Commercial Property 5801 Silverado Way, Anchorage, Alaska

Work Plan for Limited Site Investigation of Tract 2-B, Silverado Subdivision

ADEC File No. 2100.38.531
Hazard ID 25892

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List of Acronyms

ADEC	Alaska Department of Environmental Conservation
ADOT	Alaska Department of Transportation
bgs	Below Ground Surface
BTEX	Benzene Toluene Ethylbenzene and Total Xylenes
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
Cyds	Cubic Yards
D&M	Dames and Moore
DRO	Diesel Range Organics
EPA	Environmental Protection Agency
GCL	Groundwater Cleanup Levels
GRO	Gasoline Range Organics
MTG	Migration to Groundwater
NFA	No Further Action
PAHs	Polynuclear Aromatic Hydrocarbons
ROW	Right-of-Way
RSE	Restoration Science & Engineering, LLC
S&W	Shannon and Wilson
TPECI	Travis/Peterson Environmental Consulting, Inc.
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

Restoration Science & Engineering, LLC (RSE) on behalf of Leksand, LLC (Leksand) is providing this work plan for a limited site investigation related to historic contamination detected on Tract 2-B of the Silverado Subdivision in Anchorage, Alaska. This work plan was requested by the Alaska Department of Environmental Conservation (ADEC) via a letter dated December 3, 2021 (ADEC 2021).

The property is located at 5801 Silverado Way, Anchorage, Alaska and is identified by the Municipality of Anchorage as Parcel 009-301-61-000. A Vicinity Map for 5801 Silverado Way Tract 2-B is included as Figure 1 in Appendix A. This parcel was originally platted as 3.8-acre Tract 2-B, a Subdivision of Tract 2 of Silverado Subdivision (DOWL 1980). In 2010, the Alaska Department of Transportation (ADOT) acquired the southern portion of Tract 2-B to accommodate the construction of West Dowling Road highway improvements (ADOT 2010). This right-of-way (ROW) take reduced the original Tract 2-B lot by approximately 43,616 sq ft to an approximate area of 2.8 acres. The ADOT ROW property is referred to as the "ADOT ROW parcel" in this workplan. This work plan describes the methods to be used for the investigation of potential residual contamination at the south end of the subject property.

1.1 Objectives

The primary focus of the work plan is to evaluate possible hydrocarbon impacts on Tract 2-B that may be associated with contaminated soil previously managed by ADOT from within the West Dowling Road ADOT ROW Parcel acquisition. RSE understands that ADEC is requiring assessment on Tract 2-B relative to soil and groundwater contamination that was identified south of the southern property line of Tract 2-B. The ADOT ROW Parcel is not the subject of this work plan as that site is managed by others. Specifically, the ADEC work plan request stated: "Remaining *contamination of concern on site to be included in the work plan, at a minimum, should include Diesel Range Organics (DRO), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), Chromium and Nickel for soils and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) for and Chromium and Nickel for groundwater."*

To provide a comprehensive site understanding, this work plan reviews the historic hydrocarbon impacts detected and remediated to "no further action" (NFA) status by numerous prior Tract 2-B site operators. A plot plan for the subject property showing the current features of the northern portion of Tract 2-B is included as Figure 2, Plot Plan of Site Features, in Appendix A.

2.0 SITE BACKGROUND INFORMATION

Tract 2-B at 5801 Silverado Way, the subject of this work plan, has been operated by numerous entities since original site development. A site map of the property is included as Figure 3, Appendix A, 2011 Tract 2-B Site Map of Pre-ADOT acquisition. A site map of the properties after the ADOT ROW take is included as Figure 4 in Appendix A, 2021 Tract 2-B Site Map, Post-ADOT Acquisition. A brief summary of the ownership history of Tract 2-B is provided in the following paragraphs.

The various early operators of Tract 2-B were industrial in nature and more specifically, oil field service companies. Previous tenants included Haliburton Geophysical Services, Inc. from 1980 until 1990 followed by two drilling companies, Pool Arctic Alaska (Pool Arctic) and Nabors Alaska Drilling, Inc. (Nabors). Pool Arctic leased the property starting in 1992 and was purchased by Nabors in 1999, who assumed the Tract 2-B lease.

The drilling companies used the property for north slope drill rig construction, modification and maintenance. Over the years of site operations, a number of fuel spills, leaking underground storage tanks (USTs) and other potential hazardous material discharges have been reported. The reported spills and releases detected during property transfer and other investigations were subjected to corrective actions and received NFA determinations from ADEC. These cleanup actions resulted in institutional controls (ICs) established on the property. The ICs require advanced approval to transport soil or groundwater off site. One of the cleanup actions resulted in ADEC elevating the site cleanup level for diesel range organics (DRO) to 500 mg/Kg, in part due to high organic content of site peat soils (HCG, 1999).

In May 2012, hydrocarbon impacted soil was identified on the ADOT ROW Parcel during excavation for new road construction west of the Dowling Road and C Street Intersection. Approximately 5,256 cubic yards of hydrocarbon impacted and unsuitable soil was excavated, stockpiled and characterized. With ADEC approval, this soil was subsequently reused as embankment fill in a more western location in the West Dowling Road ROW. Excavation bottom and sidewall sampling of the ADOT ROW parcel excavation limits were conducted south of the new southern boundary of the re-platted Tract 2-B. Sample results identified limited low-level Benzene and DRO impacts exceeding ADEC Method Two Migration to Groundwater (MTG) soil cleanup levels in this area. Installation and sampling of Monitoring Well D yielded benzene slightly above ADEC Table C groundwater cleanup levels (GCLs). Figure 5 in Appendix A depicts sample locations, depth and concentrations from the post excavation soil boring and monitoring well installation programs most of which were conducted after the ADOT ROW parcel was backfilled.

It is currently unknown if the petroleum contaminated soil identified on the ADOT ROW parcel extends onto Tract 2-B or vice versa. A review of prior consultant reports and other available information indicates that a great deal of industrial activity and fuel storage occurred on the ADOT ROW parcel, explaining the contaminated soil ADOT encountered during road construction. Additionally, a 200-gallon diesel spill that occurred in September 1995 on the ADOT ROW parcel and was identified as Spill Number 95-21-01-263-01. This spill was reportedly remediated to acceptable levels under ADEC spill response guidance (S&W 1998c).

As described in the following paragraphs, a number of spills and UST removals occurred at the site and were subjected to corrective actions. A review of these historic spills indicate that all records have received a NFA or equivalent determination with the only restriction that ADEC be contacted prior to transporting any soil or groundwater offsite.

2.1 Chronology and Summary of Previous Investigations at Tract 2-B

The following provides a chronology of site ownership and brief summaries of previous investigations and remedial actions that have taken place at the subject property.

