 2	OK			
1232967002-D	HCL to pH < 2	OK			
1232967002-E	HCL to pH < 2	OK			
1232967002-F	HCL to pH < 2	OK			
1232967003-A	HCL to pH < 2	OK			
1232967003-B	HCL to pH < 2	OK			
1232967003-C	HCL to pH < 2	OK			
1232967003-D	HCL to pH < 2	OK			
1232967003-E	HCL to pH < 2	OK			
1232967003-F	HCL to pH < 2	OK			
1232967004-A	HCL to pH < 2	OK			
1232967004-B	HCL to pH < 2	OK			
1232967004-C	HCL to pH < 2	OK			
1232967004-D	HCL to pH < 2	OK			
1232967004-E	HCL to pH < 2	OK			
1232967004-F	HCL to pH < 2	OK			
1232967005-A	HCL to pH < 2	OK			
1232967005-B	HCL to pH < 2	OK			
1232967005-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.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
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.
QN - Insufficient sample quantity provided.

Bio-Chem LABORATORIES, INC.

1049 - 28th Street SE
Grand Rapids, MI 49508
Ph: 616/248-4900
Toll Free: 800/362-LABS
Fax: 616/248-4904

July 06, 2023

Justin Nelson
SGS North America Inc
200 W. Potter Drive
Anchorage, AK 99518

TEL: (907) 562-2343
FAX (907) 561-5301

RE: 1232967

Dear Justin Nelson: Order No.: 2306110

BIO-CHEM Laboratories, Inc. received 2 samples on 6/28/2023 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Please note that unless otherwise instructed, residual samples will be held for sixty (60) days from the original report date. At that time, all non-hazardous samples will be disposed of in accordance with federal, state and local regulations and ordinances, and hazardous samples shall be returned to you. Please contact the laboratory within thirty (30) days if other arrangements for sample retention need to be made.

Sincerely,

Cindy Euwema

Cindy Euwema
Office Manager

Working with you to ensure a better tomorrow.

SGS North America Inc.
CHAIN OF CUSTODY RECORD

Locations Nationwide
Alaska Florida
New Jersey Colorado
Texas North Carolina
Virginia Louisiana
www.us.sgs.com

Z306110

CLIENT:	SGS North America Inc. - Alaska Division	SGS Reference:	Bio-Chem
CONTACT:	Justin Nelson	PHONE NO: (907) 562-2343	Additional Comments: All soils report out in dry weight unless
PROJECT NAME:	1232967	PWSID#: / NPDL#:	
REPORTS TO:	Justin.Nelson	E-MAIL:	Justin.Nelson@sgs.com; Env.Alaska.RefLabTeam@sgs.com
INVOICE TO:	SGS - Alaska; env.alaska.accounting@sgs.com	QUOTE #: / P.O. #:	1232967

Page 1 of 1

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HHMM	MATRIX/ MATRIX CODE	# CONTAINERS	Preservative Used:	HCl				MS	MSD	SGS lab #	Location ID
						TYPE C = COMP G = GRAB MI = Multi Incremental Soils	Ethylene Glycol 8015M							
	SRF14-SW1-23	06/20/2023	15:30:00	Water	3		X						1232967001	
01	SRF14-SW1-23 MS	06/20/2023	15:30:00	Water	3		X				X		1232967002	
	SRF14-SW1-23 MSD	06/20/2023	15:30:00	Water	3		X					X	1232967003	
02	SRF14-SW1Z-23	06/20/2023	14:30:00	Water	3		X						1232967004	

Relinquished By: (1)	Date	Time	Received By:	DOD Project?	NO	Data Deliverable Requirements:
	6/27	11AM		Report to DL (J Flags)? If J- Report as DL/LOD/LOQ.	NO	Level 2 + SGS EDD
Relinquished By: (2)	Date	Time	Received By:	Cooler ID:		
				Requested Turnaround Time and-or Special Instructions:		
Relinquished By: (3)	Date	Time	Received By:	Temp Blank °C: 3.9c		Chain of Custody Seal: (Circle)
Relinquished By: (4)	Date	Time	Received For Laboratory By: Fed Ex / Cindy Elmore 6-28-23 9:15	or Ambient [ ]		INTACT BROKEN ABSENT

[X 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms_and_conditions.htm

REVIEWED

Revised Report - Revision 1

BIO-CHEM Laboratories, Inc.

Date: *06-Jul-23*

CLIENT: SGS North America Inc
Project: 1232967
Lab Order: 2306110

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Matrix	Collection Date	Date Received
2306110-01A	SRF14-SW1-23	Water	6/20/2023	6/28/2023
2306110-02A	SRF14-SW1Z-23	Water	6/20/2023	6/28/2023

BIO-CHEM Laboratories, Inc.

Date: *06-Jul-23*

CLIENT: SGS North America Inc
Project: 1232967
Lab Order: 2306110

CASE NARRATIVE

Samples are routinely analyzed using methods outlined in the following references:

(SW) Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Ed.
(E) Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020.
(A) Standard Methods for the Examination of Water and Wastewater, APHA, 18th Ed.
(D) Annual Book of ASTM Standards.

Specific methods utilized for this project are provided in the analytical report and are identified by the reference document abbreviation ( ) followed by the method number.

All QA/QC and sample analyses met method, laboratory and/or regulatory data quality objectives unless otherwise specified below.

No data qualifications required and there are no "J" flags to report.

BIO-CHEM Laboratories, Inc.

Date: *7/6/2023*

ANALYTICAL REPORT

CLIENT: SGS North America Inc
Lab Order: 2306110
Project: 1232967
Lab Sample ID: 2306110-01A

Project Number: 1232967
Client Sample ID: SRF14-SW1-23
Collection Date: 6/20/2023
Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	6/29/2023

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

This report shall not be reproduced except in full, without the written approval of BIO-CHEM Laboratories, Inc.

Note: The sample results reported are based on the sample aliquot(s) tested.

BIO-CHEM Laboratories, Inc.

Date: *7/6/2023*

ANALYTICAL REPORT

CLIENT: SGS North America Inc
Lab Order: 2306110
Project: 1232967
Lab Sample ID: 2306110-02A

Project Number: 1232967
Client Sample ID: SRF14-SW1Z-23
Collection Date: 6/20/2023
Matrix: WATER

Analyses	Method Ref.	Result	Q	PQL	Units	DF	Analyst	Date
Alcohols by GC/FID								
1. Ethylene Glycol	SW8015B	< 10		10	mg/L	1	LEB	6/29/2023

Definitions: PQL - Practical Quantitation Limit
DF - Dilution Factor

Qualifiers (Q): J - Detected below PQL but above MDL: Estimated
S - Spike Recovery Outside Acceptance Limits
B - Analyte detected in associated Method Blank
N - See case narrative for explanation

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Note: The sample results reported are based on the sample aliquot(s) tested.

Lab Order: 2306110
Client: SGS North America Inc
Project: 1232967

ANALYTICAL DETAIL REPORT

Sample ID	Client Sample ID	Matrix	Test Name	Date Sampled	TCLP/SPLP Date	Prep Date	QC Batch	Analysis Date	Analytical Batch
2306110-01A	SRF14-SW1-23	Water	Alcohols by GC/FID	6/20/2023		6/30/2023	49251	6/29/2023	GC_B_FID_230629B
2306110-02A	SRF14-SW1Z-23	Water	Alcohols by GC/FID	6/20/2023		6/30/2023	49251	6/29/2023	GC_B_FID_230629B

Revised Report - Revision 1

CLIENT: SGS North America Inc
Work Order: 2306110
Project: 1232967

ANALYTICAL QC SUMMARY REPORT

TestCode: ALCOHOL_W

Sample ID	**MB-49251**	SampType:	**MBLK**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**ZZZZZ**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191320**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	< 10	10									

Sample ID	**LCS-49251**	SampType:	**LCS**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**ZZZZZ**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191321**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	47.94	10	50	0	95.9	67.7	127	0	0		

Sample ID	**2306110-01AMS**	SampType:	**MS**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**SRF14-SW1-23**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191329**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	102.5	10	100	0	103	46	148	0	0		

Sample ID	**2306110-01AMSD**	SampType:	**MSD**	TestCode:	**ALCOHOL_W**	Units:	**mg/L**	Prep Date:	**6/30/2023**	Run ID:	**GC_B_FID_230629B**
Client ID:	**SRF14-SW1-23**	Batch ID:	**49251**	TestNo:	**SW8015B**	**(SW8015B)**		Analysis Date:	**6/29/2023**	SeqNo:	**1191330**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Ethylene Glycol	84.69	10	100	0	84.7	46	148	102.5	19.1	20	

Revised Report - Revision 1

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

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Laboratory Report of Analysis

To: Hilcorp Alaska, LLC
3800 Centerpoint Drive Suite 417
Anchorage, AK 99503
(907)277-7297

Report Number: **1232975**

Client Project: **Hilcorp 2023 Kenai Groundwater**

Dear Kelly Carson,

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 Justin 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.

Justin Nelson
2023.07.28
07:11:40 -08'00'

Justin Nelson Date
Project Manager
Justin.Nelson@sgs.com

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Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
SGS Project: **1232975**
Project Name/Site: **Hilcorp 2023 Kenai Groundwater**
Project Contact: **Kelly Carson**

Refer to sample receipt form for information on sample condition.

23B3-MW01-23 (1232975001) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 does not meet QC criteria. Sample was re-extracted outside of hold time and results confirmed. In hold data is reported.
AK102/103 - LCS/LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside hold-time and results confirmed. In-hold data is reported.

23B3-MW01Z-23 (1232975002) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 does not meet QC criteria. Sample was re-extracted outside of hold time and results confirmed. In hold data is reported.
AK102/103 - LCS/LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside hold-time and results confirmed. In-hold data is reported.

23B3-MW02-23 (1232975003) PS

AK102/103 - LCS/LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside hold-time and results confirmed. In-hold data is reported.

23B3-MW03-23 (1232975004) PS

AK102/103 - LCS/LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside hold-time and results confirmed. In-hold data is reported.

LCS for HBN 1857949 [XXX/48108 (1720085) LCS

AK102 - LCSD recovery for DRO does not meet QC criteria.

LCSD for HBN 1857949 [XXX/4810 (1720086) LCSD

AK102 - LCSD recovery for DRO does not meet QC criteria.

MB for HBN 1858239 [VXX/40078] (1720728) MB

8260D - Surrogate recovery for 1,2-Dichlorethane-D4 does not meet QC criteria. Surrogate recovery was biased high.

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIM LV (PAH)				
1719420	MB for HBN 1857762 [XXX/48086]	XMS13714	1-Methylnaphthalene	BLC
1719420	MB for HBN 1857762 [XXX/48086]	XMS13714	Fluoranthene	BLC
SW8260D				
1232975001	23B3-MW01-23	VMS22537	n-Butylbenzene	SP
1232975002	23B3-MW01Z-23	VMS22537	n-Butylbenzene	SP

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. 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 (Provisionally Certified as of 6/05/2023 for Orthophosphate SM4500P-E and 7/12/2023 for Nitrate-N and Nitrate-Nitrite as N EPA300.0 & SM4500NO3-F) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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
TNTC	Too Numerous To Count
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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
23B3-MW01-23	1232975001	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
23B3-MW01Z-23	1232975002	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
23B3-MW02-23	1232975003	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
23B3-MW03-23	1232975004	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
SW8260D	Volatile Organic Compounds(W)Custom List

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Detectable Results Summary

Client Sample ID: **23B3-MW01-23**
Lab Sample ID: 1232975001

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0263J	ug/L
	2-Methylnaphthalene	0.0229J	ug/L
	Fluorene	0.0178J	ug/L
	Naphthalene	0.0965J	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	2.35	mg/L
	Residual Range Organics	0.381J	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	106	ug/L
	1,3,5-Trimethylbenzene	66.1	ug/L
	Benzene	1.74	ug/L
	Ethylbenzene	9.43	ug/L
	Isopropylbenzene (Cumene)	47.8	ug/L
	Naphthalene	15.8	ug/L
	n-Butylbenzene	1.34	ug/L
	o-Xylene	1.35	ug/L
	P & M -Xylene	58.6	ug/L
	sec-Butylbenzene	6.49	ug/L
	tert-Butylbenzene	7.89	ug/L
	Xylenes (total)	59.9	ug/L

Client Sample ID: **23B3-MW01Z-23**
Lab Sample ID: 1232975002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Benzo[b]Fluoranthene	0.0214J	ug/L
	Benzo[g,h,i]perylene	0.0413J	ug/L
	Dibenzo[a,h]anthracene	0.0399	ug/L
	Fluorene	0.0225J	ug/L
	Indeno[1,2,3-c,d] pyrene	0.0403J	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	2.88	mg/L
	Residual Range Organics	0.719	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	106	ug/L
	1,3,5-Trimethylbenzene	66.8	ug/L
	Benzene	1.72	ug/L
	Ethylbenzene	9.43	ug/L
	Isopropylbenzene (Cumene)	47.1	ug/L
	Naphthalene	15.4	ug/L
	n-Butylbenzene	1.46	ug/L
	o-Xylene	1.39	ug/L
	P & M -Xylene	58.0	ug/L
	sec-Butylbenzene	6.59	ug/L
	tert-Butylbenzene	7.78	ug/L
	Xylenes (total)	59.4	ug/L

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Detectable Results Summary

Client Sample ID: **23B3-MW02-23**
Lab Sample ID: 1232975003

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0154J	ug/L
	2-Methylnaphthalene	0.0196J	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.286J	mg/L

Client Sample ID: **23B3-MW03-23**
Lab Sample ID: 1232975004

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.0188J	ug/L
	2-Methylnaphthalene	0.0216J	ug/L
	Benzo(a)Anthracene	0.576	ug/L
	Benzo[a]pyrene	1.50	ug/L
	Benzo[b]Fluoranthene	1.79	ug/L
	Benzo[g,h,i]perylene	3.12	ug/L
	Benzo[k]fluoranthene	2.83	ug/L
	Chrysene	1.43	ug/L
	Dibenzo[a,h]anthracene	3.52	ug/L
	Indeno[1,2,3-c,d] pyrene	3.14	ug/L
	Naphthalene	0.0369J	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.309J	mg/L
	Residual Range Organics	0.562	mg/L

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Results of **23B3-MW01-23**

Client Sample ID: **23B3-MW01-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975001
Lab Project ID: 1232975

Collection Date: 06/20/23 15:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0263	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
2-Methylnaphthalene	0.0229	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Acenaphthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Acenaphthylene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Anthracene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Benzo(a)Anthracene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Benzo[a]pyrene	0.0107	U	0.0213	0.00660	0.0107	ug/L	1		07/06/23 16:25
Benzo[b]Fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Benzo[g,h,i]perylene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Benzo[k]fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Chrysene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Dibenzo[a,h]anthracene	0.0107	U	0.0213	0.00660	0.0107	ug/L	1		07/06/23 16:25
Fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Fluorene	0.0178	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Indeno[1,2,3-c,d] pyrene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Naphthalene	0.0965	J	0.106	0.0330	0.0530	ug/L	1		07/06/23 16:25
Phenanthrene	0.0530	U	0.106	0.0330	0.0530	ug/L	1		07/06/23 16:25
Pyrene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 16:25
Surrogates									
2-Methylnaphthalene-d10 (surr)	13.5	*	38-100			%	1		07/06/23 16:25
Fluoranthene-d10 (surr)	63		30-111			%	1		07/06/23 16:25

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 16:25
Container ID: 1232975001-F

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Print Date: 07/28/2023 7:02:15AM

J flagging is activated

Results of **23B3-MW01-23**

Client Sample ID: **23B3-MW01-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975001
Lab Project ID: 1232975

Collection Date: 06/20/23 15:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	2.35		0.638	0.213	0.319	mg/L	1		07/05/23 16:24
Surrogates									
5a Androstane (surr)	78.9		50-150			%	1		07/05/23 16:24