2.1.1 Dames & Moore (D&M) Final Report – Underground Fuel Storage Tank Removal and Site Assessment, Haliburton Geophysical Services, 5801 Silverado Way, Anchorage Alaska. December 27, 1990

Summary of Findings:
D&M removed and disposed of three USTs from the Haliburton property: a 1,000-gallon diesel, a 2,000-gallon leaded gasoline and a 1,000-gallon unleaded gasoline UST on August 6, 1990. Visible staining was found at 2.75 ft below ground surface (bgs) along with a sheen on the groundwater at approximately 3.5 ft bgs while removing the leaded gasoline UST to the north. A layer of geofabric was found at approximately 4 ft. Organic Vapor Monitor (OVM) readings in soil ranged from 3 to 32 ppmv. Work at the south excavation included both the unleaded and diesel USTs. OVM readings ranged from 223 ppmv in surface soil (10 inches bgs) to 280 ppmv at 3.75 ft bgs. The soil exhibited a gray/black layer at 3.5 ft. The tanks were also underlain with a layer of geofabric. A small trench (test pit) was excavated 50 feet to the east to 5 ft bgs and the gray/black layer was observed to be present, however no vapors were detected in the soil with the OVM and the trench was backfilled. No groundwater was encountered in the trench. One 2-inch groundwater monitoring well was installed on November 27, 1990 approximately 8 ft east of the north UST excavation. Two groundwater samples were collected.

Analytical results: Gasoline and diesel concentrations in soil were all below the cleanup levels in place at that time. Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) in one soil sample exceeded the then current cleanup level at 11.2 mg/Kg. BTEX concentrations in the groundwater were below cleanup levels, with Benzene at 0.2 ug/L. D&M theorized that the contamination could have resulted from a spill or overfill as all the piping appeared intact.

Site Hazard ID No. 24079, Event ID No. 211 issued Cleanup Complete Status for Spill Date 11/29/1990 in the ADEC Spill Prevention and Response database.

2.1.2 Shannon & Wilson, Inc. (S&W) Limited Phase I Environmental Assessment, 5801 Silverado Way, Anchorage Alaska. August 10, 1998

Summary of Findings:
S&W concluded from the Phase I EA there was a potential that petroleum hydrocarbon and hazardous substances could have impacted the site as a result of operations by the current lessee, Pool Arctic. The suspect locations included the floor drain system, the sandblasting/paint booth area and the waste storage area. Further investigation of these areas was recommended. No sampling was conducted during the Phase I EA.

2.1.3 S&W Limited Phase II Environmental Assessment at 5801 Silverado Way, Anchorage, Alaska. August 26, 1998

Summary of Findings:
During this investigation, one water sample was collected from the sanitary sewer/floor drain lift station and two composite soil samples were collected during the investigation. One composite soil sample was collected from the waste storage area and one composite soil sample was collected from the sand blasting/paint booth area. The water sample from the lift station had detections of DRO, residual range organics (RRO) and low levels of halogenated volatile organic compounds (HVOCs). The composite soil sample collected from the waste storage area, S1 had a concentration of 1920 mg/Kg of DRO, 67.7 mg/Kg of gasoline range organics (GRO) as well as low levels of BTEX. Composite soil sample S2 collected from the sand blasting/paint booth area had 626 mg/Kg of DRO, 535 mg/Kg of RRO, 17.6 mg/Kg of GRO and low levels of BTEX.

2.1.4 S&W Addendum to Limited Phase II Environmental Site Assessment at 5801 Silverado Way, Anchorage, Alaska. September 11, 1998

Summary of Findings:
Subsequent to the issue of the Phase II report, in a meeting with S&W and Pool Arctic, a report was provided by Herb Williams (of Pool Arctic) authored by Rare Earth Sciences, dated February 1996 that documented the release and cleanup of a diesel spill of approximately 200 gallons. The spill took place on September 19, 1995 near the southern property boundary. ADEC was immediately notified and approximately 56 tons of diesel impacted soil was excavated and transported to Alaska Soil Recycling (ASR) for treatment/disposal. The spill cleanup received a no further action (NFA) letter from ADEC. The spill reportedly is not included in the ADEC Contaminated Sites (CS) database (#95-21-01-263-01) since it was cleaned up within 6 months of being reported and was not required to be entered into the database. This area appeared to have been affected by DRO contamination again as per the S&W Phase II report.

2.1.5 Hoefler Consulting Group. Site Soils Characterization at 5801 Silverado Way, Anchorage, Alaska, Prepared for Pool Arctic Alaska. ADEC CS # 100.220. July 1999

Summary of Findings:
The work plan addressed the two areas of contamination identified by S&W in their Phase II EA. The areas were adjacent to the fuel storage area and adjacent to the sand blasting tent. All samples were analyzed for DRO and select samples collected from the sand blast tent area were analyzed for total Resource Conservation and Recovery Act (RCRA) metals, and tri- and hexavalent Chromium.

2.1.6 Hoefler Consulting Group. Soil Sampling Report for 5801 Silverado Way, Prepared for Pool Arctic Alaska, Anchorage, Alaska. ADEC CS # 100.220. September 1999

Summary of Findings:
The soil sampling work addressed the two areas of contamination identified by S&W in their Phase II EA of the Pool Arctic property. The two areas identified were adjacent to the fuel storage area and adjacent to the

sand blasting tent. Ten primary and three duplicate samples were collected from each site, with the samples collected from the petroleum storage area analyzed for DRO only. Out of the samples collected from the sand blast tent, eight primary and one duplicate were analyzed for DRO only, one primary and one duplicate were analyzed for total RCRA metals only, and one primary and a duplicate were analyzed for both DRO and RCRA metals. RSE notes that these areas were positioned in the ADOT ROW parcel area.

The only exceedance of MTG cleanup levels in samples from both areas was for DRO (MTG cleanup level of 250 mg/Kg). At the petroleum storage area, out of the 10 primary and 3 duplicate samples collected and analyzed for DRO, one sample and its duplicate exceeded the MTG cleanup level for DRO at 3300 mg/Kg and 2800 mg/Kg in its duplicate. At the sand blasting tent, four samples exceeded MTG cleanup levels for DRO with concentrations of 270, 320, 370 and 440 mg/Kg. There was no MTG soil cleanup level exceedances for total RCRA metals with the exception of Arsenic, the values of which were within the range of background concentrations typically found in Alaska soil. The highest total Arsenic concentration detected was 3.4 mg/Kg. A second round of sampling was conducted on August 27, 1999 to speciate total Chromium into tri- and hexavalent Chromium concentrations. All Chromium results were the trivalent species, and all were well below the MTG soil cleanup level of 100,000 mg/Kg. While chromium is a naturally occurring substance in Alaska soil, chromium concentrations measured by HCG around the sand blast tent were artificially elevated by these activities. The sand blast tent was located on property acquired by ADOT (ADOT ROW Parcel).