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 07/05/23 16:24
Container ID: 1232975001-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.381	J	0.532	0.213	0.266	mg/L	1		07/05/23 16:24
Surrogates									
n-Triacontane-d62 (surr)	78.6		50-150			%	1		07/05/23 16:24

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Analyst: T.L
Analytical Date/Time: 07/05/23 16:24
Container ID: 1232975001-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Results of **23B3-MW01-23**

Client Sample ID: **23B3-MW01-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975001
Lab Project ID: 1232975

Collection Date: 06/20/23 15:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	106		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/01/23 20:39
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/01/23 20:39
1,3,5-Trimethylbenzene	66.1		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
Benzene	1.74		0.400	0.120	0.200	ug/L	1		07/01/23 20:39
Ethylbenzene	9.43		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
Isopropylbenzene (Cumene)	47.8		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/01/23 20:39
Naphthalene	15.8		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
n-Butylbenzene	1.34		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
o-Xylene	1.35		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
P & M -Xylene	58.6		2.00	0.620	1.00	ug/L	1		07/01/23 20:39
sec-Butylbenzene	6.49		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
tert-Butylbenzene	7.89		1.00	0.310	0.500	ug/L	1		07/01/23 20:39
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 20:39
Xylenes (total)	59.9		3.00	1.00	1.50	ug/L	1		07/01/23 20:39
Surrogates									
1,2-Dichloroethane-D4 (surr)	103		81-118			%	1		07/01/23 20:39
4-Bromofluorobenzene (surr)	100		85-114			%	1		07/01/23 20:39
Toluene-d8 (surr)	103		89-112			%	1		07/01/23 20:39

Batch Information

Analytical Batch: VMS22537
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 20:39
Container ID: 1232975001-A

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **23B3-MW01Z-23**

Client Sample ID: **23B3-MW01Z-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975002
Lab Project ID: 1232975

Collection Date: 06/20/23 14:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
2-Methylnaphthalene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Acenaphthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Acenaphthylene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Benzo(a)Anthracene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Benzo[a]pyrene	0.0104	U	0.0208	0.00646	0.0104	ug/L	1		07/06/23 16:46
Benzo[b]Fluoranthene	0.0214	J	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Benzo[g,h,i]perylene	0.0413	J	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Benzo[k]fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Chrysene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Dibenzo[a,h]anthracene	0.0399		0.0208	0.00646	0.0104	ug/L	1		07/06/23 16:46
Fluoranthene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Fluorene	0.0225	J	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Indeno[1,2,3-c,d] pyrene	0.0403	J	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Naphthalene	0.0520	U	0.104	0.0323	0.0520	ug/L	1		07/06/23 16:46
Phenanthrene	0.0520	U	0.104	0.0323	0.0520	ug/L	1		07/06/23 16:46
Pyrene	0.0261	U	0.0521	0.0156	0.0261	ug/L	1		07/06/23 16:46
Surrogates									
2-Methylnaphthalene-d10 (surr)	26.7	*	38-100			%	1		07/06/23 16:46
Fluoranthene-d10 (surr)	65.2		30-111			%	1		07/06/23 16:46

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 16:46
Container ID: 1232975002-F

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 07/28/2023 7:02:15AM

J flagging is activated

Results of **23B3-MW01Z-23**

Client Sample ID: **23B3-MW01Z-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975002
Lab Project ID: 1232975

Collection Date: 06/20/23 14:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	2.88		0.638	0.213	0.319	mg/L	1		07/05/23 16:34
Surrogates									
5a Androstane (surr)	85		50-150			%	1		07/05/23 16:34

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 07/05/23 16:34
Container ID: 1232975002-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.719		0.532	0.213	0.266	mg/L	1		07/05/23 16:34
Surrogates									
n-Triacontane-d62 (surr)	94.5		50-150			%	1		07/05/23 16:34

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Analyst: T.L
Analytical Date/Time: 07/05/23 16:34
Container ID: 1232975002-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
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Member of SGS Group

Results of **23B3-MW01Z-23**

Client Sample ID: **23B3-MW01Z-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975002
Lab Project ID: 1232975

Collection Date: 06/20/23 14:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	106		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/01/23 20:54
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/01/23 20:54
1,3,5-Trimethylbenzene	66.8		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
Benzene	1.72		0.400	0.120	0.200	ug/L	1		07/01/23 20:54
Ethylbenzene	9.43		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
Isopropylbenzene (Cumene)	47.1		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/01/23 20:54
Naphthalene	15.4		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
n-Butylbenzene	1.46		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
o-Xylene	1.39		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
P & M -Xylene	58.0		2.00	0.620	1.00	ug/L	1		07/01/23 20:54
sec-Butylbenzene	6.59		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
tert-Butylbenzene	7.78		1.00	0.310	0.500	ug/L	1		07/01/23 20:54
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 20:54
Xylenes (total)	59.4		3.00	1.00	1.50	ug/L	1		07/01/23 20:54
Surrogates									
1,2-Dichloroethane-D4 (surr)	102		81-118			%	1		07/01/23 20:54
4-Bromofluorobenzene (surr)	102		85-114			%	1		07/01/23 20:54
Toluene-d8 (surr)	102		89-112			%	1		07/01/23 20:54

Batch Information

Analytical Batch: VMS22537
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 20:54
Container ID: 1232975002-A

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/28/2023 7:02:15AM

J flagging is activated

Results of **23B3-MW02-23**

Client Sample ID: **23B3-MW02-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975003
Lab Project ID: 1232975

Collection Date: 06/20/23 16:10
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-02

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0154	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
2-Methylnaphthalene	0.0196	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Acenaphthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Acenaphthylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/06/23 17:06
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Chrysene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/06/23 17:06
Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Fluorene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Naphthalene	0.0500	U	0.100	0.0310	0.0500	ug/L	1		07/06/23 17:06
Phenanthrene	0.0500	U	0.100	0.0310	0.0500	ug/L	1		07/06/23 17:06
Pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:06
Surrogates									
2-Methylnaphthalene-d10 (surr)	62.2		38-100			%	1		07/06/23 17:06
Fluoranthene-d10 (surr)	81.3		30-111			%	1		07/06/23 17:06

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 17:06
Container ID: 1232975003-F

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 07/28/2023 7:02:15AM

J flagging is activated

Results of **23B3-MW02-23**

Client Sample ID: **23B3-MW02-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975003
Lab Project ID: 1232975

Collection Date: 06/20/23 16:10
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-02

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.286	J	0.612	0.204	0.306	mg/L	1		07/05/23 16:44
Surrogates									
5a Androstane (surr)	77.3		50-150			%	1		07/05/23 16:44

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 07/05/23 16:44
Container ID: 1232975003-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.255	U	0.510	0.204	0.255	mg/L	1		07/05/23 16:44
Surrogates									
n-Triacontane-d62 (surr)	81.2		50-150			%	1		07/05/23 16:44

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Analyst: T.L
Analytical Date/Time: 07/05/23 16:44
Container ID: 1232975003-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Results of **23B3-MW02-23**

Client Sample ID: **23B3-MW02-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975003
Lab Project ID: 1232975

Collection Date: 06/20/23 16:10
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-02

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/04/23 20:17
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/01/23 21:09
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/01/23 21:09
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		07/01/23 21:09
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/01/23 21:09
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/04/23 20:17
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		07/01/23 21:09
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:09
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		07/01/23 21:09
Surrogates									
1,2-Dichloroethane-D4 (surr)	104		81-118			%	1		07/01/23 21:09
4-Bromofluorobenzene (surr)	103		85-114			%	1		07/01/23 21:09
Toluene-d8 (surr)	107		89-112			%	1		07/01/23 21:09

Batch Information

Analytical Batch: VMS22539
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/04/23 20:17
Container ID: 1232975003-B

Prep Batch: VXX40084
Prep Method: SW5030B
Prep Date/Time: 07/04/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22537
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 21:09
Container ID: 1232975003-A

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **23B3-MW03-23**

Client Sample ID: **23B3-MW03-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975004
Lab Project ID: 1232975

Collection Date: 06/20/23 17:10
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-03

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0188	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
2-Methylnaphthalene	0.0216	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Acenaphthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Acenaphthylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Benzo(a)Anthracene	0.576		0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Benzo[a]pyrene	1.50		0.0200	0.00620	0.0100	ug/L	1		07/06/23 17:27
Benzo[b]Fluoranthene	1.79		0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Benzo[g,h,i]perylene	3.12		0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Benzo[k]fluoranthene	2.83		0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Chrysene	1.43		0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Dibenzo[a,h]anthracene	3.52		0.0200	0.00620	0.0100	ug/L	1		07/06/23 17:27
Fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Fluorene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Indeno[1,2,3-c,d] pyrene	3.14		0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Naphthalene	0.0369	J	0.100	0.0310	0.0500	ug/L	1		07/06/23 17:27
Phenanthrene	0.0500	U	0.100	0.0310	0.0500	ug/L	1		07/06/23 17:27
Pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 17:27
Surrogates									
2-Methylnaphthalene-d10 (surr)	61.5		38-100			%	1		07/06/23 17:27
Fluoranthene-d10 (surr)	74.8		30-111			%	1		07/06/23 17:27

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 17:27
Container ID: 1232975004-F

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 07/28/2023 7:02:15AM

J flagging is activated

Results of **23B3-MW03-23**

Client Sample ID: **23B3-MW03-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975004
Lab Project ID: 1232975

Collection Date: 06/20/23 17:10
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-03

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.309	J	0.625	0.208	0.313	mg/L	1		07/05/23 16:54
Surrogates									
5a Androstane (surr)	83.3		50-150			%	1		07/05/23 16:54

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 07/05/23 16:54
Container ID: 1232975004-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.562		0.521	0.208	0.261	mg/L	1		07/05/23 16:54
Surrogates									
n-Triacontane-d62 (surr)	83.2		50-150			%	1		07/05/23 16:54

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Analyst: T.L
Analytical Date/Time: 07/05/23 16:54
Container ID: 1232975004-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 07/28/2023 7:02:15AM

J flagging is activated

Results of **23B3-MW03-23**

Client Sample ID: **23B3-MW03-23**
Client Project ID: **Hilcorp 2023 Kenai Groundwater**
Lab Sample ID: 1232975004
Lab Project ID: 1232975

Collection Date: 06/20/23 17:10
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-03

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/01/23 21:17
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/01/23 21:17
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		07/01/23 21:17
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/01/23 21:17
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		07/01/23 21:17
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:17
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		07/01/23 21:17
Surrogates									
1,2-Dichloroethane-D4 (surr)	109		81-118			%	1		07/01/23 21:17
4-Bromofluorobenzene (surr)	101		85-114			%	1		07/01/23 21:17
Toluene-d8 (surr)	97.2		89-112			%	1		07/01/23 21:17

Batch Information

Analytical Batch: VMS22534
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 21:17
Container ID: 1232975004-A

Prep Batch: VXX40078
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1858239 [VXX/40078]
Blank Lab ID: 1720728

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232975004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	0.0375	ug/L
1,2-Dichloroethane	0.250U	0.500	0.200	0.250	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	5.00	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	120*	81-118		0	%
4-Bromofluorobenzene (surr)	101	85-114		0	%
Toluene-d8 (surr)	98.5	89-112		0	%

Batch Information

Analytical Batch: VMS22534
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 7/1/2023 1:25:00PM

Prep Batch: VXX40078
Prep Method: SW5030B
Prep Date/Time: 7/1/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232975 [VXX40078]
Blank Spike Lab ID: 1720729
Date Analyzed: 07/01/2023 13:39

Spike Duplicate ID: LCSD for HBN 1232975 [VXX40078]
Spike Duplicate Lab ID: 1720730
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232975004

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	31.1	104	30	30.6	102	(79-124)	1.60	(< 20)
1,2-Dibromoethane	30	31.5	105	30	29.1	97	(77-121)	8.10	(< 20)
1,2-Dichloroethane	30	32.4	108	30	30.6	102	(73-128)	5.60	(< 20)
1,3,5-Trimethylbenzene	30	30.8	103	30	31.8	106	(75-124)	3.10	(< 20)
Benzene	30	30.1	100	30	29.4	98	(79-120)	2.20	(< 20)
Ethylbenzene	30	30.8	103	30	30.7	102	(79-121)	0.33	(< 20)
Isopropylbenzene (Cumene)	30	30.9	103	30	30.8	103	(72-131)	0.31	(< 20)
Methyl-t-butyl ether	45	51.7	115	45	48.1	107	(71-124)	7.10	(< 20)
Naphthalene	30	31.4	105	30	30.1	100	(61-128)	4.10	(< 20)
n-Butylbenzene	30	27.1	90	30	27.0	90	(75-128)	0.41	(< 20)
o-Xylene	30	31.3	104	30	30.5	102	(78-122)	2.70	(< 20)
P & M -Xylene	60	62.7	104	60	61.6	103	(80-121)	1.80	(< 20)
sec-Butylbenzene	30	30.1	100	30	30.1	100	(77-126)	0.04	(< 20)
tert-Butylbenzene	30	29.7	99	30	29.8	99	(78-124)	0.47	(< 20)
Toluene	30	28.7	96	30	28.0	93	(80-121)	2.50	(< 20)
Xylenes (total)	90	94.0	104	90	92.1	102	(79-121)	2.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		110	30		106	(81-118)	4.10	
4-Bromofluorobenzene (surr)	30		99	30		106	(85-114)	7.50	
Toluene-d8 (surr)	30		100	30		100	(89-112)	0.22	

Batch Information

Analytical Batch: **VMS22534**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40078**
Prep Method: **SW5030B**
Prep Date/Time: **07/01/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 07/28/2023 7:02:21AM

Method Blank

Blank ID: MB for HBN 1858279 [VXX/40082]
Blank Lab ID: 1720855

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232975001, 1232975002, 1232975003

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	0.0375	ug/L
1,2-Dichloroethane	0.250U	0.500	0.200	0.250	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	5.00	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	102	81-118		0	%
4-Bromofluorobenzene (surr)	102	85-114		0	%
Toluene-d8 (surr)	105	89-112		0	%

Batch Information

Analytical Batch: VMS22537
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: PHK
Analytical Date/Time: 7/1/2023 2:27:00PM

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 7/1/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232975 [VXX40082]
Blank Spike Lab ID: 1720856
Date Analyzed: 07/01/2023 14:42

Spike Duplicate ID: LCSD for HBN 1232975 [VXX40082]
Spike Duplicate Lab ID: 1720857
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232975001, 1232975002, 1232975003

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	33.5	112	30	32.9	110	(79-124)	1.70	(< 20)
1,2-Dibromoethane	30	30.2	101	30	29.9	100	(77-121)	1.10	(< 20)
1,2-Dichloroethane	30	26.5	88	30	26.0	87	(73-128)	1.80	(< 20)
1,3,5-Trimethylbenzene	30	33.5	112	30	33.2	111	(75-124)	0.78	(< 20)
Benzene	30	29.0	97	30	28.5	95	(79-120)	1.80	(< 20)
Ethylbenzene	30	32.4	108	30	31.4	105	(79-121)	3.00	(< 20)
Isopropylbenzene (Cumene)	30	32.1	107	30	31.1	104	(72-131)	3.20	(< 20)
Methyl-t-butyl ether	45	44.0	98	45	43.5	97	(71-124)	1.10	(< 20)
Naphthalene	30	33.5	112	30	35.6	119	(61-128)	5.90	(< 20)
n-Butylbenzene	30	33.1	110	30	32.5	108	(75-128)	1.80	(< 20)
o-Xylene	30	32.2	107	30	31.0	103	(78-122)	3.60	(< 20)
P & M -Xylene	60	64.7	108	60	62.9	105	(80-121)	2.90	(< 20)
sec-Butylbenzene	30	32.8	109	30	32.3	108	(77-126)	1.60	(< 20)
tert-Butylbenzene	30	32.2	107	30	31.9	106	(78-124)	0.81	(< 20)
Toluene	30	30.4	101	30	30.0	100	(80-121)	1.20	(< 20)
Xylenes (total)	90	96.9	108	90	93.9	104	(79-121)	3.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		95	30		95	(81-118)	0.81	
4-Bromofluorobenzene (surr)	30		100	30		99	(85-114)	0.53	
Toluene-d8 (surr)	30		105	30		105	(89-112)	0.09	