2.1.7 Hoefler Consulting Group. Site Excavation and Remediation Report for 5801 Silverado Way, Prepared for Pool Arctic Alaska, Anchorage, Alaska. ADEC CS # 100.220. October 1999

Summary of Findings:

Based on sampling showing DRO MTG soil cleanup level exceedance, soil was excavated at the site on September 22, 1999 and again on March 13, 2000. A total of 430.97 tons of DRO contaminated soil was received at ASR for treatment/disposal from the September remedial action. Based on final sample results from this event, another removal action was conducted on March 13, 2000 and an additional 20.43 tons was excavated and transported to ASR for treatment/disposal.

A NFA letter was issued for the site by ADEC on June 28, 2000.

2.1.8 Travis/Peterson Environmental Consulting, Inc. Soil Investigation, 5801 Silverado Way Prepared for Nabors Alaska Drilling. October 20, 2006

Summary of Findings:

Travis/Peterson Environmental Consulting, Inc. (TPECI) collected soil samples on September 29, 2006 as recommended by a Phase I Environmental Site Assessment Update performed by TPECI in September 2006. The ESA recommended sampling for GRO and DRO in the area around the above ground storage tanks (ASTs) using a hydraulic posthole auger in six separate locations. Samples were collected along the western edge of the property at approximately one (1) foot bgs, at the groundwater interface. The only sample yielding contamination was in the soil boring 4 primary sample and its duplicate, where GRO and elevated

levels of DRO were detected. GRO was detected at 128 and 107 mg/Kg, respectively and DRO was detected at 4090 and 4120 mg/Kg in the duplicate. The contamination in soil boring 4 appeared to be localized.

2.1.9 Travis/Peterson Environmental Consulting, Inc. Corrective Action Work Plan Silverado Way sent via Email to Rich Sundet, Todd Blessing and Robert Weimer. October 27, 2006

Summary of Findings:

During the remedial action, 60 cyds of contaminated soil was removed and transported to ASR for treatment/disposal. Confirmation soil and groundwater samples collected from the excavation and well were within cleanup levels (500 mg/Kg default cleanup level for DRO due to the peat content – established previously by ADEC and Hoefler Consulting Group), and 1.5 mg/L for DRO in groundwater.

2.1.10 Travis/Peterson Environmental Consulting, Inc. Corrective Action Plan Silverado Way Summary Report Prepared for Nabors Alaska Drilling. December 2006

Summary of Findings:

This is the formal report detailing the corrective action where 60 cyds of DRO contaminated soil was excavated (summarized above). One confirmation sample had a 306 mg/Kg DRO. TPECI estimated less than one half of one cyd remained that was above the MTG clean up level of 250 mg/Kg. TPECI also installed a groundwater monitoring well as requested by ADEC and sampled the well for DRO. DRO was below the groundwater cleanup level at 0.573 and 0.478 mg/L in the duplicate sample. The MTG cleanup level for DRO in groundwater is 1.5 mg/L.

A NFA letter was issued to Nabors Alaska Drilling, Inc. for the site by ADEC on January 17, 2007.

2.1.11 TELLUS, Ltd. Confirmation Sampling Report for Stockpiled Soil Silverado Subdivision, Plat 80-111, Anchorage, Alaska Prepared for Granite Construction Company – Contractor. ADEC CS File #2100.38.531. August 2015

Summary of Findings:

The Confirmation Sampling Report was developed based on contaminated soil encountered on the ADOT ROW Parcel (formerly a portion of Tract 2B) during Phase II of the West Dowling Road construction project. Tract 2-B was previously re-platted in 2010 and the southern portion of Tract 2-B was acquired by ADOT for the road construction project. Soil excavation, stockpiling and sampling was performed by Granite Construction and TELLUS according to ADOT's ADEC-approved work plan between July 13th and 17th, 2015. Approximately 5,256 cyds of soil was field screened, segregated, sampled and reused within the project's roadway and embankment construction limits with ADEC approval. Samples were analyzed for VOCs by 8260C, GRO, DRO and RRO. Samples were also analyzed for total Nickel and total Chromium, with 10% of the confirmation samples also analyzed for polynuclear aromatic hydrocarbons (PAHs) by 8270D. DRO was the only analyte detected above MTG cleanup levels. There were no attachments associated with this version of the report.

2.1.12 TELLUS, Ltd. Confirmation Sampling Report for West Dowling Road Reconstruction Phase II: C Street to Minnesota Drive Prepared for Granite Construction Company – Contractor & ADOT&PF. ADEC CS File #2100.38.53. September 2020

Summary of Findings:
This report details the findings of the investigation of the ADOT ROW take from the original Tract 2-B after ADOT acquired the parcel and contaminated soil was discovered in 2012. The focus of this workplan is the current limits of Tract 2-B, however the information from the ADOT ROW parcel investigation and characterization is relevant as it abuts Tract 2-B. Further, based on the ADOT ROW parcel sampling results, soil hydrocarbon concentrations slightly exceeding MTG cleanup levels still exist near the boundary between the two properties.

All field observations associated analytical results and project documentation presented in this report were generated during the 2015 and 2016 soil and groundwater investigations of the ADOT ROW parcel. The investigation was conducted in general accordance with an ADEC approved Sampling and Analysis Plan (SAP) dated April 2015 and the subsequent Groundwater Monitoring Plan. Groundwater monitoring was completed over the course of four quarterly events that occurred in 2016 (Tellus 2020).

This report was comprehensive of the investigation of the ADOT ROW parcel located along the south boundary of Tract 2-B. The report is complete with attachments of soil and groundwater data from 2015 and 2016. Sample locations with highlighted exceedances are shown on Figure 5 in Appendix A and tabulated sample results of the exceedances are included in Appendix B, Tabulated Results of ADEC Exceedances. The ADOT ROW parcel was sampled in multiple phases due to inability to sample the excavation bottom during excavation due to groundwater intrusion. The investigation of the post excavation contaminated area included the following boring and sample locations and sampling methods:

- Thirteen (13) discrete floor and sidewall samples were collected from various depths along the northern and southern boundaries of the excavated ADOT ROW parcel. Samples were denoted by project survey stations and depths (i.e., SS65+50 @ 10') and selected for laboratory analysis based on soil screening results.
- Ten (10) borings (Nos. 1-10) were drilled to a depth of 14 feet on the east side of the parcel. Soil samples were screened and selected for laboratory analysis based on screening results. The borings were drilled after backfilling the excavation with clean fill. Borings were required due to the high area groundwater that prevented collection of floor samples of native soil during the previous excavation and characterization effort. The borings reached native soil at 14 feet bgs to investigate for remaining contaminated soil.
- Fourteen (14) borings (Nos. FL05A through FL43) were drilled on the western side of the ADOT ROW parcel to access native soil at 14 feet bgs at floor locations where sampling was limited during excavation due to the high area groundwater. Soil samples were collected from each of the borings and screened and submitted for laboratory analysis based on screening results.
- Ten (10) borings each were drilled on the northern (Nos. 11-20) and southern (Nos. 21-30) ADOT ROW parcel property boundaries. Soil samples from each of the 20 borings were continuously

screened during drilling, and samples were submitted for laboratory analysis based on screening results.