Batch Information

Analytical Batch: **VMS22537**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **PHK**

Prep Batch: **VXX40082**
Prep Method: **SW5030B**
Prep Date/Time: **07/01/2023 06:00**
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 1858286 [VXX/40084]
Blank Lab ID: 1720879

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232975003

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	105	81-118		0	%
4-Bromofluorobenzene (surr)	101	85-114		0	%
Toluene-d8 (surr)	95.8	89-112		0	%

Batch Information

Analytical Batch: VMS22539
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 7/4/2023 4:06:00PM

Prep Batch: VXX40084
Prep Method: SW5030B
Prep Date/Time: 7/4/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232975 [VXX40084]
Blank Spike Lab ID: 1720880
Date Analyzed: 07/04/2023 16:50

Spike Duplicate ID: LCSD for HBN 1232975 [VXX40084]
Spike Duplicate Lab ID: 1720881
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232975003

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	29.5	98	30	30.6	102	(79-124)	3.90	(< 20)
Naphthalene	30	29.6	99	30	30.5	102	(61-128)	3.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		97	30		96	(81-118)	1.00	
4-Bromofluorobenzene (surr)	30		102	30		102	(85-114)	0.02	
Toluene-d8 (surr)	30		100	30		100	(89-112)	0.19	

Batch Information

Analytical Batch: **VMS22539**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **NRB**

Prep Batch: **VXX40084**
Prep Method: **SW5030B**
Prep Date/Time: **07/04/2023 06:00**
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 1857762 [XXX/48086]
Blank Lab ID: 1719420

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232975001, 1232975002, 1232975003, 1232975004

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	LOD	Units
1-Methylnaphthalene	0.0185J	0.0500	0.0150	0.0250	ug/L
2-Methylnaphthalene	0.0225J	0.0500	0.0150	0.0250	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	0.0100	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Chrysene	0.0250U	0.0500	0.0150	0.0250	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	0.0100	ug/L
Fluoranthene	0.0227J	0.0500	0.0150	0.0250	ug/L
Fluorene	0.0250U	0.0500	0.0150	0.0250	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Naphthalene	0.0500U	0.100	0.0310	0.0500	ug/L
Phenanthrene	0.0406J	0.100	0.0310	0.0500	ug/L
Pyrene	0.0157J	0.0500	0.0150	0.0250	ug/L
Surrogates					
2-Methylnaphthalene-d10 (surr)	72.2	38-100		0	%
Fluoranthene-d10 (surr)	83.5	30-111		0	%

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/6/2023 2:02:00PM

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 6/27/2023 9:30:00AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232975 [XXX48086]
Blank Spike Lab ID: 1719421
Date Analyzed: 07/06/2023 14:22

Spike Duplicate ID: LCSD for HBN 1232975 [XXX48086]
Spike Duplicate Lab ID: 1719422
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232975001, 1232975002, 1232975003, 1232975004

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.47	73	2	1.35	67	(41-115)	8.50	(< 20)
2-Methylnaphthalene	2	1.47	74	2	1.34	67	(39-114)	9.30	(< 20)
Acenaphthene	2	1.62	81	2	1.51	76	(48-114)	6.50	(< 20)
Acenaphthylene	2	1.64	82	2	1.54	77	(35-121)	6.70	(< 20)
Anthracene	2	1.73	87	2	1.61	81	(53-119)	7.50	(< 20)
Benzo(a)Anthracene	2	1.64	82	2	1.57	78	(59-120)	4.80	(< 20)
Benzo[a]pyrene	2	1.69	85	2	1.60	80	(53-120)	5.20	(< 20)
Benzo[b]Fluoranthene	2	1.69	85	2	1.62	81	(53-126)	4.10	(< 20)
Benzo[g,h,i]perylene	2	1.78	89	2	1.69	85	(44-128)	5.00	(< 20)
Benzo[k]fluoranthene	2	1.76	88	2	1.63	82	(54-125)	7.20	(< 20)
Chrysene	2	1.74	87	2	1.65	83	(57-120)	5.40	(< 20)
Dibenzo[a,h]anthracene	2	1.75	88	2	1.64	82	(44-131)	6.60	(< 20)
Fluoranthene	2	1.77	89	2	1.68	84	(58-120)	5.60	(< 20)
Fluorene	2	1.72	86	2	1.63	81	(50-118)	5.60	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.75	87	2	1.65	83	(48-130)	5.60	(< 20)
Naphthalene	2	1.52	76	2	1.34	67	(43-114)	12.30	(< 20)
Phenanthrene	2	1.73	86	2	1.62	81	(53-115)	6.40	(< 20)
Pyrene	2	1.76	88	2	1.67	84	(53-121)	4.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		73	2		68	(38-100)	7.00	
Fluoranthene-d10 (surr)	2		86	2		84	(30-111)	1.70	

Batch Information

Analytical Batch: **XMS13714**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **HMW**

Prep Batch: **XXX48086**
Prep Method: **SW3535A**
Prep Date/Time: **06/27/2023 09:30**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1857949 [XXX/48108]
Blank Lab ID: 1720084

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232975001, 1232975002, 1232975003, 1232975004

Results by **AK102**

Parameter	Results	LOQ/CL	DL	LOD	Units
Diesel Range Organics	0.300U	0.600	0.200	0.300	mg/L
Surrogates					
5a Androstane (surr)	86.3	60-120		0	%

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: T.L
Analytical Date/Time: 7/5/2023 2:15:00PM

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 6/29/2023 5:00:00PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232975 [XXX48108]
Blank Spike Lab ID: 1720085
Date Analyzed: 07/05/2023 14:25

Spike Duplicate ID: LCSD for HBN 1232975 [XXX48108]
Spike Duplicate Lab ID: 1720086
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232975001, 1232975002, 1232975003, 1232975004

Results by **AK102**

	Blank Spike (mg/L)				Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)		Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	14.8	74	*	20	14.0	70	* (75-125)	5.50	(< 20)
Surrogates										
5a Androstane (surr)	0.4		93		0.4		84	(60-120)	9.60	

Batch Information

Analytical Batch: **XFC16552**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **T.L**

Prep Batch: **XXX48108**
Prep Method: **SW3520C**
Prep Date/Time: **06/29/2023 17:00**
Spike Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL

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200 West Potter Drive Anchorage, AK 95518
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Method Blank

Blank ID: MB for HBN 1857949 [XXX/48108]
Blank Lab ID: 1720084

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232975001, 1232975002, 1232975003, 1232975004

Results by **AK103**

Parameter	Results	LOQ/CL	DL	LOD	Units
Residual Range Organics	0.250U	0.500	0.200	0.250	mg/L
Surrogates					
n-Triacontane-d62 (surr)	101	60-120		0	%

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: T.L
Analytical Date/Time: 7/5/2023 2:15:00PM

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 6/29/2023 5:00:00PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232975 [XXX48108]
Blank Spike Lab ID: 1720085
Date Analyzed: 07/05/2023 14:25

Spike Duplicate ID: LCSD for HBN 1232975 [XXX48108]
Spike Duplicate Lab ID: 1720086
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232975001, 1232975002, 1232975003, 1232975004

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	16.3	82	20	14.7	74	(60-120)	10.30	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4		85	0.4		77	(60-120)	9.40	

Batch Information

Analytical Batch: **XFC16552**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **T.L**

Prep Batch: **XXX48108**
Prep Method: **SW3520C**
Prep Date/Time: **06/29/2023 17:00**
Spike Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL

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ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD

P#373673 QM

Laboratory:	SGS Anchorage		**COC ID:**	SCU-23B3			**Cooler Name:**	Honduras/ Indonesia			**Report To:**	Kelly Carson			
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring		**Contact:**	Kelly Carson			**Contact Email:**	kelly.carson@hilcorp.com			**Invoice To:**	HAK, ananderson@hilcorp.com			
											AFE Number:	235-02465.15.10.28			
Location ID	**Sample ID**	**Collection Date**	**Collection Time**	**Sampler**	**Matrix**	**QC Type**	**Qty**	**Sample Type**	**Container Type**	**Container Vol**	**Preservative**	**Method**	**TAT**	**Notes**	**Cooler**
MW-01	23B3-MW01-23	2023-06-20	1500	JB	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras (1)AC
MW-01	23B3-MW01-23	2023-06-20	1500	JB	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras (1)DE
MW-01	23B3-MW01-23	2023-06-20	1500	JB	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras (1)PG
MW-01	23B3-MW01Z-23	2023-06-20	1400	JB	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras (2)AC
MW-01	23B3-MW01Z-23	2023-06-20	1400	JB	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras (2)DE
MW-01	23B3-MW01Z-23	2023-06-20	1400	JB	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras (2)PG
MW-02	23B3-MW02-23	2023-06-20	1610	KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras (3)AC
MW-02	23B3-MW02-23	2023-06-20	1610	KT	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras (3)DE
MW-02	23B3-MW02-23	2023-06-20	1610	KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras (3)PG
MW-03	23B3-MW03-23	2023-06-20	1710	JB	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras (4)AC
MW-03	23B3-MW03-23	2023-06-20	1710	JB	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras (4)DE
MW-03	23B3-MW03-23	2023-06-20	1710	JB	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras (4)PG
	Trip blank														5 AC

Special Instuctions:
Deliverables: Level 2 PDF, EFWEDD, DataView

Sample Receipt:
Temperature Blank:
Custody Seals:

Cooler Temperature:

Relinquished By / Affiliation:
Nicole Morton / ALEUT
Signature / Printed Name / Affiliation — Date 6/21/2023 Time 1400

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Alexandra Cervas / SGS
Signature / Printed Name / Affiliation — Date 6/22/23 Time 1025

Indonesia: 1.2+0.5 = 1.7 CS: 1F1B

Honduras: 3.5+0.5 = 4.0 CS: 1F1B

1232975

ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD

DUPLICATE

Laboratory:	SGS Anchorage	COC ID:	SCU-23B3	Cooler Name:	Honduras/ Indonesia	Report To:	Kelly Carson
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring	Contact:	Kelly Carson	Contact Email:	kelly.carson@hilcorp.com	Invoice To:	HAK, ananderson@hilcorp.com
						AFE Number:	235-02465.15.10.28

Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes	Cooler
MW-01	23B3-MW01-23	2023-06-20	1500	JB	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-01	23B3-MW01-23	2023-06-20	1500	JB	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras
MW-01	23B3-MW01-23	2023-06-20	1500	JB	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras
MW-01	23B3-MW01Z-23	2023-06-20	1400	JB	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-01	23B3-MW01Z-23	2023-06-20	1400	JB	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras
MW-01	23B3-MW01Z-23	2023-06-20	1400	JB	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras
MW-02	23B3-MW02-23	2023-06-20	1610	KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-02	23B3-MW02-23	2023-06-20	1610	KT	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras
MW-02	23B3-MW02-23	2023-06-20	1610	KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras
MW-03	23B3-MW03-23	2023-06-20	1710	JB	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-03	23B3-MW03-23	2023-06-20	1710	JB	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Honduras
MW-03	23B3-MW03-23	2023-06-20	1710	JB	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Honduras

Special Instructions:
Deliverables: Level 2 PDF, EFWEDD, DataView

Sample Receipt:
Temperature Blank:
Custody Seals:

Cooler Temperature:

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation: ALEUT
Date: 6/21/2023 Time: 1400

Received By / Affiliation:
Signature / Printed Name / Affiliation:
Date: Time:

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation:
Date: Time:

Received By / Affiliation:
Signature / Printed Name / Affiliation: Alexandra Carnes SGS
Date: 10/12/23 Time: 1025

Indonesia: 1.4 DSS
CS: 1F 1B

Honduras: 3.5 DSS
CS: 1F 1B

List Number	Analytes
1	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
2	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, ethylene glycol
3	petroleum VOCs (including BTEX) and PAHs
4	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, tert-butylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
5	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene
6	ethylene glycol, 1,4-dioxane
7	DRO/RRO, petroleum VOCs (specific list for SCU 23B-03 and SCU 312-09), PAHs

1232975



Report naphthalene by SW8260 and SW8270 SIM for lists 1-5

Petroleum-related VOCs by SW8260D for List 3 (SRF TS sites):

1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (cumene)
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Petroleum VOCs by SW8260D for List 7 (SCU 23B-03 and SCU 312-09):

1,2,4-Trimethylbenzene
1,2-Dibromoethane
1,2-Dichloroethane
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (Cumene)
Methyl-t-butyl ether
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Please report m & p-xylenes and total xylenes for all samples requiring xylenes

SGS

SAMPLE RECEIPT FORM

1232975

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	(Yes)	No	N/A	
Was temperature between 0-6° C?	(Yes)	No	N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time*?	(Yes)	No	N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	(Yes)	No	N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	(Yes)	No	N/A	Attached
If rush was requested by the client, was the requested TAT approved?	Yes	No	(N/A)	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPDL Number provided?	Yes	No	(N/A)	*If "NO", contact client for information.*
Sample Login Completion				
Do ID's on sample containers match COC?	(Yes)	No	N/A	
If provided on containers, do dates/times collected match COC?	(Yes)	No	N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	(Yes)	No	N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? **See form F-083 "Sample Guide"*	(Yes)	No	N/A	*Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here:* *If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve.* *For all non-metals methods, inform Project Manager.*
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	(Yes)	No	N/A	Trip blank shared w/ other 2 WOs WO: 1232976 & WO: 1232977
Were all VOA vials free of headspace >6mm?	(Yes)	No	N/A	
Were all soil VOA samples received field extracted with Methanol?	Yes	No	(N/A)	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	Yes	No	(N/A)	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	Yes	No	(N/A)	
For Rush/Short Holding time, was the lab notified?	(Yes)	No	N/A	
For any question answered "NO", was the Project Manager notified?	Yes	No	(N/A)	PM Initials:
Was Peer Review of sample numbering/labelling completed?	(Yes)	No	N/A	Reviewer Initials:
Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:				


SGS

Container Id	Preservative
1232975001-A	HCL to pH < 2
1232975001-B	HCL to pH < 2
1232975001-C	HCL to pH < 2
1232975001-D	HCL to pH < 2

6/27/2023

Container Condition	Container Id
OK	
OK	
OK	
OK	

Container Id	Preservative
1232975001-E	HCL to pH < 2
1232975001-F	No Preservative Requir
1232975001-G	No Preservative Requir
1232975002-A	HCL to pH < 2

	Container Condition	Container Id
	OK	
ed	OK	
ed	OK	
	OK	

Container Id	Preservative
1232975002-B	HCL to pH < 2
1232975002-C	HCL to pH < 2
1232975002-D	HCL to pH < 2
1232975002-E	HCL to pH < 2

6/27/2023

Container Condition	Container Id
OK	
OK	
OK	
OK	

Container Id	Preservative
1232975002-F	No Preservative Requir
1232975002-G	No Preservative Requir
1232975003-A	HCL to pH < 2
1232975003-B	HCL to pH < 2

	Container Condition	Container Id
ed	OK	
ed	OK	
	OK	
	OK	

Container Id	Preservative
1232975003-C	HCL to pH < 2
1232975003-D	HCL to pH < 2
1232975003-E	HCL to pH < 2
1232975003-F	No Preservative Requir

Container Condition	Container Id
OK	
OK	
OK	
OK	

ed

Container Id	Preservative
1232975003-G	No Preservative Requir
1232975004-A	HCL to pH < 2
1232975004-B	HCL to pH < 2
1232975004-C	HCL to pH < 2

	Container Condition	Container Id
ed	OK	
	OK	
	OK	
	OK	

Container Id	Preservative
1232975004-D	HCL to pH < 2
1232975004-E	HCL to pH < 2
1232975004-F	No Preservative Requir
1232975004-G	No Preservative Requir

	Container Condition	Container Id
	OK	
	OK	
ed	OK	
ed	OK	

Container Id Preservative

Container Condition Glossary

Containers for bacteriological, low level

be assigned condition code OK unless e

OK - The container was received at an

Container Id	Preservative
BU - The container was received with h	
DM - The container was received dama	
FR - The container was received frozen	
IC - The container provided for microbi	
container and therefore was not suitab	

Container Id	Preservative
	NC- The container provided was not pr additional preservative added after coll PA - The container was received outsid was added upon receipt and the contai details on the amount and lot # of the

Container Id	Preservative

PH - The container was received outsid
was added upon receipt, but was insuff
requested. See the Sample Receipt For
QN - Insufficient sample quantity provi

Laboratory Report of Analysis

To: Hilcorp Alaska, LLC
3800 Centerpoint Drive Suite 417
Anchorage, AK 99503
(907)277-7297

Report Number: **1232976**

Client Project: **Hilcorp 2023 Kenai GW Monitori**

Dear Kelly Carson,

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 Justin 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.



Justin Nelson
2023.10.03
09:42:16 -08'00'

Justin Nelson Date
Project Manager
Justin.Nelson@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

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Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
SGS Project: **1232976**
Project Name/Site: **Hilcorp 2023 Kenai GW Monitori**
Project Contact: **Kelly Carson**

Refer to sample receipt form for information on sample condition.

SRF-TB03 (1232976004) TB

Revised Report - This report has been reissued to add compounds to the 8260 compound list.

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

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIM LV (PAH)				
1232976002	SRF39-TS39F-23	XMS13714	Benzo[b]Fluoranthene	BLC
1719420	MB for HBN 1857762 [XXX/48086]	XMS13714	1-Methylnaphthalene	BLC
1719420	MB for HBN 1857762 [XXX/48086]	XMS13714	Fluoranthene	BLC

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 10/03/2023 9:39:38AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. 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, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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
TNTC	Too Numerous To Count
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

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
SRF39-TS39CR-23	1232976001	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-TS39F-23	1232976002	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF39-TS39T-23	1232976003	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
SRF-TB03	1232976004	06/20/2023	06/27/2023	Water (Surface, Eff., Ground)
NA	1232976005	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV-Custom
SW8260D	Volatile Organic Compounds(W)Custom List

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

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Detectable Results Summary

Client Sample ID: **SRF39-TS39CR-23**
Lab Sample ID: 1232976001

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.151	ug/L
	Naphthalene	0.178	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	83.1	ug/L
	1,3,5-Trimethylbenzene	147	ug/L
	Benzene	9.17	ug/L
	Ethylbenzene	2.53	ug/L
	Naphthalene	3.48	ug/L
	o-Xylene	190	ug/L
	P & M -Xylene	84.9	ug/L
	Xylenes (total)	275	ug/L

Client Sample ID: **SRF39-TS39F-23**
Lab Sample ID: 1232976002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	25.0	ug/L
	2-Methylnaphthalene	23.8	ug/L
	Acenaphthene	0.321	ug/L
	Benzo(a)Anthracene	0.0432J	ug/L
	Benzo[b]Fluoranthene	0.0319J	ug/L
	Chrysene	0.0538	ug/L
	Fluoranthene	0.0404J	ug/L
	Fluorene	0.979	ug/L
	Naphthalene	49.4	ug/L
	Phenanthrene	0.779	ug/L
	Pyrene	0.0723	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	609	ug/L
	1,3,5-Trimethylbenzene	385	ug/L
	Benzene	13.4	ug/L
	Ethylbenzene	549	ug/L
	Isopropylbenzene (Cumene)	103	ug/L
	Naphthalene	127	ug/L
	o-Xylene	14.4	ug/L
	P & M -Xylene	1850	ug/L
	sec-Butylbenzene	6.51	ug/L
	tert-Butylbenzene	2.94	ug/L
	Toluene	0.524J	ug/L
	Xylenes (total)	1870	ug/L

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Detectable Results Summary

Client Sample ID: **SRF39-TS39T-23**
Lab Sample ID: 1232976003

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	2.62	ug/L
	Naphthalene	1.62	ug/L
Volatile GC/MS	1,2,4-Trimethylbenzene	6.12	ug/L
	1,3,5-Trimethylbenzene	7.13	ug/L
	Benzene	1.95	ug/L
	Ethylbenzene	24.4	ug/L
	Naphthalene	4.12	ug/L
	P & M -Xylene	2.14	ug/L
	Xylenes (total)	2.14J	ug/L

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Results of **SRF39-TS39CR-23**

Client Sample ID: **SRF39-TS39CR-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232976001
Lab Project ID: 1232976

Collection Date: 06/20/23 12:33
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9CR

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.151		0.0481	0.0144	0.0240	ug/L	1		07/06/23 17:47
Naphthalene	0.178		0.0962	0.0298	0.0481	ug/L	1		07/06/23 17:47
Surrogates									
2-Methylnaphthalene-d10 (surr)	42.8		38-100			%	1		07/06/23 17:47
Fluoranthene-d10 (surr)	63.1		30-111			%	1		07/06/23 17:47

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 17:47
Container ID: 1232976001-D

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:39:44AM

J flagging is activated

Results of **SRF39-TS39CR-23**

Client Sample ID: **SRF39-TS39CR-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232976001
Lab Project ID: 1232976

Collection Date: 06/20/23 12:33
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9CR

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	83.1		1.00	0.310	0.500	ug/L	1		07/01/23 21:24
1,3,5-Trimethylbenzene	147		1.00	0.310	0.500	ug/L	1		07/01/23 21:24
Benzene	9.17		0.400	0.120	0.200	ug/L	1		07/01/23 21:24
Ethylbenzene	2.53		1.00	0.310	0.500	ug/L	1		07/01/23 21:24
Naphthalene	3.48		1.00	0.310	0.500	ug/L	1		07/01/23 21:24
o-Xylene	190		1.00	0.310	0.500	ug/L	1		07/01/23 21:24
P & M -Xylene	84.9		2.00	0.620	1.00	ug/L	1		07/01/23 21:24
Xylenes (total)	275		3.00	1.00	1.50	ug/L	1		07/01/23 21:24
Surrogates									
1,2-Dichloroethane-D4 (surr)	96.3		81-118			%	1		07/01/23 21:24
4-Bromofluorobenzene (surr)	102		85-114			%	1		07/01/23 21:24
Toluene-d8 (surr)	104		89-112			%	1		07/01/23 21:24

Batch Information

Analytical Batch: VMS22537
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 21:24
Container ID: 1232976001-A

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **SRF39-TS39F-23**

Client Sample ID: **SRF39-TS39F-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232976002
Lab Project ID: 1232976

Collection Date: 06/20/23 18:04
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	25.0		0.250	0.0750	0.125	ug/L	5		07/15/23 01:36
2-Methylnaphthalene	23.8		0.250	0.0750	0.125	ug/L	5		07/15/23 01:36
Acenaphthene	0.321		0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Acenaphthylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Anthracene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Benzo(a)Anthracene	0.0432	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/06/23 18:08
Benzo[b]Fluoranthene	0.0319	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Chrysene	0.0538		0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	0.0100	ug/L	1		07/06/23 18:08
Fluoranthene	0.0404	J	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Fluorene	0.979		0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Naphthalene	49.4		0.500	0.155	0.250	ug/L	5		07/15/23 01:36
Phenanthrene	0.779		0.100	0.0310	0.0500	ug/L	1		07/06/23 18:08
Pyrene	0.0723		0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:08
Surrogates									
2-Methylnaphthalene-d10 (surr)	42.9		38-100			%	1		07/06/23 18:08
Fluoranthene-d10 (surr)	68.2		30-111			%	1		07/06/23 18:08

Batch Information

Analytical Batch: XMS13734
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/15/23 01:36
Container ID: 1232976002-D

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 18:08
Container ID: 1232976002-D

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:39:44AM

J flagging is activated

Results of **SRF39-TS39F-23**

Client Sample ID: **SRF39-TS39F-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232976002
Lab Project ID: 1232976

Collection Date: 06/20/23 18:04
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	609		10.0	3.10	5.00	ug/L	10		07/03/23 21:32
1,3,5-Trimethylbenzene	385		10.0	3.10	5.00	ug/L	10		07/03/23 21:32
Benzene	13.4		0.400	0.120	0.200	ug/L	1		07/01/23 21:39
Ethylbenzene	549		10.0	3.10	5.00	ug/L	10		07/03/23 21:32
Isopropylbenzene (Cumene)	103		1.00	0.310	0.500	ug/L	1		07/01/23 21:39
Naphthalene	127		1.00	0.310	0.500	ug/L	1		07/01/23 21:39
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:39
o-Xylene	14.4		10.0	3.10	5.00	ug/L	10		07/03/23 21:32
P & M -Xylene	1850		20.0	6.20	10.0	ug/L	10		07/03/23 21:32
sec-Butylbenzene	6.51		1.00	0.310	0.500	ug/L	1		07/01/23 21:39
tert-Butylbenzene	2.94		1.00	0.310	0.500	ug/L	1		07/01/23 21:39
Toluene	0.524	J	1.00	0.310	0.500	ug/L	1		07/01/23 21:39
Xylenes (total)	1870		30.0	10.0	15.0	ug/L	10		07/03/23 21:32
Surrogates									
1,2-Dichloroethane-D4 (surr)	94		81-118			%	1		07/01/23 21:39
4-Bromofluorobenzene (surr)	102		85-114			%	1		07/01/23 21:39
Toluene-d8 (surr)	105		89-112			%	1		07/01/23 21:39

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/03/23 21:32
Container ID: 1232976002-B

Prep Batch: VXX40083
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22537
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 21:39
Container ID: 1232976002-A

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:39:44AM

J flagging is activated

Results of **SRF39-TS39T-23**

Client Sample ID: **SRF39-TS39T-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232976003
Lab Project ID: 1232976

Collection Date: 06/20/23 10:38
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9T

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	2.62		0.0500	0.0150	0.0250	ug/L	1		07/06/23 18:28
Naphthalene	1.62		0.100	0.0310	0.0500	ug/L	1		07/06/23 18:28
Surrogates									
2-Methylnaphthalene-d10 (surr)	77.9		38-100			%	1		07/06/23 18:28
Fluoranthene-d10 (surr)	88.1		30-111			%	1		07/06/23 18:28

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 18:28
Container ID: 1232976003-D

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Results of **SRF39-TS39T-23**

Client Sample ID: **SRF39-TS39T-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232976003
Lab Project ID: 1232976

Collection Date: 06/20/23 10:38
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TS3-9T

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	6.12		1.00	0.310	0.500	ug/L	1		07/03/23 19:49
1,3,5-Trimethylbenzene	7.13		1.00	0.310	0.500	ug/L	1		07/03/23 19:49
Benzene	1.95		0.400	0.120	0.200	ug/L	1		07/01/23 21:54
Ethylbenzene	24.4		1.00	0.310	0.500	ug/L	1		07/01/23 21:54
Naphthalene	4.12		1.00	0.310	0.500	ug/L	1		07/03/23 19:49
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:49
P & M -Xylene	2.14		2.00	0.620	1.00	ug/L	1		07/03/23 19:49
Xylenes (total)	2.14	J	3.00	1.00	1.50	ug/L	1		07/03/23 19:49
Surrogates									
1,2-Dichloroethane-D4 (surr)	93		81-118			%	1		07/01/23 21:54
4-Bromofluorobenzene (surr)	102		85-114			%	1		07/01/23 21:54
Toluene-d8 (surr)	108		89-112			%	1		07/01/23 21:54

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/03/23 19:49
Container ID: 1232976003-B

Prep Batch: VXX40083
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS22537
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 21:54
Container ID: 1232976003-A

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:39:44AM

J flagging is activated

Results of **SRF-TB03**

Client Sample ID: **SRF-TB03**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232976004
Lab Project ID: 1232976

Collection Date: 06/20/23 08:00
Received Date: 06/27/23 05:20
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: TB03

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		07/03/23 18:49
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		07/03/23 18:49
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		07/03/23 18:49
Surrogates									
1,2-Dichloroethane-D4 (surr)	110		81-118			%	1		07/03/23 18:49
4-Bromofluorobenzene (surr)	99.2		85-114			%	1		07/03/23 18:49
Toluene-d8 (surr)	97.3		89-112			%	1		07/03/23 18:49

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/03/23 18:49
Container ID: 1232976004-A

Prep Batch: VXX40083
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:39:44AM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1858279 [VXX/40082]
Blank Lab ID: 1720855

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232976001, 1232976002, 1232976003

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	102	81-118		0	%
4-Bromofluorobenzene (surr)	102	85-114		0	%
Toluene-d8 (surr)	105	89-112		0	%

Batch Information

Analytical Batch: VMS22537
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: PHK
Analytical Date/Time: 7/1/2023 2:27:00PM

Prep Batch: VXX40082
Prep Method: SW5030B
Prep Date/Time: 7/1/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232976 [VXX40082]
Blank Spike Lab ID: 1720856
Date Analyzed: 07/01/2023 14:42

Spike Duplicate ID: LCSD for HBN 1232976 [VXX40082]
Spike Duplicate Lab ID: 1720857
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232976001, 1232976002, 1232976003

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	33.5	112	30	32.9	110	(79-124)	1.70	(< 20)
1,3,5-Trimethylbenzene	30	33.5	112	30	33.2	111	(75-124)	0.78	(< 20)
Benzene	30	29.0	97	30	28.5	95	(79-120)	1.80	(< 20)
Ethylbenzene	30	32.4	108	30	31.4	105	(79-121)	3.00	(< 20)
Isopropylbenzene (Cumene)	30	32.1	107	30	31.1	104	(72-131)	3.20	(< 20)
Naphthalene	30	33.5	112	30	35.6	119	(61-128)	5.90	(< 20)
n-Butylbenzene	30	33.1	110	30	32.5	108	(75-128)	1.80	(< 20)
o-Xylene	30	32.2	107	30	31.0	103	(78-122)	3.60	(< 20)
P & M -Xylene	60	64.7	108	60	62.9	105	(80-121)	2.90	(< 20)
sec-Butylbenzene	30	32.8	109	30	32.3	108	(77-126)	1.60	(< 20)
tert-Butylbenzene	30	32.2	107	30	31.9	106	(78-124)	0.81	(< 20)
Toluene	30	30.4	101	30	30.0	100	(80-121)	1.20	(< 20)
Xylenes (total)	90	96.9	108	90	93.9	104	(79-121)	3.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		95	30		95	(81-118)	0.81	
4-Bromofluorobenzene (surr)	30		100	30		99	(85-114)	0.53	
Toluene-d8 (surr)	30		105	30		105	(89-112)	0.09	

Batch Information

Analytical Batch: **VMS22537**
Analytical Method: **SW8260D**
Instrument: **Agilent 7890-75MS**
Analyst: **PHK**

Prep Batch: **VXX40082**
Prep Method: **SW5030B**
Prep Date/Time: **07/01/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:39:50AM

Method Blank

Blank ID: MB for HBN 1858283 [VXX/40083]
Blank Lab ID: 1720861

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232976002, 1232976003, 1232976004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	110	81-118		0	%
4-Bromofluorobenzene (surr)	98.3	85-114		0	%
Toluene-d8 (surr)	97.2	89-112		0	%