- Four borings were drilled outside each corner of the rectangular excavation and completed as monitoring wells. Monitoring Wells A through D were installed in a clockwise pattern with Monitoring Well A installed in the northeast corner. Soil samples from each of the borings were continuously screened and samples were submitted for laboratory analysis based on screening results.
- Fifteen (15) borings (Nos. 100-114) were drilled across the western side of the lot through the clean backfill to access native floor samples at 14 feet bgs at locations where area groundwater levels limited sampling during the previous excavation effort.
- PAH and VOC analyses was performed on samples and PAHs were non detect and Benzene was the only analyte that exceeded MTG cleanup level under those analyses.

2.2 General Site Topography and Hydrogeology

During the Pleistocene epoch the Anchorage area was covered by a large glacier resulting in a variety of glacial deposits that include glacial till, washed ice-contact sediments, glaciodeltaic sand and gravel, and glacioestuarine silt and clay. These deposits are complexly interrelated with deposits originating from intervening fluvial, stillwater, and colluvial non-glacial processes (ADOT 2012). More recent (Holocene) surficial deposits in the Anchorage area include alluvial materials along drainages, wind-deposited silts and sands, and peat deposits. The latter type is the predominant native surface soil type in the project area. The resulting accumulation of sediments in the Anchorage area ranges in thickness from zero where it abuts the Chugach Mountains to 1640 feet bgs at Point Campbell. Depth to bedrock in the project area is estimated at approximately 590 feet (Combellick 1999).

The original surface topography of the Tract 2-B vicinity is generally low relief with an overall slope to the south and west and towards Tina Lake. Wetlands are common in the project area as the natural drainage is poorly integrated, characterized by un-drained or poorly drained areas (ADOT 2012). Flat topography and the presence of relatively impermeable fine-grained soils are contributing factors to wetland development in the area (Selkregg 1972). Construction activities including the West Dowling extension have filled in much of the wetlands that once dominated portions of the area and storm drain piping conveys surface water from the north side to the south side of the roadway prism.

The subject Tract 2-B property is bounded on the east by the C Street ROW, to the south by West Dowling Road ROW, and the east by Weidner Properties equipment storage yard which adjoins a large snow disposal site further west. Properties to the north and northwest of the subject property are in the Silverado Subdivision and are of commercial-industrial use with business park offices, warehousing, specialty retail or wholesale sales and consulting businesses present. The subject industrial-commercial properties extend northward up to Potter Road.

The general slope of the Silverado Subdivision properties is southward with storm drainage collected in curb and field inlets for culver conveyed discharge to Tina Lake. The Tract 2-B property does not receive significant

drainage from upslope or other adjoining properties. Consistent with the area, Tract 2-B drains southward via sheet flow to the ADOT ROW storm drainage ditches including a south sloping drainage ditch along the east property boundary (C Street ROW) and a shallow drainage ditch along the west property line between Tract 2-A and Tract 2-B. A drainage ditch along the north side of the ADOT ROW parcel leads to culverts carrying storm water to Tina Lake.

The subject property is comprised of imported fill placed over native soil comprised of peat and layers of sand and silt (D&M 1990). S&W investigation described Tract 2-B surficial soil as brown sandy gravel fill. Site groundwater has been observed at depths range from 1 to 6 feet below ground surface at developed (filled) areas of Tract 2-B fill pad. The presence of thick layers of peat soil in the project area indicates that wetland or shallow lake conditions were historically present at the southern portion of Tract 2-B and the ADOT ROW Parcel. Tina Lake, much of which was filled during the ADOT West Dowling Road project, is positioned southwest and west of Tract 2-B and occupies a low point that likely influences shallow unconfined groundwater and surface water flow.

The log of a monitoring well installed along the southwest boundary of Tract 2-B in November 1990 by Dames and Moore showed poorly graded sand with silt (fill) placed over peat soil and groundwater at a depth of about 4 feet bgs (D&M 1990). D&M also installed a test trench 50 feet east of the well and groundwater was not observed at a trench depth of 6 feet bgs.

In September of 2006 TPECI conducted soil sampling around aboveground fuel storage tanks using a hydraulic posthole auger along the fenced western boundary of the property. Soil appeared to be sandy gravel fill with silt and groundwater was encountered at shallow depths from 1 to 2 feet. Based on the developed (paved roads, paved parking and buildings) upslope areas, groundwater recharge would expect to be modest. Occurrence of shallow groundwater in the fill soil on Tract 2-B is expected to be variable.

Tellus installed two monitoring wells denoted wells A and D on the ADOT ROW Parcel just south of the Tract 2-B south property boundary. These wells observed groundwater at 2 to 3 feet bgs. Wells B and C were similarly installed on the south side of the ADOT ROW parcel.

The ADOT ROW parcel has been subjected to excavation and fill activities associated with the construction of West Dowling Road. ADOT contractors removed more than 5,200 yards of suspected contaminated or unsuitable soil (much of it comprised of peat). Tellus reports that surface soil on the ADOT ROW parcel was comprised of around 4 feet of silty sandy gravel fill. Excavated soil from the ADOT ROW parcel was reused as embankment fill at a project location further west within the West Dowling Road alignment.

ADOT conducted geotechnical investigations of the south side of Tract 2-B and across the ADOT ROW parcel (borings TH09-06, TH09-12 andTH09-13). ADOT reported the borings located between station 64+75 to station 67+00 where the alignment passes through an improved commercial property at the corner of C Street and the existing West Dowling right of way (ADOT 2012). The generalized soil profile for this section is reported as:

- 4 to 6.5 feet of fill (SM, SP-SM), over
- 8.5 to 9 feet of Peat (PT), over
- Silt (ML)

As discussed previously, Tellus installed a great number of soil borings on the ADOT ROW parcel (Tellus 2020). During these previous investigations soil samples were collected from borings were advanced through the clean backfill and peat to sample native dry silt soil at 12 to 14 feet bgs (excavation bottom samples). All excavation bottom sample results were below MTG soil cleanup levels.