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 7/3/2023 4:21:00PM

Prep Batch: VXX40083
Prep Method: SW5030B
Prep Date/Time: 7/3/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232976 [VXX40083]
Blank Spike Lab ID: 1720862
Date Analyzed: 07/03/2023 16:36

Spike Duplicate ID: LCSD for HBN 1232976 [VXX40083]
Spike Duplicate Lab ID: 1720863
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232976002, 1232976003, 1232976004

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	29.4	98	30	28.2	94	(79-124)	4.10	(< 20)
1,3,5-Trimethylbenzene	30	29.3	98	30	28.1	94	(75-124)	4.20	(< 20)
Benzene	30	31.3	104	30	30.9	103	(79-120)	1.20	(< 20)
Ethylbenzene	30	30.8	103	30	30.3	101	(79-121)	1.80	(< 20)
Isopropylbenzene (Cumene)	30	28.2	94	30	27.5	92	(72-131)	2.60	(< 20)
Naphthalene	30	28.8	96	30	29.1	97	(61-128)	1.00	(< 20)
n-Butylbenzene	30	28.0	93	30	27.3	91	(75-128)	2.70	(< 20)
o-Xylene	30	30.8	103	30	30.2	101	(78-122)	1.90	(< 20)
P & M -Xylene	60	62.4	104	60	60.4	101	(80-121)	3.30	(< 20)
sec-Butylbenzene	30	28.6	95	30	27.6	92	(77-126)	3.70	(< 20)
tert-Butylbenzene	30	28.8	96	30	27.8	93	(78-124)	3.70	(< 20)
Toluene	30	30.8	103	30	30.2	101	(80-121)	1.80	(< 20)
Xylenes (total)	90	93.2	104	90	90.6	101	(79-121)	2.80	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		97	30		99	(81-118)	1.60	
4-Bromofluorobenzene (surr)	30		101	30		101	(85-114)	0.52	
Toluene-d8 (surr)	30		100	30		100	(89-112)	0.28	

Batch Information

Analytical Batch: **VMS22538**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **NRB**

Prep Batch: **VXX40083**
Prep Method: **SW5030B**
Prep Date/Time: **07/03/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:39:54AM

Method Blank

Blank ID: MB for HBN 1857762 [XXX/48086]
Blank Lab ID: 1719420

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232976001, 1232976002, 1232976003

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	LOD	Units
1-Methylnaphthalene	0.0185J	0.0500	0.0150	0.0250	ug/L
2-Methylnaphthalene	0.0225J	0.0500	0.0150	0.0250	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	0.0100	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Chrysene	0.0250U	0.0500	0.0150	0.0250	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	0.0100	ug/L
Fluoranthene	0.0227J	0.0500	0.0150	0.0250	ug/L
Fluorene	0.0250U	0.0500	0.0150	0.0250	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Naphthalene	0.0500U	0.100	0.0310	0.0500	ug/L
Phenanthrene	0.0406J	0.100	0.0310	0.0500	ug/L
Pyrene	0.0157J	0.0500	0.0150	0.0250	ug/L
Surrogates					
2-Methylnaphthalene-d10 (surr)	72.2	38-100		0	%
Fluoranthene-d10 (surr)	83.5	30-111		0	%

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/6/2023 2:02:00PM

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 6/27/2023 9:30:00AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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

Member of SGS Group

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232976 [XXX48086]
Blank Spike Lab ID: 1719421
Date Analyzed: 07/06/2023 14:22

Spike Duplicate ID: LCSD for HBN 1232976 [XXX48086]
Spike Duplicate Lab ID: 1719422
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232976001, 1232976002, 1232976003

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.47	73	2	1.35	67	(41-115)	8.50	(< 20)
2-Methylnaphthalene	2	1.47	74	2	1.34	67	(39-114)	9.30	(< 20)
Acenaphthene	2	1.62	81	2	1.51	76	(48-114)	6.50	(< 20)
Acenaphthylene	2	1.64	82	2	1.54	77	(35-121)	6.70	(< 20)
Anthracene	2	1.73	87	2	1.61	81	(53-119)	7.50	(< 20)
Benzo(a)Anthracene	2	1.64	82	2	1.57	78	(59-120)	4.80	(< 20)
Benzo[a]pyrene	2	1.69	85	2	1.60	80	(53-120)	5.20	(< 20)
Benzo[b]Fluoranthene	2	1.69	85	2	1.62	81	(53-126)	4.10	(< 20)
Benzo[g,h,i]perylene	2	1.78	89	2	1.69	85	(44-128)	5.00	(< 20)
Benzo[k]fluoranthene	2	1.76	88	2	1.63	82	(54-125)	7.20	(< 20)
Chrysene	2	1.74	87	2	1.65	83	(57-120)	5.40	(< 20)
Dibenzo[a,h]anthracene	2	1.75	88	2	1.64	82	(44-131)	6.60	(< 20)
Fluoranthene	2	1.77	89	2	1.68	84	(58-120)	5.60	(< 20)
Fluorene	2	1.72	86	2	1.63	81	(50-118)	5.60	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.75	87	2	1.65	83	(48-130)	5.60	(< 20)
Naphthalene	2	1.52	76	2	1.34	67	(43-114)	12.30	(< 20)
Phenanthrene	2	1.73	86	2	1.62	81	(53-115)	6.40	(< 20)
Pyrene	2	1.76	88	2	1.67	84	(53-121)	4.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		73	2		68	(38-100)	7.00	
Fluoranthene-d10 (surr)	2		86	2		84	(30-111)	1.70	

Batch Information

Analytical Batch: **XMS13714**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **HMW**

Prep Batch: **XXX48086**
Prep Method: **SW3535A**
Prep Date/Time: **06/27/2023 09:30**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 10/03/2023 9:39:59AM

CHAIN OF CUSTODY RECORD

P#373673 QV

Laboratory:	SGS Anchorage	COC ID:	SRF-TS39	Cooler Names:	Honduras / Indonesia	Report To:	Kelly Carson
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring	Contact:	Kelly Carson	Contact Email:	kelly.carson@hilcorp.com	Invoice To:	HAK, ananderson@hilcorp.com
						AFE Number:	235-02465.15.10.28

Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes	Cooler
TS3-9CR	SRF39-TS39CR-23	2023-06-20	1233	KP,BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 5	Honduras 1AC
TS3-9CR	SRF39-TS39CR-23	2023-06-20	1233	KP,BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 5	Indonesia 1QE
TS3-9F	SRF39-TS39F-23	2023-06-20	1804	KP,BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3, sheen on surface	Honduras 2AC
TS3-9F	SRF39-TS39F-23	2023-06-20	1804	KP,BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3, sheen on surface	Indonesia 2QE
TS3-9T	SRF39-TS39T-23	2023-06-20	1038	BR,KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 5	Honduras 3AC
TS3-9T	SRF39-TS39T-23	2023-06-20	1038	BR,KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 5	Indonesia 3QE
TB03	SRF-TB03	2023-06-20	0800	JB,KT,KP,BR	GW	TB	3	NA	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30		Honduras 4AC

Special Instuctions:
Deliverables: Level 2 PDF, EFWEDD, DataView

Sample Receipt:
Temperature Blank:
Custody Seals:
Cooler Temperature:

Relinquished By / Affiliation:
Nicole Mathis / AKEUT
Signature / Printed Name / Affiliation — Date 6/21/2023 Time 1400

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Alexandra Carnes
Signature / Printed Name / Affiliation — Date 6/22/23 Time 1025

Indonesia: 1.4 0SS
CS: 1F 1B

Honduras: 3.5 0SS
CS: 1F 1B

1232976

DUPLICATE

Revised Report - Revision 1

ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD

Laboratory:	SGS Anchorage		COC ID:	SRF-TS39				Cooler Names:	Honduras / Indonesia			Report To:		Kelly Carson	
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring		Contact:	Kelly Carson				Contact Email:	kelly.carson@hilcorp.com			Invoice To:		HAK, ananderson@hilcorp.com	
												AFE Number:		235-02465.15.10.28	
Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes	Cooler
TS3-9CR	SRF39-TS39CR-23	2023-06-20	1233	KP,BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 5	Honduras
TS3-9CR	SRF39-TS39CR-23	2023-06-20	1233	KP,BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 5	Indonesia
TS3-9F	SRF39-TS39F-23	2023-06-20	1804	KP,BR	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 3, sheen on surface	Honduras
TS3-9F	SRF39-TS39F-23	2023-06-20	1804	KP,BR	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 3, sheen on surface	Indonesia
TS3-9T	SRF39-TS39T-23	2023-06-20	1038	BR,KP	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 5	Honduras
TS3-9T	SRF39-TS39T-23	2023-06-20	1038	BR,KP	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D SIM	30	Analytical List 5	Indonesia
TB03	SRF-TB03	2023-06-20	0800	JB,KT,KP,BR	GW	TB	3	NA	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30		Honduras

Special Instructions:
Deliverables: Level 2 PDF, EFWEDD, DataView

Sample Receipt:
Temperature Blank:
Custody Seals:
Cooler Temperature:

Relinquished By / Affiliation:
Nicole Mathis / AKEUT
Signature / Printed Name / Affiliation — Date 6/21/2023 Time 1600

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Alexandra Carnes SGS
Signature / Printed Name / Affiliation — Date 6/22/23 Time 1025

Indonesia: 1.4/055
CS: 1F1B

Honduras: 3.5 DSC
CS: 1F1B

1232976



List Number	Analytes
1	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
2	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, ethylene glycol
3	petroleum VOCs (including BTEX) and PAHs
4	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, tert-butylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
5	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene
6	ethylene glycol, 1,4-dioxane
7	DRO/RRO, petroleum VOCs (specific list for SCU 23B-03 and SCU 312-09), PAHs

Report naphthalene by SW8260 and SW8270 SIM for lists 1-5

Petroleum-related VOCs by SW8260D for List 3 (SRF TS sites):

1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (cumene)
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Petroleum VOCs by SW8260D for List 7 (SCU 23B-03 and SCU 312-09):

1,2,4-Trimethylbenzene
1,2-Dibromoethane
1,2-Dichloroethane
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (Cumene)
Methyl-t-butyl ether
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Please report m & p-xylenes and total xylenes for all samples requiring xylenes

1232976



SGS

SAMPLE RECEIPT FORM

SGS WO# 1232976

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	(Yes)	No	N/A	
Was temperature between 0-6° C?	(Yes)	No	N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time*?	(Yes)	No	N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	(Yes)	No	N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	(Yes)	No	N/A	Attached
If rush was requested by the client, was the requested TAT approved?	Yes	No	(N/A)	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPDL Number provided?	Yes	No	(N/A)	*If "NO", contact client for information.*
Sample Login Completion				
Do ID's on sample containers match COC?	(Yes)	No	N/A	
If provided on containers, do dates/times collected match COC?	(Yes)	No	N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	(Yes)	No	N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? **See form F-083 "Sample Guide"*	(Yes)	No	N/A	*Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here: If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve. For all non-metals methods, inform Project Manager.*
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	(Yes)	No	N/A	Trip blanks shared w/ Wo:1732975 & Wo:1732977
Were all VOA vials free of headspace >6mm?	Yes	(No)	N/A	Sample 3BC & 4BC have head space
Were all soil VOA samples received field extracted with Methanol?	Yes	No	(N/A)	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	Yes	No	(N/A)	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	Yes	No	(N/A)	
For Rush/Short Holding time, was the lab notified?	(Yes)	No	N/A	Short hold
For any question answered "NO", was the Project Manager notified?	Yes	No	(N/A)	PM Initials:
Was Peer Review of sample numbering/labelling completed?	(Yes)	No	N/A	Reviewer Initials:
Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:				

Container Id	Preservative
1232976001-A	HCL to pH < 2
1232976001-B	HCL to pH < 2
1232976001-C	HCL to pH < 2
1232976001-D	No Preservative Requir

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6/27/2023

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Container Condition	Container Id
OK	
OK	
OK	
OK	

ed

Revised Report - Revision 1

Container Id	Preservative
1232976001-E	No Preservative Requir
1232976002-A	HCL to pH < 2
1232976002-B	HCL to pH < 2
1232976002-C	HCL to pH < 2

	Container Condition	Container Id
ed	OK	
	OK	
	OK	
	OK	

Container Id	Preservative
1232976002-D	No Preservative Requir
1232976002-E	No Preservative Requir
1232976003-A	HCL to pH < 2
1232976003-B	HCL to pH < 2

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	Container Condition	Container Id
ed	OK	
ed	OK	
	OK	
	OK	

Container Id	Preservative
1232976003-C	HCL to pH < 2
1232976003-D	No Preservative Requir
1232976003-E	No Preservative Requir
1232976004-A	HCL to pH < 2

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	Container Condition	Container Id
	OK	
ed	OK	
ed	OK	
	OK	

Container Id	Preservative
1232976004-B	HCL to pH < 2
1232976004-C	HCL to pH < 2
1232976005-A	HCL to pH < 2
1232976005-B	HCL to pH < 2

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6/27/2023

Container Condition	Container Id
BU	
BU	
OK	
BU	

Container Id	Preservative
1232976005-C	HCL to pH < 2

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Container Condition	Container Id
BU	

Container Id Preservative

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Container Condition Glossary

Containers for bacteriological, low level

be assigned condition code OK unless e

OK - The container was received at an

BU - The container was received with h

DM - The container was received dama

FR - The container was received frozen

IC - The container provided for microbi

container and therefore was not suitab

Container Id Preservative

Revised Report - Revision 1

NC- The container provided was not pr
additional preservative added after coll
PA - The container was received outsid
was added upon receipt and the contai
details on the amount and lot # of the

PH - The container was received outsid
was added upon receipt, but was insuff
requested. See the Sample Receipt For
QN - Insufficient sample quantity provi

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Laboratory Report of Analysis

To: Hilcorp Alaska, LLC
3800 Centerpoint Drive Suite 417
Anchorage, AK 99503
(907)277-7297

Report Number: **1232977**

Client Project: **Hilcorp 2023 Kenai GW Monitori**

Dear Kelly Carson,

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 Justin 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.

Justin Nelson
2024.04.30
10:59:54 -08'00'

Justin Nelson Date
Project Manager
Justin.Nelson@sgs.com

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Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
SGS Project: **1232977**
Project Name/Site: **Hilcorp 2023 Kenai GW Monitori**
Project Contact: **Kelly Carson**

Refer to sample receipt form for information on sample condition.

31209-MW01-23 (1232977001) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 does not meet QC criteria. Sample was re-extracted outside of old time and results confirmed. In hold data is reported.
AK102/103 - LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside of hold-time and results confirmed. In-hold data is reported.
AK102/103 - Surrogate recoveries for 5a-androstane and n-triacontane do not meet QC criteria due to laboratory error.

31209-MW02-23 (1232977002) PS

AK102/103 - LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside of hold-time and results confirmed. In-hold data is reported.
AK102/103 - Surrogate recoveries for 5a-androstane and n-triacontane do not meet QC criteria due to laboratory error.

31209-MW-03-23 (1232977003) PS

AK102/103 - LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside of hold-time and results confirmed. In-hold data is reported.

31209-MW-03-23(1232977003BMS) (1232977004) BMS

8270D SIM - PAH BMS/BMSD recoveries for several analytes do not meet QC criteria. Refer to LCS/LCSD for accuracy requirements.
AK102/103 - LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside of hold-time and results confirmed. In-hold data is reported.

31209-MW-03-23(1232977003BMSD) (1232977005) BMSD

8270D SIM - PAH BMS/BMSD recoveries for several analytes do not meet QC criteria. Refer to LCS/LCSD for accuracy requirements.
AK102/103 - LCSD recovery for DRO did not meet QC criteria. Sample was re-extracted outside of hold-time and results confirmed. In-hold data is reported.
AK102 - BMSD recovery for DRO does not meet QC criteria.