Tellus installed and sampled 4 borings to a total depth of 22.0 feet which were then completed as groundwater monitoring wells. The soils encountered in these borings consisted of 2 to 5 feet of gray sandy gravel fill followed by 7 to 10 feet of peat underlain by a dry sandy silt. These wells were identified as monitoring wells A ,B, C and D. Monitoring wells A and D are located on the ADOT ROW parcel just south of the south boundary of Tract 2-B. The final groundwater monitoring episode was completed in October 2016.

RSE used Tellus groundwater measuring point and depth to water elevation to construct groundwater contours for that monitoring event which demonstrated a south flow direction that swings to the southwest (Appendix C).

3.0 SAMPLING PLAN & CONTAMINANTS OF CONCERN

As summarized in the above section *Chronology and Summary of Previous Investigations at Tract 2-B*, several historic releases have occurred on Tract 2-B, the subject of this work plan. The primary compound of potential concern (COPC) previously found at the site above MTG soil cleanup levels has been DRO. Other COPCs determined to be non-detect or below MTG cleanup levels include GRO, RRO, VOCs, polynuclear aromatic hydrocarbons (PAHs) and RCRA metals. Chromium has been previously speciated into tri- and hexavalent Chromium and was also found to be below MTG soil cleanup levels. Based on sample results after previous corrective actions, Tract 2-B has been successfully remediated for DRO and NFA letters received from ADEC after each reported release. Groundwater has also been previously sampled, analyzed, and found to be within cleanup levels for DRO on the subject property.

As demonstrated in the highlighted sample results in the tables in Appendix B, 2012, 2015-2016 Tract 2A Investigation - Tabulated Results of ADEC Exceedances, low levels of DRO and Benzene above MTG soil cleanup levels remain in soil on the ADOT ROW parcel. As seen in the locations highlighted on Figure 5 of Appendix A, the MTG soil cleanup level exceedances for soil were detected mainly in the borings and sidewall samples located along the north sidewall of the ADOT ROW parcel excavation at depths between 4 to 8 feet bgs. Review of the DRO data shows the preponderance of exceedances were in low percent solid and high total organic carbon (TOC) peat soil. Tellus requested silica gel cleanup of the soil samples for select results which validated that in the peat soil contributions of natural organics elevated DRO on average by 165 mg/Kg.

Hydrocarbons were below MTG soil cleanup levels in soil samples collected during monitoring well installation. Monitoring well D is located in the northwest corner and Monitoring Well A located in the northeast corner of the ADOT ROW parcel (both wells installed in native soil just outside of the previously excavated area). Total Chromium in the soil boring for Monitoring Well D was 430 mg/Kg and total Nickel was at 140

mg/Kg although these results are non-comparative to mineral soil due to low percent solids in the sample. Both elements were detected in the 5-to-7-foot depth soil sample. The MTG soil cleanup level for total hexavalent Chromium in soil is 89 mg/Kg and 86 mg/Kg for total Nickel. The only other COPC detected in the northern Monitoring Wells D and A was Benzene at 7.2 ug/L in a groundwater sample collected from Well D (Tellus 2016c). The GCL for Benzene in groundwater is 4.6 ug/L. No other COPCs, including Benzene were detected in Monitoring Well A over the three quarters of groundwater monitoring program. Based on the above findings, the project COPCs, their abbreviations, laboratory analytical methods and the ADEC soil and groundwater cleanup levels are listed in Table 1.

Table 1. Soil and Groundwater Contaminants of Potential Concern

COPC	COPC Abbreviation	Lab Method	ADEC MTG Soil Cleanup Level[1]
Soil			
Diesel Range Organics	DRO	AK 102	250 mg/Kg
VOCs (Benzene)	Collectively referred to as BTEX	EPA 8021B	0.022 mg/Kg
Chromium	Cr	EPA 6010	89 mg/Kg
Nickel	Ni	EPA 6010	86 mg/Kg
Total Organic Carbon	TOC	SM 5310B	NA
Groundwater			
VOCs (Benzene)	Benzene	EPA 8021B	4.6 ug/L[2]

[1] See ADEC Table B1. Method Two –Migration to Groundwater Soil Cleanup Levels for Under 40-inch Zone

[2] See ADEC Table C. Groundwater Cleanup Level for benzene

3.1 Proposed Workplan Scope

As requested by ADEC, RSE is providing this work plan describing the additional field investigation proposed for the subject portion of Tract 2-B at 5801 Silverado Way. Previous work on Tract 2-B documented known hydrocarbon releases, however these releases were remediated and currently no data is available to indicate significant contamination is affecting Tract 2-B soil or groundwater. As of 2015-2016 sampling, low levels of DRO and Benzene above MTG soil cleanup levels were known to exist in the soil at depths of between 4 and 8 feet bgs along the northern boundary of the ADOT ROW parcel (southern boundary of Tract 2-B). It is also known that the September 2016 groundwater sampling in monitoring well D on the ADOT ROW parcel yielded Benzene at 7.2 ug/L, slightly above the groundwater cleanup level of 4.6 ug/L. It is currently unknown if the contaminated soil and/or groundwater identified on the ADOT ROW parcel is also present in soil and/or groundwater on Tract 2-B, the subject property. The ADOT ROW parcel was nearly fully excavated to a depth of 14 feet bgs except for narrow strips of land on the north and south sides where the monitoring wells were installed. Given the results from a great number of final excavation limit samples, it is RSE's opinion that the ADOT ROW parcel is adequately characterized and remediated. Although low level exceedances for Benzene were documented in north sidewall soil, the remaining impacts on the ADOT ROW parcel site do not appear to present an unacceptable risk to human health or the environment.

Review of the lab data, field notes and soil boring logs indicates most of the ADOT ROW parcel excavation

sidewall samples were collected from organic soil. Due to soil high TOC, reported DRO in soil values were elevated due to natural organics and most likely are below MTG soil cleanup levels. Based on analyses of Tellus soil samples that were subjected to conventional DRO analyses and analyses after silica gel cleanup the average background contribution of natural organics to the DRO result was about 165 mg/Kg. ADEC comments also noted benzene as a concern on the ADOT ROW parcel. RSE's review of this data shows that benzene is at relatively low levels and is present in soil very high in TOC. This was demonstrated upon review of sampling field notes and scrutinizing the percent solids. Generally, percent solids less than 75% implies the presence of lighter and organic soil matrices. Soils of less than 40% solids can be inferred as high in TOC.

Ratios of RRO to DRO can also be used to help identify naturally occurring organics which in Anchorage area peat soil RRO/DRO ratios of peat soil is generally in the 4 to 8 range. HCG previously calculated alternative cleanup levels for DRO based on the soil high TOC which was the basis of previous ADEC acceptance of a 500 mg/Kg cleanup level for the Tract 2-B site (HCG 1999b).

In short, DRO quantitation in organic soil is always problematic if the results are not evaluated in the context of the matrix characteristics relative to the impact low percent solids and contribution of natural organic compounds to elevation of the analytical result. Based on RSE's review the data, the ADOT ROW parcel requires no further investigation and this workplan proposes to focus the efforts on determining if contaminated soil near the south property line on Tract 2-B exists and if it does exist, is it associated with the contamination removed from the ADOT ROW parcel or a separate source.

3.1.1 Soil Investigation

As per ADEC request, RSE will provide ADEC 10 days-notice prior to initiating field work. In order to investigate soil conditions at the subject property on Tract 2-B, RSE proposes installing at least three borings along the Tract 2-B southern property boundary. Low concentrations of Benzene and/or DRO were previously detected in soil exceeding MTG soil cleanup levels in 3 out of 6 of the sidewall samples collected at 4 feet bgs, and in 8 out of the 10 borings drilled across the northern side of the ADOT ROW parcel. Exceedances were detected in the borings at depths of between 4 and 8 feet bgs (see Figure 5 in Appendix A and Tables of highlighted exceedances in Appendix B). RSE proposes soil borings in the southeast and southwest corners of the Tract 2-B and advancing a third boring in the center along the southern boundary. Boring locations are shown on Figure 6 in Appendix A, 2022 Investigation Proposed Boring and Monitoring Well Locations.

Borings will be installed by local drilling contractor, Discovery Drilling with a Geoprobe drill rig using direct push technology and Macrocore soil sampling system. Soil boring soil will be continuously screened by an RSE Qualified Environmental Professional (QEP) using ambient temperature headspace method with a photoionization detector (ATH/PID). (Additional information on the ATH/PID method is included in Section 4.1, *Field Screening by ATH/PID Method*.) Each boring will be advanced to 14 feet bgs with detailed observations and sampling from the 1.5 to 8-foot interval and at depths where contaminated soil was previously identified on the north side of the ADOT ROW parcel.

Borings will be logged according to the soil type, depth and ATH/PID reading. At least two soil samples from depths greater than 2 ft bgs with the highest ATH/PID readings from each boring will be submitted for laboratory analysis for the COPCs outlined in Table 1. A third soil sample will be collected from less than 2 ft depth in fill soil at all borings to address the surface exposure pathway. If only low-level non-definitive ATH/PID readings are measured during the screening process, soil samples will be collected from the fill soil at a less than 2 ft depth, and 2 samples from the 4 to 8-foot depth range (total of 3 samples). Additional samples or step out borings will be collected if necessary to define observed potential hydrocarbon impacts. At least one blind duplicate soil sample will be selected for analysis based one of the highest ATH/PID reading and at a minimum frequency of 10%. All soil samples will be laboratory analyzed for DRO and VOC (benzene) concentrations by contract laboratory SGS North America, Inc. (SGS) in Anchorage, Alaska.

3.1.2 Groundwater Investigation

To investigate current groundwater conditions, the boring installed in the southwest corner of Tract 2-B will be completed as a monitoring well (see Figure 6 for approximate location). Well construction will be 2-inch schedule 40 PVC installed to 14 feet bgs with a 0.010-inch slotted screen. The screened interval will be from approximately 1.5 feet bgs to total depth of the boring at 14 feet. Care will be taken to set the top of screen above groundwater level which has been previously identified at approximately 2 feet bgs at existing wells A and D. The new well will be installed with a 10/20 sandpack that extends above the top of the screened interval. Completion will be a steel flush-mounted monument. The well will be properly developed by purging at least three well volumes, then allowed to stabilize for at least 24 hours prior to sampling. RSE will provide a construction diagram of the monitoring well along with soil boring logs in the investigation report.

The location of the workplan proposed well was selected to be adjacent and upgradient to existing monitoring well D installed in 2015, located in the northwest corner of the ADOT ROW parcel and south of Tract 2-B. At well D, benzene concentrations in groundwater exceeded cleanup levels during the quarterly monitoring program in 2016 for two consecutive quarters. A groundwater sample and blind duplicate groundwater sample will be collected and analyzed for BTEX, by EPA Method 8021B. Analyses of al 4 groundwater samples from all 4 monitoring wells for PAHs, full list VOCs, GRO, RRO and DRO were well below GCLs or non-detect. Other than Benzene, no COPCs were detected above groundwater cleanup levels during September 2016 quarterly groundwater sampling which was the third and most recent monitoring event for these wells.

Groundwater samples will be analyzed by SGS in Anchorage. The other existing monitoring well in the northeast corner of ADOT-owned Tract 2-B, Monitoring Well A, did not yield soil sample results that exceeded MTG soil cleanup levels and groundwater samples collected during 2016 quarterly sampling events were below GCLs. The other two monitoring wells installed in 2016, Wells B and C are located in the southeast and southwest corners of the ADOT ROW parcel, respectively. Monitoring wells A and D were observed to remain accessible on the ADOT ROW property however the condition of these wells in unknown at this time. A single duplicate sample will be collected or at a frequency of 10% .

4.0 FIELD METHODS

4.1 Soil Field Screening by ATH/PID Method

An RSE QEP will continuously field screen all soil obtained from the borings using ATH/PID technique. This method involves placing samples of in-situ soil from borings into new, quart-sized Ziploc™ storage bags, warming the contents to 45-55 °F, then measuring the headspace generated within the bag with a PID. RSE will use a MiniRAE Lite™ PID calibrated with 100 parts per million by volume isobutylene (ppmv) for soil field screening. The instrument will be calibrated prior to all drilling and sampling activities. Headspace vapors will be allowed to develop in the container for at least 10 minutes but no longer than one hour; containers will be shaken or agitated for 15 seconds at the beginning and end of the headspace development period to assist volatilization; temperatures of the headspace will be warmed to at least 40° F, with instruments calibrated for the temperature used.

4.2 Soil and Groundwater Sampling Methods

Soil samples will be collected for laboratory analysis using clean stainless-steel spoons to place soil into method-specific containers with appropriate preservatives such as methanol for VOC soil samples and HCL for VOC and DRO/RRO groundwater samples. All samples will be placed into a cooler to maintain temperatures between to 0 and 6 degrees Celsius. The sample containers will be new and provided by the contract laboratory, SGS. RSE will collect field screening and analytical samples from native, in place soil taken from the soil boring cores. Samples for laboratory analysis will be selected by comparison of field screening results and from soil that exhibits hydrocarbon staining or sheening At least two and up to three samples will be collected from each boring. Soil samples will be collected in order of high volatility with VOC analytes collected first and metals samples collected last.