LCS for HBN 1857949 [XXX/48108 (1720085) LCS

AK102 - LCS recovery for DRO does not meet QC criteria.

LCSD for HBN 1857949 [XXX/4810 (1720086) LCSD

AK102 - LCSD recovery for DRO does not meet QC criteria.

MB for HBN 1858239 [VXX/40078] (1720728) MB

8260D - Surrogate recovery for 1,2-Dichlorethane-D4 does not meet QC criteria. Surrogate recovery was biased high.

Revised Report - Revision 2 - Signature and pagination has been added. No data has changed.

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIM LV (PAH)				
1719420	MB for HBN 1857762 [XXX/48086]	XMS13714	1-Methylnaphthalene	BLC
1719420	MB for HBN 1857762 [XXX/48086]	XMS13714	Fluoranthene	BLC

Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

Print Date: 10/03/2023 9:48:58AM

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. 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, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. 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
TNTC	Too Numerous To Count
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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
31209-MW01-23	1232977001	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
31209-MW02-23	1232977002	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
31209-MW-03-23	1232977003	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
31209-MW-03-23(1232977003BM	1232977004	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
31209-MW-03-23(1232977003BM	1232977005	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)
TB-03	1232977006	06/20/2023	06/22/2023	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
SW8260D	Volatile Organic Compounds (W) FULL
SW8260D	Volatile Organic Compounds(W)Custom List

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Detectable Results Summary

Client Sample ID: **31209-MW01-23**
Lab Sample ID: 1232977001
Polynuclear Aromatics GC/MS

Parameter	Result	Units
1-Methylnaphthalene	0.0161J	ug/L
2-Methylnaphthalene	0.0206J	ug/L
Benzo(a)Anthracene	0.0219J	ug/L
Benzo[a]pyrene	0.0190J	ug/L
Benzo[b]Fluoranthene	0.0394J	ug/L
Benzo[g,h,i]perylene	0.0516J	ug/L
Benzo[k]fluoranthene	0.0340J	ug/L
Chrysene	0.0225J	ug/L
Dibenzo[a,h]anthracene	0.0570	ug/L
Indeno[1,2,3-c,d] pyrene	0.0565	ug/L

Client Sample ID: **31209-MW02-23**
Lab Sample ID: 1232977002
Polynuclear Aromatics GC/MS

Parameter	Result	Units
1-Methylnaphthalene	0.0196J	ug/L
2-Methylnaphthalene	0.0249J	ug/L
Phenanthrene	0.0478J	ug/L

Client Sample ID: **31209-MW-03-23**
Lab Sample ID: 1232977003
Polynuclear Aromatics GC/MS

Parameter	Result	Units
1-Methylnaphthalene	0.0174J	ug/L
2-Methylnaphthalene	0.0217J	ug/L
Benzo(a)Anthracene	0.0461J	ug/L
Benzo[a]pyrene	0.235	ug/L
Benzo[b]Fluoranthene	0.197	ug/L
Benzo[g,h,i]perylene	1.84	ug/L
Benzo[k]fluoranthene	0.520	ug/L
Chrysene	0.0949	ug/L
Dibenzo[a,h]anthracene	2.10	ug/L
Fluoranthene	0.0185J	ug/L
Indeno[1,2,3-c,d] pyrene	1.41	ug/L
Phenanthrene	0.0494J	ug/L

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Results of **31209-MW01-23**

Client Sample ID: **31209-MW01-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977001
Lab Project ID: 1232977

Collection Date: 06/20/23 12:30
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual		LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0161	J		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
2-Methylnaphthalene	0.0206	J		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Acenaphthene	0.0261	U		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Acenaphthylene	0.0261	U		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Anthracene	0.0261	U		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Benzo(a)Anthracene	0.0219	J		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Benzo[a]pyrene	0.0190	J		0.0208	0.00646	0.0104	ug/L	1		07/06/23 18:49
Benzo[b]Fluoranthene	0.0394	J		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Benzo[g,h,i]perylene	0.0516	J		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Benzo[k]fluoranthene	0.0340	J		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Chrysene	0.0225	J		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Dibenzo[a,h]anthracene	0.0570			0.0208	0.00646	0.0104	ug/L	1		07/06/23 18:49
Fluoranthene	0.0261	U		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Fluorene	0.0261	U		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Indeno[1,2,3-c,d] pyrene	0.0565			0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Naphthalene	0.0520	U		0.104	0.0323	0.0520	ug/L	1		07/06/23 18:49
Phenanthrene	0.0520	U		0.104	0.0323	0.0520	ug/L	1		07/06/23 18:49
Pyrene	0.0261	U		0.0521	0.0156	0.0261	ug/L	1		07/06/23 18:49
Surrogates										
2-Methylnaphthalene-d10 (surr)	28.1		*	38-100			%	1		07/06/23 18:49
Fluoranthene-d10 (surr)	35.1			30-111			%	1		07/06/23 18:49

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 18:49
Container ID: 1232977001-F

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:49:04AM

J flagging is activated

Results of **31209-MW01-23**

Client Sample ID: **31209-MW01-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977001
Lab Project ID: 1232977

Collection Date: 06/20/23 12:30
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual		LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.306	U		0.612	0.204	0.306	mg/L	1		07/05/23 17:03
Surrogates										
5a Androstane (surr)	-.87		*	50-150			%	1		07/05/23 17:03

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 07/05/23 17:03
Container ID: 1232977001-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual		LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.255	U		0.510	0.204	0.255	mg/L	1		07/05/23 17:03
Surrogates										
n-Triacontane-d62 (surr)	0		*	50-150			%	1		07/05/23 17:03

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Analyst: T.L
Analytical Date/Time: 07/05/23 17:03
Container ID: 1232977001-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Results of **31209-MW01-23**

Client Sample ID: **31209-MW01-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977001
Lab Project ID: 1232977

Collection Date: 06/20/23 12:30
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-01

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/01/23 21:32
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/01/23 21:32
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		07/01/23 21:32
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/01/23 21:32
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		07/01/23 21:32
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:32
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		07/01/23 21:32
Surrogates									
1,2-Dichloroethane-D4 (surr)	109		81-118			%	1		07/01/23 21:32
4-Bromofluorobenzene (surr)	101		85-114			%	1		07/01/23 21:32
Toluene-d8 (surr)	98.6		89-112			%	1		07/01/23 21:32

Batch Information

Analytical Batch: VMS22534
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 21:32
Container ID: 1232977001-A

Prep Batch: VXX40078
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **31209-MW02-23**

Client Sample ID: **31209-MW02-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977002
Lab Project ID: 1232977

Collection Date: 06/20/23 11:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-02

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0196	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
2-Methylnaphthalene	0.0249	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Acenaphthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Acenaphthylene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Anthracene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Benzo(a)Anthracene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Benzo[a]pyrene	0.0107	U	0.0213	0.00660	0.0107	ug/L	1		07/06/23 19:10
Benzo[b]Fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Benzo[g,h,i]perylene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Benzo[k]fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Chrysene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Dibenzo[a,h]anthracene	0.0107	U	0.0213	0.00660	0.0107	ug/L	1		07/06/23 19:10
Fluoranthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Fluorene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Indeno[1,2,3-c,d] pyrene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Naphthalene	0.0530	U	0.106	0.0330	0.0530	ug/L	1		07/06/23 19:10
Phenanthrene	0.0478	J	0.106	0.0330	0.0530	ug/L	1		07/06/23 19:10
Pyrene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:10
Surrogates									
2-Methylnaphthalene-d10 (surr)	62.4		38-100			%	1		07/06/23 19:10
Fluoranthene-d10 (surr)	82.5		30-111			%	1		07/06/23 19:10

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 19:10
Container ID: 1232977002-F

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:49:04AM

J flagging is activated

Results of **31209-MW02-23**

Client Sample ID: **31209-MW02-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977002
Lab Project ID: 1232977

Collection Date: 06/20/23 11:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-02

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.326	U	0.652	0.217	0.326	mg/L	1		07/05/23 17:16
Surrogates									
5a Androstane (surr)	27.3	*	50-150			%	1		07/05/23 17:16

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 07/05/23 17:16
Container ID: 1232977002-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.272	U	0.543	0.217	0.272	mg/L	1		07/05/23 17:16
Surrogates									
n-Triacontane-d62 (surr)	33.4	*	50-150			%	1		07/05/23 17:16

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Analyst: T.L
Analytical Date/Time: 07/05/23 17:16
Container ID: 1232977002-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:49:04AM

J flagging is activated

Results of **31209-MW02-23**

Client Sample ID: **31209-MW02-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977002
Lab Project ID: 1232977

Collection Date: 06/20/23 11:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-02

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/01/23 21:47
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/01/23 21:47
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		07/01/23 21:47
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/01/23 21:47
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		07/01/23 21:47
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/01/23 21:47
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		07/01/23 21:47
Surrogates									
1,2-Dichloroethane-D4 (surr)	112		81-118			%	1		07/01/23 21:47
4-Bromofluorobenzene (surr)	101		85-114			%	1		07/01/23 21:47
Toluene-d8 (surr)	96.5		89-112			%	1		07/01/23 21:47

Batch Information

Analytical Batch: VMS22534
Analytical Method: SW8260D
Analyst: PHK
Analytical Date/Time: 07/01/23 21:47
Container ID: 1232977002-A

Prep Batch: VXX40078
Prep Method: SW5030B
Prep Date/Time: 07/01/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **31209-MW-03-23**

Client Sample ID: **31209-MW-03-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977003
Lab Project ID: 1232977

Collection Date: 06/20/23 12:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-03

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0174	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
2-Methylnaphthalene	0.0217	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Acenaphthene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Acenaphthylene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Anthracene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Benzo(a)Anthracene	0.0461	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Benzo[a]pyrene	0.235		0.0213	0.00660	0.0107	ug/L	1		07/06/23 19:30
Benzo[b]Fluoranthene	0.197		0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Benzo[g,h,i]perylene	1.84		0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Benzo[k]fluoranthene	0.520		0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Chrysene	0.0949		0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Dibenzo[a,h]anthracene	2.10		0.0213	0.00660	0.0107	ug/L	1		07/06/23 19:30
Fluoranthene	0.0185	J	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Fluorene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Indeno[1,2,3-c,d] pyrene	1.41		0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Naphthalene	0.0530	U	0.106	0.0330	0.0530	ug/L	1		07/06/23 19:30
Phenanthrene	0.0494	J	0.106	0.0330	0.0530	ug/L	1		07/06/23 19:30
Pyrene	0.0266	U	0.0532	0.0160	0.0266	ug/L	1		07/06/23 19:30
Surrogates									
2-Methylnaphthalene-d10 (surr)	63.7		38-100			%	1		07/06/23 19:30
Fluoranthene-d10 (surr)	81.4		30-111			%	1		07/06/23 19:30

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Analyst: HMW
Analytical Date/Time: 07/06/23 19:30
Container ID: 1232977003-F

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 06/27/23 09:30
Prep Initial Wt./Vol.: 235 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:49:04AM

J flagging is activated

Results of **31209-MW-03-23**

Client Sample ID: **31209-MW-03-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977003
Lab Project ID: 1232977

Collection Date: 06/20/23 12:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-03

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.294	U	0.588	0.196	0.294	mg/L	1		07/05/23 17:55
Surrogates									
5a Androstane (surr)	72.4		50-150			%	1		07/05/23 17:55

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Analyst: T.L
Analytical Date/Time: 07/05/23 17:55
Container ID: 1232977003-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.245	U	0.490	0.196	0.245	mg/L	1		07/05/23 17:55
Surrogates									
n-Triacontane-d62 (surr)	91.1		50-150			%	1		07/05/23 17:55

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Analyst: T.L
Analytical Date/Time: 07/05/23 17:55
Container ID: 1232977003-D

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 06/29/23 17:00
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **31209-MW-03-23**

Client Sample ID: **31209-MW-03-23**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977003
Lab Project ID: 1232977

Collection Date: 06/20/23 12:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location: MW-03

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/03/23 19:19
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/03/23 19:19
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		07/03/23 19:19
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/03/23 19:19
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		07/03/23 19:19
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 19:19
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		07/03/23 19:19
Surrogates									
1,2-Dichloroethane-D4 (surr)	106		81-118			%	1		07/03/23 19:19
4-Bromofluorobenzene (surr)	100		85-114			%	1		07/03/23 19:19
Toluene-d8 (surr)	98.1		89-112			%	1		07/03/23 19:19

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/03/23 19:19
Container ID: 1232977003-A

Prep Batch: VXX40083
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:49:04AM

J flagging is activated

Results of **TB-03**

Client Sample ID: **TB-03**
Client Project ID: **Hilcorp 2023 Kenai GW Monitori**
Lab Sample ID: 1232977006
Lab Project ID: 1232977

Collection Date: 06/20/23 00:00
Received Date: 06/22/23 10:25
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	LOD	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	0.0375	ug/L	1		07/03/23 18:49
1,2-Dichloroethane	0.250	U	0.500	0.200	0.250	ug/L	1		07/03/23 18:49
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Benzene	0.200	U	0.400	0.120	0.200	ug/L	1		07/03/23 18:49
Ethylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Methyl-t-butyl ether	5.00	U	10.0	3.10	5.00	ug/L	1		07/03/23 18:49
Naphthalene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
n-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
o-Xylene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
P & M -Xylene	1.00	U	2.00	0.620	1.00	ug/L	1		07/03/23 18:49
sec-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
tert-Butylbenzene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Toluene	0.500	U	1.00	0.310	0.500	ug/L	1		07/03/23 18:49
Xylenes (total)	1.50	U	3.00	1.00	1.50	ug/L	1		07/03/23 18:49
Surrogates									
1,2-Dichloroethane-D4 (surr)	110		81-118			%	1		07/03/23 18:49
4-Bromofluorobenzene (surr)	99.2		85-114			%	1		07/03/23 18:49
Toluene-d8 (surr)	97.3		89-112			%	1		07/03/23 18:49

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 07/03/23 18:49
Container ID: 1232977006-A

Prep Batch: VXX40083
Prep Method: SW5030B
Prep Date/Time: 07/03/23 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/03/2023 9:49:04AM

J flagging is activated

Method Blank

Blank ID: MB for HBN 1858239 [VXX/40078]
Blank Lab ID: 1720728

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232977001, 1232977002

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	0.0375	ug/L
1,2-Dichloroethane	0.250U	0.500	0.200	0.250	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	5.00	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	120*	81-118		0	%
4-Bromofluorobenzene (surr)	101	85-114		0	%
Toluene-d8 (surr)	98.5	89-112		0	%

Batch Information

Analytical Batch: VMS22534
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: PHK
Analytical Date/Time: 7/1/2023 1:25:00PM

Prep Batch: VXX40078
Prep Method: SW5030B
Prep Date/Time: 7/1/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232977 [VXX40078]
Blank Spike Lab ID: 1720729
Date Analyzed: 07/01/2023 13:39

Spike Duplicate ID: LCSD for HBN 1232977 [VXX40078]
Spike Duplicate Lab ID: 1720730
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232977001, 1232977002