Following well installation in the southwest corner of Tract 2-B of the subject property, the well will be developed, and allowed to stabilize for 24 hours prior to sampling. The amount of time (hours and minutes) that each well was allowed to develop before it was sampled will be documented in the field notes and well logs. Prior to sampling, RSE will measure the depth to the bottom of the well and the depth to groundwater from a marked measuring point on the north side of the PVC at the top of the well casing. After measurement and determination of the well volume, three volumes will be purged using a low-flow submersible pump. Water quality parameters will be monitored for stabilization using a YSI 556 water quality meter. The well conditions will be considered stabilized after purging three well volumes, or when the readings collected are within the following ranges:

- pH ± 0.1
- Temperature ±3% (minimum of ± 0.2ºC)
- Conductivity ± 3%
- Specific Conductance ±10 uS
- Dissolved Oxygen ±10%

Monitoring well purging and sampling will be performed according to EPA Low Flow Purging and Sampling Procedures (EPA/EQASOP-GW4, September 2017). Water samples will be collected using a positive-pressure submersible pump set to a low flow rate during purging and sampling. Water samples will be collected using new tubing. As water samples are collected, care will be taken to minimize volatile loss by excessive turbulence or air mixing. Samples will be collected in order of high volatility with VOC analytes collected first. Field personnel will avoid spilling or over-diluting acid sample preservatives. One primary sample will be collected from the well and submitted for BTEX analysis. A blind duplicate sample will also be submitted to the laboratory for BTEX analysis for quality control purposes.

After collection, laboratory soil and groundwater samples will be stored in a cooler (with frozen gel-ice), along with temperature and trip blanks, chilled to between 0-6°C and transported under chain of custody documentation to SGS located in Anchorage. All samples will be collected in accordance with ADEC sampling and guidance documents with any deviations from this workplan noted in the site assessment report. The sample containers, preservation and holding requirements for each proposed analytical method by media are summarized in Table 2.

Table 2. Containers, Preservation, and Holding Times for Soil and Groundwater Samples

COPC	Matrix	Lab Method	Sample Container	Preservation	Holding Time
DRO	Soil	AK 102	1 x 4 oz. amber jar with Teflon lined cap	0 – 6° C	14 days to extract, <40 days to analysis
Cr	Soil	EPA 6010	1 x 4 oz. amber jar with Teflon lined cap	0 – 6° C	40 days to analysis
Ni	Soil	EPA 6010	1 x 4 oz. amber jar with Teflon lined cap	0 – 6° C	40 days to analysis
BTEX	Water	EPA 8021	3 x 40 ml VOA with Teflon-lined lids	HCL 0 – 6° C	14 days to analysis

4.3 Groundwater Elevation Survey

RSE will perform an elevation survey of the new groundwater monitoring well and the existing groundwater monitoring wells that were installed by Tellus on behalf of ADOT. Surveys will be tied to a site temporary benchmark (TBM) using an assumed datum. RSE will complete at least two elevation surveys of all monitoring well casings (measuring points) and compared for agreement. Elevation data will be considered valid if the measuring points between the two surveys are within 0.01 foot vertical unless the steepness of hydraulic gradient allows for lower accuracy. If the two data sets do not agree, additional data sets will be collected as required to eliminate the discrepancy. RSE will also collect elevation of the ground surface and will tie in current Tina Lake surface elevation to include in the groundwater flow determination. The tabulated

data will be used, along with depth to groundwater measurements for input into the Surfer™ software program to generate a groundwater contour map. Horizontal locations of project related data points will be located by horizontal measurements to existing permanent site features and in some cases with use of a GPS.

5.0 QUALITY ASSURANCE AND CONTROL

5.1 Field and Laboratory Data Quality Control

RSE will collect each sample in accordance with applicable ADEC regulations and guidance documents. Data quality assurance will follow the Minimum Quality Assurance Requirements for Sample Handling, Reports and Laboratory Data (October 2019). Sampling will be in accordance with ADEC Field Sampling Guidance (January 2022). Blind soil and groundwater duplicate samples will be collected at a frequency of 10%, with no less than one (1) blind duplicate sample for soil and groundwater collected. RSE will submit one (1) trip blank with each sample cooler containing volatile samples for comparison to detection levels. Trip blanks will be entered onto the project Chain of Custody along with all field-collected samples. Any cooler that does not remain in the custody of RSE personnel or secured on RSE premises will be equipped with a custody seal.

Upon receipt of data, RSE will complete an ADEC Laboratory Data Review checklist for each laboratory report received. RSE will document any deviations to typical field sampling protocol and notify the ADEC as to whether the deviations affect the data objectives. SGS laboratory data quality objectives (DQOs) for soil and groundwater are provided in Appendix D. All laboratory results, including laboratory quality control (QC) sample results, will be reviewed and evaluated for quality and usability. The quality assurance assessment summary will include a discussion of any effects on data quality and/or usability due to field sampling and laboratory quality control discrepancies.

5.2 Field Documentation

Field scientists will maintain field logs onsite to document the following elements, at a minimum:

- Date
- Weather
- Sampling personnel
- Field measurements
- Field observations
- Changes to work plan (if any)
- Sketches of sample location with distances show
- Soil and Groundwater descriptions
- Decision-making and sample selection rationale
- PID and water quality instrument calibrations

Field notes will be recorded in write-in-the-rain field book or on field sheets or forms. Soil or groundwater sample locations will be located by the use of distance measuring equipment to tie the locations to permanent site features such as fencing or buildings. RSE employs a groundwater monitoring field form for use by scientists while developing and sampling groundwater. A copy of this form is included as Appendix E.

6.0 INVESTIGATIVE DERIVED WASTE MANAGEMENT

Consumables such as plastic bags, tubing and gloves will be placed into a trash receptacle for disposal. Non-consumables such as spoons, the submersible pump, and water level indicator will be decontaminated using Alconox™ and water between sampling efforts. Soil cuttings will be stored in a 55-gallon drum at the site pending laboratory sample results.

If free product is not observed in the purge or sample water, RSE proposes passing the purge water through a granular activated carbon (GAC) filter and discharging it to a vegetated area onsite a minimum of 100 feet away from surface water. If the purge water exhibits a sheen or free product, RSE will containerize, seal, and store the water onsite until data supports applicable disposal methods. If free-product is encountered, any removed product will also be containerized, sealed, and stored on-site until offsite disposal or treatment is approved by ADEC. Spent carbon filters will be disposed of via the Very Small Quantity Generator (Conditionally Exempt Small Quantity Generator) facility at the Anchorage Regional Landfill in Anchorage, Alaska.

Carbon filters are disposed of when water is no longer efficiently accepted by the filter. Based on a carbon weight of 15 lbs per container and assuming only half the media is used, a properly operated (avoidance of sediment) a filter can theoretically treat many thousands of gallons. However, in practice the filter is plugged with sediment or biofouling prior to exceeding filter capacity and breakthrough occurs. RSE dedicates carbon filters to sites. The start date of filter use is written on the top of the filter.