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	31.1	104	30	30.6	102	(79-124)	1.60	(< 20)
1,2-Dibromoethane	30	31.5	105	30	29.1	97	(77-121)	8.10	(< 20)
1,2-Dichloroethane	30	32.4	108	30	30.6	102	(73-128)	5.60	(< 20)
1,3,5-Trimethylbenzene	30	30.8	103	30	31.8	106	(75-124)	3.10	(< 20)
Benzene	30	30.1	100	30	29.4	98	(79-120)	2.20	(< 20)
Ethylbenzene	30	30.8	103	30	30.7	102	(79-121)	0.33	(< 20)
Isopropylbenzene (Cumene)	30	30.9	103	30	30.8	103	(72-131)	0.31	(< 20)
Methyl-t-butyl ether	45	51.7	115	45	48.1	107	(71-124)	7.10	(< 20)
Naphthalene	30	31.4	105	30	30.1	100	(61-128)	4.10	(< 20)
n-Butylbenzene	30	27.1	90	30	27.0	90	(75-128)	0.41	(< 20)
o-Xylene	30	31.3	104	30	30.5	102	(78-122)	2.70	(< 20)
P & M -Xylene	60	62.7	104	60	61.6	103	(80-121)	1.80	(< 20)
sec-Butylbenzene	30	30.1	100	30	30.1	100	(77-126)	0.04	(< 20)
tert-Butylbenzene	30	29.7	99	30	29.8	99	(78-124)	0.47	(< 20)
Toluene	30	28.7	96	30	28.0	93	(80-121)	2.50	(< 20)
Xylenes (total)	90	94.0	104	90	92.1	102	(79-121)	2.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		110	30		106	(81-118)	4.10	
4-Bromofluorobenzene (surr)	30		99	30		106	(85-114)	7.50	
Toluene-d8 (surr)	30		100	30		100	(89-112)	0.22	

Batch Information

Analytical Batch: **VMS22534**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **PHK**

Prep Batch: **VXX40078**
Prep Method: **SW5030B**
Prep Date/Time: **07/01/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:49:09AM

Method Blank

Blank ID: MB for HBN 1858283 [VXX/40083]
Blank Lab ID: 1720861

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232977003, 1232977006

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	LOD	Units
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	0.0375	ug/L
1,2-Dichloroethane	0.250U	0.500	0.200	0.250	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Benzene	0.200U	0.400	0.120	0.200	ug/L
Ethylbenzene	0.500U	1.00	0.310	0.500	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	0.500	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	5.00	ug/L
Naphthalene	0.500U	1.00	0.310	0.500	ug/L
n-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
o-Xylene	0.500U	1.00	0.310	0.500	ug/L
P & M -Xylene	1.00U	2.00	0.620	1.00	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	0.500	ug/L
Toluene	0.500U	1.00	0.310	0.500	ug/L
Xylenes (total)	1.50U	3.00	1.00	1.50	ug/L
Surrogates					
1,2-Dichloroethane-D4 (surr)	110	81-118		0	%
4-Bromofluorobenzene (surr)	98.3	85-114		0	%
Toluene-d8 (surr)	97.2	89-112		0	%

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 7/3/2023 4:21:00PM

Prep Batch: VXX40083
Prep Method: SW5030B
Prep Date/Time: 7/3/2023 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232977 [VXX40083]
Blank Spike Lab ID: 1720862
Date Analyzed: 07/03/2023 16:36

Spike Duplicate ID: LCSD for HBN 1232977 [VXX40083]
Spike Duplicate Lab ID: 1720863
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232977003, 1232977006

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	29.4	98	30	28.2	94	(79-124)	4.10	(< 20)
1,2-Dibromoethane	30	28.3	94	30	28.8	96	(77-121)	1.90	(< 20)
1,2-Dichloroethane	30	30.5	102	30	30.2	101	(73-128)	1.20	(< 20)
1,3,5-Trimethylbenzene	30	29.3	98	30	28.1	94	(75-124)	4.20	(< 20)
Benzene	30	31.3	104	30	30.9	103	(79-120)	1.20	(< 20)
Ethylbenzene	30	30.8	103	30	30.3	101	(79-121)	1.80	(< 20)
Isopropylbenzene (Cumene)	30	28.2	94	30	27.5	92	(72-131)	2.60	(< 20)
Methyl-t-butyl ether	45	48.3	107	45	48.5	108	(71-124)	0.36	(< 20)
Naphthalene	30	28.8	96	30	29.1	97	(61-128)	1.00	(< 20)
n-Butylbenzene	30	28.0	93	30	27.3	91	(75-128)	2.70	(< 20)
o-Xylene	30	30.8	103	30	30.2	101	(78-122)	1.90	(< 20)
P & M -Xylene	60	62.4	104	60	60.4	101	(80-121)	3.30	(< 20)
sec-Butylbenzene	30	28.6	95	30	27.6	92	(77-126)	3.70	(< 20)
tert-Butylbenzene	30	28.8	96	30	27.8	93	(78-124)	3.70	(< 20)
Toluene	30	30.8	103	30	30.2	101	(80-121)	1.80	(< 20)
Xylenes (total)	90	93.2	104	90	90.6	101	(79-121)	2.80	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		97	30		99	(81-118)	1.60	
4-Bromofluorobenzene (surr)	30		101	30		101	(85-114)	0.52	
Toluene-d8 (surr)	30		100	30		100	(89-112)	0.28	

Batch Information

Analytical Batch: **VMS22538**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **NRB**

Prep Batch: **VXX40083**
Prep Method: **SW5030B**
Prep Date/Time: **07/03/2023 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/03/2023 9:49:15AM

Billable Matrix Spike Summary

Original Sample ID: 1232977003
MS Sample ID: 1232977004 BMS
MSD Sample ID: 1232977005 BMSD

Analysis Date: 07/03/2023 19:19
Analysis Date: 07/03/2023 17:20
Analysis Date: 07/03/2023 17:35
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **SW8260D**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	0.500U	30.0	30.6	102	30.0	31.0	103	79-124	1.40	(< 20)
1,2-Dibromoethane	0.0375U	30.0	29.8	99	30.0	28.8	96	77-121	3.50	(< 20)
1,2-Dichloroethane	0.250U	30.0	30.2	101	30.0	29.9	100	73-128	0.85	(< 20)
1,3,5-Trimethylbenzene	0.500U	30.0	30.3	101	30.0	31.4	105	75-124	3.60	(< 20)
Benzene	0.200U	30.0	32.6	109	30.0	32.4	108	79-120	0.49	(< 20)
Ethylbenzene	0.500U	30.0	32.3	108	30.0	32.4	108	79-121	0.55	(< 20)
Isopropylbenzene (Cumene)	0.500U	30.0	29.7	99	30.0	30.2	101	72-131	1.50	(< 20)
Methyl-t-butyl ether	5.00U	45.0	48.6	108	45.0	47.1	105	71-124	3.00	(< 20)
Naphthalene	0.500U	30.0	29.8	99	30.0	30.6	102	61-128	2.50	(< 20)
n-Butylbenzene	0.500U	30.0	30.1	100	30.0	30.7	102	75-128	1.70	(< 20)
o-Xylene	0.500U	30.0	31.7	106	30.0	32.0	107	78-122	1.00	(< 20)
P & M -Xylene	1.00U	60.0	64.6	108	60.0	65.4	109	80-121	1.20	(< 20)
sec-Butylbenzene	0.500U	30.0	30.3	101	30.0	31.9	106	77-126	5.40	(< 20)
tert-Butylbenzene	0.500U	30.0	30.2	101	30.0	31.6	105	78-124	4.50	(< 20)
Toluene	0.500U	30.0	32.1	107	30.0	32.4	108	80-121	0.98	(< 20)
Xylenes (total)	1.50U	90.0	96.3	107	90.0	97.4	108	79-121	1.10	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		30.0	28.4	95	30.0	27.9	93	81-118	1.70	
4-Bromofluorobenzene (surr)		30.0	30	100	30.0	30.9	103	85-114	2.70	
Toluene-d8 (surr)		30.0	30.2	101	30.0	29.8	99	89-112	1.10	

Batch Information

Analytical Batch: VMS22538
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: NRB
Analytical Date/Time: 7/3/2023 5:20:00PM

Prep Batch: VXX40083
Prep Method: Volatiles Extraction 8240/8260
Prep Date/Time: 7/3/2023 6:00:00AM
Prep Initial Wt./Vol.: 5.00mL
Prep Extract Vol: 5.00mL

Print Date: 10/03/2023 9:49:16AM

Method Blank

Blank ID: MB for HBN 1857762 [XXX/48086]
Blank Lab ID: 1719420

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232977001, 1232977002, 1232977003

Results by **8270D SIM LV (PAH)**

Parameter	Results	LOQ/CL	DL	LOD	Units
1-Methylnaphthalene	0.0185J	0.0500	0.0150	0.0250	ug/L
2-Methylnaphthalene	0.0225J	0.0500	0.0150	0.0250	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	0.0100	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	0.0250	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	0.0250	ug/L
Chrysene	0.0250U	0.0500	0.0150	0.0250	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	0.0100	ug/L
Fluoranthene	0.0227J	0.0500	0.0150	0.0250	ug/L
Fluorene	0.0250U	0.0500	0.0150	0.0250	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	0.0250	ug/L
Naphthalene	0.0500U	0.100	0.0310	0.0500	ug/L
Phenanthrene	0.0406J	0.100	0.0310	0.0500	ug/L
Pyrene	0.0157J	0.0500	0.0150	0.0250	ug/L
Surrogates					
2-Methylnaphthalene-d10 (surr)	72.2	38-100		0	%
Fluoranthene-d10 (surr)	83.5	30-111		0	%

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/6/2023 2:02:00PM

Prep Batch: XXX48086
Prep Method: SW3535A
Prep Date/Time: 6/27/2023 9:30:00AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1232977 [XXX48086]
Blank Spike Lab ID: 1719421
Date Analyzed: 07/06/2023 14:22

Spike Duplicate ID: LCSD for HBN 1232977 [XXX48086]
Spike Duplicate Lab ID: 1719422
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232977001, 1232977002, 1232977003

Results by **8270D SIM LV (PAH)**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.47	73	2	1.35	67	(41-115)	8.50	(< 20)
2-Methylnaphthalene	2	1.47	74	2	1.34	67	(39-114)	9.30	(< 20)
Acenaphthene	2	1.62	81	2	1.51	76	(48-114)	6.50	(< 20)
Acenaphthylene	2	1.64	82	2	1.54	77	(35-121)	6.70	(< 20)
Anthracene	2	1.73	87	2	1.61	81	(53-119)	7.50	(< 20)
Benzo(a)Anthracene	2	1.64	82	2	1.57	78	(59-120)	4.80	(< 20)
Benzo[a]pyrene	2	1.69	85	2	1.60	80	(53-120)	5.20	(< 20)
Benzo[b]Fluoranthene	2	1.69	85	2	1.62	81	(53-126)	4.10	(< 20)
Benzo[g,h,i]perylene	2	1.78	89	2	1.69	85	(44-128)	5.00	(< 20)
Benzo[k]fluoranthene	2	1.76	88	2	1.63	82	(54-125)	7.20	(< 20)
Chrysene	2	1.74	87	2	1.65	83	(57-120)	5.40	(< 20)
Dibenzo[a,h]anthracene	2	1.75	88	2	1.64	82	(44-131)	6.60	(< 20)
Fluoranthene	2	1.77	89	2	1.68	84	(58-120)	5.60	(< 20)
Fluorene	2	1.72	86	2	1.63	81	(50-118)	5.60	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.75	87	2	1.65	83	(48-130)	5.60	(< 20)
Naphthalene	2	1.52	76	2	1.34	67	(43-114)	12.30	(< 20)
Phenanthrene	2	1.73	86	2	1.62	81	(53-115)	6.40	(< 20)
Pyrene	2	1.76	88	2	1.67	84	(53-121)	4.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		73	2		68	(38-100)	7.00	
Fluoranthene-d10 (surr)	2		86	2		84	(30-111)	1.70	

Batch Information

Analytical Batch: **XMS13714**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **Agilent GC 7890B/5977A SWA**
Analyst: **HMW**

Prep Batch: **XXX48086**
Prep Method: **SW3535A**
Prep Date/Time: **06/27/2023 09:30**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

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Billable Matrix Spike Summary

Original Sample ID: 1232977003
MS Sample ID: 1232977004 BMS
MSD Sample ID: 1232977005 BMSD

Analysis Date: 07/06/2023 19:30
Analysis Date: 07/06/2023 19:51
Analysis Date: 07/06/2023 20:11
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **8270D SIM LV (PAH)**

		Matrix Spike (ug/L)				Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
1-Methylnaphthalene	0.0174J	2.04	1.37	66		2.00	1.45	72		41-115	5.90	(< 20)
2-Methylnaphthalene	0.0217J	2.04	1.34	65		2.00	1.47	72		39-114	9.00	(< 20)
Acenaphthene	0.0266U	2.04	1.54	75		2.00	1.59	80		48-114	3.70	(< 20)
Acenaphthylene	0.0266U	2.04	1.58	78		2.00	1.66	83		35-121	4.50	(< 20)
Anthracene	0.0266U	2.04	1.62	80		2.00	1.72	86		53-119	5.50	(< 20)
Benzo(a)Anthracene	0.0461J	2.04	1.51	72		2.00	1.47	71		59-120	2.80	(< 20)
Benzo[a]pyrene	0.235	2.04	1.4	57		2.00	1.33	55		53-120	5.20	(< 20)
Benzo[b]Fluoranthene	0.197	2.04	1.44	61		2.00	1.36	58		53-126	5.30	(< 20)
Benzo[g,h,i]perylene	1.84	2.04	1.3	-27	*	2.00	1.20	-32	*	44-128	7.70	(< 20)
Benzo[k]fluoranthene	0.520	2.04	1.39	43	*	2.00	1.28	38	*	54-125	8.20	(< 20)
Chrysene	0.0949	2.04	1.58	73		2.00	1.54	72		57-120	2.50	(< 20)
Dibenzo[a,h]anthracene	2.10	2.04	1.23	-43	*	2.00	1.17	-47	*	44-131	4.90	(< 20)
Fluoranthene	0.0185J	2.04	1.63	79		2.00	1.65	82		58-120	1.20	(< 20)
Fluorene	0.0266U	2.04	1.66	81		2.00	1.76	88		50-118	6.10	(< 20)
Indeno[1,2,3-c,d] pyrene	1.41	2.04	1.05	-18	*	2.00	0.990	-21	*	48-130	6.20	(< 20)
Naphthalene	0.0530U	2.04	1.38	68		2.00	1.46	73		43-114	6.00	(< 20)
Phenanthrene	0.0494J	2.04	1.67	80		2.00	1.70	83		53-115	1.70	(< 20)
Pyrene	0.0266U	2.04	1.62	80		2.00	1.63	81		53-121	0.39	(< 20)
Surrogates												
2-Methylnaphthalene-d10 (surr)		2.04	1.39	68		2.00	1.38	69		38-100	1.10	
Fluoranthene-d10 (surr)		2.04	1.67	82		2.00	1.66	83		30-111	0.66	

Batch Information

Analytical Batch: XMS13714
Analytical Method: 8270D SIM LV (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: HMW
Analytical Date/Time: 7/6/2023 7:51:00PM

Prep Batch: XXX48086
Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
Prep Date/Time: 6/27/2023 9:30:00AM
Prep Initial Wt./Vol.: 245.00mL
Prep Extract Vol: 1.00mL

Print Date: 10/03/2023 9:49:23AM

Method Blank

Blank ID: MB for HBN 1857949 [XXX/48108]
Blank Lab ID: 1720084

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232977001, 1232977002, 1232977003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	LOD	Units
Diesel Range Organics	0.300U	0.600	0.200	0.300	mg/L
Surrogates					
5a Androstane (surr)	86.3	60-120		0	%

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: T.L
Analytical Date/Time: 7/5/2023 2:15:00PM

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 6/29/2023 5:00:00PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:49:25AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232977 [XXX48108]
Blank Spike Lab ID: 1720085
Date Analyzed: 07/05/2023 14:25

Spike Duplicate ID: LCSD for HBN 1232977 [XXX48108]
Spike Duplicate Lab ID: 1720086
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232977001, 1232977002, 1232977003

Results by **AK102**

	Blank Spike (mg/L)				Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)		Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	14.8	74	*	20	14.0	70	* (75-125)	5.50	(< 20)
Surrogates										
5a Androstane (surr)	0.4		93		0.4		84	(60-120)	9.60	

Batch Information

Analytical Batch: **XFC16552**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **T.L**

Prep Batch: **XXX48108**
Prep Method: **SW3520C**
Prep Date/Time: **06/29/2023 17:00**
Spike Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL

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Billable Matrix Spike Summary

Original Sample ID: 1232977003
MS Sample ID: 1232977004 BMS
MSD Sample ID: 1232977005 BMSD

Analysis Date: 07/05/2023 17:55
Analysis Date: 07/05/2023 18:05
Analysis Date: 07/05/2023 18:15
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **AK102**

		Matrix Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	0.294U	21.7	16.6	77	20.0	13.5	68 *	75-125	20.50	(< 30)
Surrogates										
5a Androstane (surr)		0.435	.391	90	0.400	0.297	74	50-150	27.30	

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: T.L
Analytical Date/Time: 7/5/2023 6:05:00PM

Prep Batch: XXX48108
Prep Method: Cnt. Liq/Liq Ext. for AK102/3 Low Vol
Prep Date/Time: 6/29/2023 5:00:00PM
Prep Initial Wt./Vol.: 230.00mL
Prep Extract Vol: 1.00mL

Print Date: 10/03/2023 9:49:30AM

Method Blank

Blank ID: MB for HBN 1857949 [XXX/48108]
Blank Lab ID: 1720084

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1232977001, 1232977002, 1232977003

Results by **AK103**

Parameter	Results	LOQ/CL	DL	LOD	Units
Residual Range Organics	0.250U	0.500	0.200	0.250	mg/L
Surrogates					
n-Triacontane-d62 (surr)	101	60-120		0	%

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: T.L
Analytical Date/Time: 7/5/2023 2:15:00PM

Prep Batch: XXX48108
Prep Method: SW3520C
Prep Date/Time: 6/29/2023 5:00:00PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/03/2023 9:49:31AM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1232977 [XXX48108]
Blank Spike Lab ID: 1720085
Date Analyzed: 07/05/2023 14:25

Spike Duplicate ID: LCSD for HBN 1232977 [XXX48108]
Spike Duplicate Lab ID: 1720086
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1232977001, 1232977002, 1232977003

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	16.3	82	20	14.7	74	(60-120)	10.30	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4		85	0.4		77	(60-120)	9.40	

Batch Information

Analytical Batch: **XFC16552**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **T.L**

Prep Batch: **XXX48108**
Prep Method: **SW3520C**
Prep Date/Time: **06/29/2023 17:00**
Spike Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL

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Billable Matrix Spike Summary

Original Sample ID: 1232977003
MS Sample ID: 1232977004 BMS
MSD Sample ID: 1232977005 BMSD

Analysis Date: 07/05/2023 17:55
Analysis Date: 07/05/2023 18:05
Analysis Date: 07/05/2023 18:15
Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by **AK103**

		Matrix Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	0.245U	21.7	17.7	82	20.0	13.6	68	60-140	26.60	(< 30)
Surrogates										
n-Triacontane-d62 (surr)		0.435	.376	87	0.400	0.284	71	50-150	28.00	

Batch Information

Analytical Batch: XFC16552
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: T.L
Analytical Date/Time: 7/5/2023 6:05:00PM

Prep Batch: XXX48108
Prep Method: Cnt. Liq/Liq Ext. for AK102/3 Low Vol
Prep Date/Time: 6/29/2023 5:00:00PM
Prep Initial Wt./Vol.: 230.00mL
Prep Extract Vol: 1.00mL

Print Date: 10/03/2023 9:49:36AM

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CHAIN OF CUSTODY RECORD

P#373673 QV

Laboratory:	SGS Anchorage	COC ID:	SCU-3129	Cooler Name:	Honduras/ Indonesia	Report To:	Kelly Carson
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring	Contact:	Kelly Carson	Contact Email:	kelly.carson@hilcorp.com	Invoice To:	HAK, ananderson@hilcorp.com
						AFE Number:	235-02465.15.10.28

Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes	Cooler
MW-01	31209-MW01-23	2023-06-20	1230	KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras 1AC
MW-01	31209-MW01-23	2023-06-20	1230	KT	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Indonesia 1DE
MW-01	31209-MW01-23	2023-06-20	1230	KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Indonesia 1FG
MW-02	31209-MW02-23	2023-06-20	1100	KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras 2AC
MW-02	31209-MW02-23	2023-06-20	1100	KT	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Indonesia 2DE
MW-02	31209-MW02-23	2023-06-20	1100	KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Indonesia 2FG
MW-03	31209-MW03-23	2023-06-20	1200	JB	GW	MSD	9	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-03	31209-MW03-23	2023-06-20	1200	JB	GW	MSD	6	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7, MS/MSD	Indonesia
MW-03	31209-MW03-23	2023-06-20	1200	JB	GW	MSD	6	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7, MS/MSD	Indonesia
	Trip blanks														6AC

Special Instructions:
Deliverables: Level 2 PDF, EFWEDD, DataView

Sample Receipt:
Temperature Blank:
Custody Seals:

Cooler Temperature:

Relinquished By / Affiliation:
Nicole Matta IALEUT
Signature / Printed Name / Affiliation — Date 6/21/2023 Time 1645

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Alexandra Carnes SGS
Signature / Printed Name / Affiliation — Date 6/22/23 — Time 1025

Indonesia: 1.4 0SS Honduras: 3.5 0SS
CS:1FIB CS:1FIB

1232977

ARS Aleut Remediation, LLC
Anchorage, AK

CHAIN OF CUSTODY RECORD DUPLICATE QM

Revised Report - Revision 2

Laboratory:	SGS Anchorage		COC ID:	SCU-3129				Cooler Name:	Honduras/ Indonesia			Report To:	Kelly Carson		
Project Name:	Hilcorp 2023 Kenai Groundwater Monitoring		Contact:	Kelly Carson				Contact Email:	kelly.carson@hilcorp.com			Invoice To:	HAK, ananderson@hilcorp.com		
												AFE Number:	235-02465.15.10.28		
Location ID	Sample ID	Collection Date	Collection Time	Sampler	Matrix	QC Type	Qty	Sample Type	Container Type	Container Vol	Preservative	Method	TAT	Notes	Cooler
MW-01	31209-MW01-23	2023-06-20	1230	KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-01	31209-MW01-23	2023-06-20	1230	KT	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Indonesia
MW-01	31209-MW01-23	2023-06-20	1230	KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Indonesia
MW-02	31209-MW02-23	2023-06-20	1100	KT	GW		3	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-02	31209-MW02-23	2023-06-20	1100	KT	GW		2	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7	Indonesia
MW-02	31209-MW02-23	2023-06-20	1100	KT	GW		2	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7	Indonesia
MW-03	31209-MW03-23	2023-06-20	1200	JB	GW	MSD	9	Grab	40mL	amber vials	HCl pH<2/ZHS/Chill 0-6 deg C	VOCs SW8260D	30	Analytical List 7	Honduras
MW-03	31209-MW03-23	2023-06-20	1200	JB	GW	MSD	6	Grab	250mL	amber glass	HCl pH<2/Chill 0-6 deg C	DRO+RRO AK102+3	30	Analytical List 7, MS/MSD	Indonesia
MW-03	31209-MW03-23	2023-06-20	1200	JB	GW	MSD	6	Grab	250mL	amber glass	Chill 0-6 deg C	PAHs SW8270D	30	Analytical List 7, MS/MSD	Indonesia

Special Instuctions:
Deliverables: Level 2 PDF, EFWEDD, DataView

Sample Receipt:
Temperature Blank:
Custody Seals:

Cooler Temperature:

Relinquished By / Affiliation:
Nicole Matta IALEUT
Signature / Printed Name / Affiliation — Date 6/21/2023 Time 1450

Received By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Relinquished By / Affiliation:
Signature / Printed Name / Affiliation — Date — Time

Received By / Affiliation:
Alexandra Carnos SGS
Signature / Printed Name / Affiliation — Date 6/22/23 Time 1025

Indonesia: 1.4 DSC
CS: IFIB

Honduras: 3.5 DSC
CS: IFIB

1232977

List Number	Analytes
1	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
2	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, ethylene glycol
3	petroleum VOCs (including BTEX) and PAHs
4	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, tert-butylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
5	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene
6	ethylene glycol, 1,4-dioxane
7	DRO/RRO, petroleum VOCs (specific list for SCU 23B-03 and SCU 312-09), PAHs

Report naphthalene by SW8260 and SW8270 SIM for lists 1-5

Petroleum-related VOCs by SW8260D for List 3 (SRF TS sites):

1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (cumene)
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Petroleum VOCs by SW8260D for List 7 (SCU 23B-03 and SCU 312-(

1,2,4-Trimethylbenzene
1,2-Dibromoethane
1,2-Dichloroethane
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (Cumene)
Methyl-t-butyl ether
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes



Please report m & p-xylenes and total xylenes for all samples requiring xylenes

List Number	Analytes
1	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
2	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, ethylene glycol
3	petroleum VOCs (including BTEX) and PAHs
4	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, tert-butylbenzene, isopropylbenzene (cumene), naphthalene, 1-methylnaphthalene, 2-methylnaphthalene
5	benzene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene
6	ethylene glycol, 1,4-dioxane
7	DRO/RRO, petroleum VOCs (specific list for SCU 23B-03 and SCU 312-09), PAHs

Report naphthalene by SW8260 and SW8270 SIM for lists 1-5

Petroleum-related VOCs by SW8260D for List 3 (SRF TS sites):

1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (cumene)
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes

Petroleum VOCs by SW8260D for List 7 (SCU 23B-03 and SCU 312-09):

1,2,4-Trimethylbenzene
1,2-Dibromoethane
1,2-Dichloroethane
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Isopropylbenzene (Cumene)
Methyl-t-butyl ether
Naphthalene
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Toluene
Total xylenes



Please report m & p-xylenes and total xylenes for all samples requiring xylenes

SGS

SAMPLE RECEIPT FORM

SGS WO#
1232977

Project Manager Completion				
Was all necessary information recorded on the COC upon receipt? (temperature, COC seals, etc.?)	(Yes)	No	N/A	
Was temperature between 0-6° C?	(Yes)	No	N/A	If "No", are the samples either exempt* or sampled <8 hours prior to receipt?
Were all analyses received within holding time*?	(Yes)	No	N/A	
Was a method specified for each analysis, where applicable? If no, please note correct methods.	(Yes)	No	N/A	
Are compound lists specified, where applicable? For project specific or special compound lists please note correct analysis code.	(Yes)	No	N/A	Attached
If rush was requested by the client, was the requested TAT approved?	Yes	No	(N/A)	If "NO", what is the approved TAT?
If SEDD Deliverables are required, were Location ID's and an NPDL Number provided?	Yes	No	(N/A)	*If "NO", contact client for information.*
Sample Login Completion				
Do ID's on sample containers match COC?	(Yes)	No	N/A	
If provided on containers, do dates/times collected match COC?	(Yes)	No	N/A	Note: If times differ <1 hr., record details below and login per COC.
Were all sample containers received in good condition?	(Yes)	No	N/A	
Were proper containers (type/mass/volume/preservative) received for all samples? **See form F-083 "Sample Guide"*	(Yes)	No	N/A	*Note: If 200.8/6020 Total Metals are received unpreserved, preserve and note HNO3 lot here: If 200.8/6020 Dissolved Metals are received unpreserved, log in for LABFILTER and do not preserve. For all non-metals methods, inform Project Manager.*
Were Trip Blanks (VOC, GRO, Low-Level Hg, etc.) received with samples, where applicable*?	(Yes)	No	N/A	Trip blank shared w/ Wo: 1232976 & Wo: 1232975
Were all VOA vials free of headspace >6mm?	(Yes)	No	N/A	
Were all soil VOA samples received field extracted with Methanol?	Yes	No	(N/A)	
Did all soil VOA samples have an accompanying unpreserved container for % solids?	Yes	No	(N/A)	
If special handling is required, were containers labelled appropriately? e.g. MI/ISM, foreign soils, lab filter, Ref Lab, limited volume	(Yes)	No	N/A	Spike labels for MSD samples
For Rush/Short Holding time, was the lab notified?	(Yes)	No	N/A	
For any question answered "NO", was the Project Manager notified?	Yes	No	(N/A)	PM Initials:
Was Peer Review of sample numbering/labelling completed?	(Yes)	No	N/A	Reviewer Initials: CB

Additional Notes/Clarification where Applicable, including resolution of "No" answers when a change order is not attached:



Revised Report - Revision 2

Container Id	Preservative
1232977001-A	HCL to pH < 2
1232977001-B	HCL to pH < 2
1232977001-C	HCL to pH < 2
1232977001-D	No Preservative Requir

Container Condition	Container Id
OK	
OK	
OK	
OK	

ed

Container Id	Preservative
1232977001-E	No Preservative Requir
1232977001-F	No Preservative Requir
1232977001-G	No Preservative Requir
1232977002-A	HCL to pH < 2

Revised Report - Revision 2

	Container Condition	Container Id
ed	OK	
ed	OK	
ed	OK	
	OK	

Container Id	Preservative
1232977002-B	HCL to pH < 2
1232977002-C	HCL to pH < 2
1232977002-D	No Preservative Requir
1232977002-E	No Preservative Requir

Revised Report - Revision 2

	Container Condition	Container Id
	OK	
	OK	
ed	OK	
ed	OK	

Revised Report - Revision 2

Container Id	Preservative
1232977002-F	No Preservative Requir
1232977002-G	No Preservative Requir
1232977003-A	HCL to pH < 2
1232977003-B	HCL to pH < 2

	Container Condition	Container Id
ed	OK	
ed	OK	
	OK	
	OK	

Container Id	Preservative
1232977003-C	HCL to pH < 2
1232977003-D	No Preservative Requir
1232977003-E	HCL to pH < 2
1232977003-F	No Preservative Requir

Revised Report - Revision 2

	Container Condition	Container Id
	OK	
ed	OK	
	OK	
ed	OK	

Container Id	Preservative
1232977003-G	HCL to pH < 2
1232977004-A	HCL to pH < 2
1232977004-B	HCL to pH < 2
1232977004-C	HCL to pH < 2

Revised Report - Revision 2

6/27/2023

Container Condition	Container Id
OK	
OK	
OK	
OK	

Container Id	Preservative
1232977004-D	No Preservative Requir
1232977004-E	HCL to pH < 2
1232977004-F	No Preservative Requir
1232977004-G	HCL to pH < 2

	Container Condition	Container Id
ed	OK	
	OK	
ed	OK	
	OK	

Container Id	Preservative
1232977005-A	HCL to pH < 2
1232977005-B	HCL to pH < 2
1232977005-C	HCL to pH < 2
1232977005-D	No Preservative Requir

Revised Report - Revision 2

Container Condition	Container Id
OK	
OK	
OK	
OK	

ed

Container Id	Preservative
1232977005-E	HCL to pH < 2
1232977005-F	No Preservative Requir
1232977005-G	HCL to pH < 2
1232977006-A	HCL to pH < 2

Revised Report - Revision 2

Container Condition	Container Id
OK	
OK	
OK	
OK	

ed

Container Id	Preservative
1232977006-B	HCL to pH < 2
1232977006-C	HCL to pH < 2

Revised Report - Revision 2

Container Condition	Container Id
BU	
BU	

Container Id Preservative

Revised Report - Revision 2

Container Condition Glossary

Containers for bacteriological, low level

be assigned condition code OK unless e

OK - The container was received at an

BU - The container was received with h

DM - The container was received dama

FR - The container was received frozen

IC - The container provided for microbi

container and therefore was not suitab

Container Id	Preservative

NC- The container provided was not pr
additional preservative added after coll
PA - The container was received outsid
was added upon receipt and the contai
details on the amount and lot # of the

PH - The container was received outsid
was added upon receipt, but was insuff
requested. See the Sample Receipt For
QN - Insufficient sample quantity provi