Soil cuttings will be containerized in an open top 55-gallon drum. If soil results for metals exceed the “20 times rule” RSE will analyze cuttings via TCLP to determine if the materials are subject to regulation as VSQG hazardous waste. Cuttings that are above ADEC soil cleanup standard will be disposed of at the Anchorage Regional Landfill VSQG facility.

If the off-site treatment or disposal of investigation-generated waste is required, RSE will submit an ADEC Transport, Treatment and Disposal form to the ADEC project manager for approval prior to engaging in such actions. A copy of this form is provided in Appendix F.

7.0 PRELIMINARY CONCEPTUAL SITE MODEL

A preliminary conceptual site model (CSM) is provided in Appendix G. The CSM will be updated in the site assessment report.

8.0 REPORTING

RSE will provide our client and the ADEC with a final report in accordance with 18 AAC 75 to include the following key elements:

- Discussion of deviations from the approved work plan, if any, and how they may affect data quality and usability;
- A discussion of soil field screening, and laboratory sample results;
- A discussion of water quality parameter monitoring, and laboratory groundwater results;
- Monitoring well depth to water, depth to well bottom, purge volumes, and observations regarding the presence or absence of sheen, odor, and/or free-product;
- Tables showing soil field screening and laboratory soil sample results;
- Tables showing water quality, and laboratory sample results for groundwater;
- A narrative regarding quality assurance and quality control;
- An ADEC Laboratory Data Review Checklist for each lab report;
- Select site photographs;
- A copy of field notes;
- Complete SGS Laboratory Package(s);
- An updated CSM showing potential exposure pathways and appropriate risk-based cleanup standards; and,
- Conclusions and recommendations.

All soil and groundwater samples will be collected by an ADEC Qualified Environmental Professional (QEP). Please contact David Nyman at (907) 229-7333 if you have any questions or comments. This work plan was prepared by an ADEC QEP in accordance with 18 AAC 75.

9.0 REFERENCES

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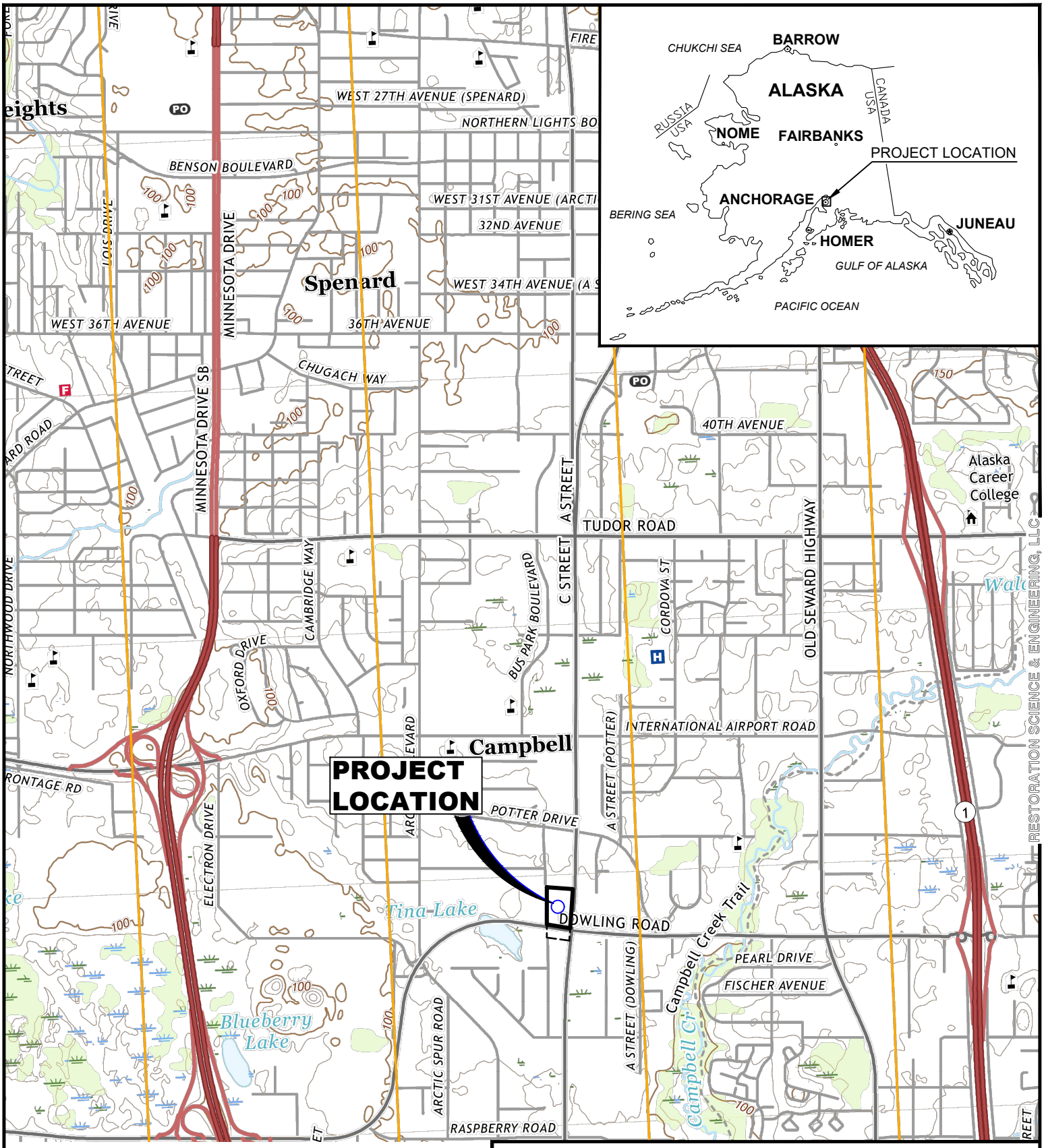
TELLUS, Ltd. 2020. Confirmation Sampling Report for West Dowling Road Reconstruction Phase II: C Street to Minnesota Drive Prepared for Granite Construction Company – Contractor & ADOT&PF. ADEC CS File #2100.38.53. September 2020.

Appendix A

Figures

1 – Vicinity Map
2 – Plot Plan of Site Features
3 – 2011 Tract 2-B Site Map of Pre-ADOT Acquisition
4 – 2021 Tract 2-B Site Map of Post-ADOT Acquisition
5 – 2012, 2015-2016 ADOT ROW Parcel Investigations Showing Exceedance Locations, Concentrations and Depths
6 – 2022 Investigation-Proposed Boring and Monitor Well Locations



GRAPHIC SCALE
N.T.S.

5801 SILVERADO WAY
TR 2-B, SILVERADO SUBDIVISION
PROPERTY TRANSFER

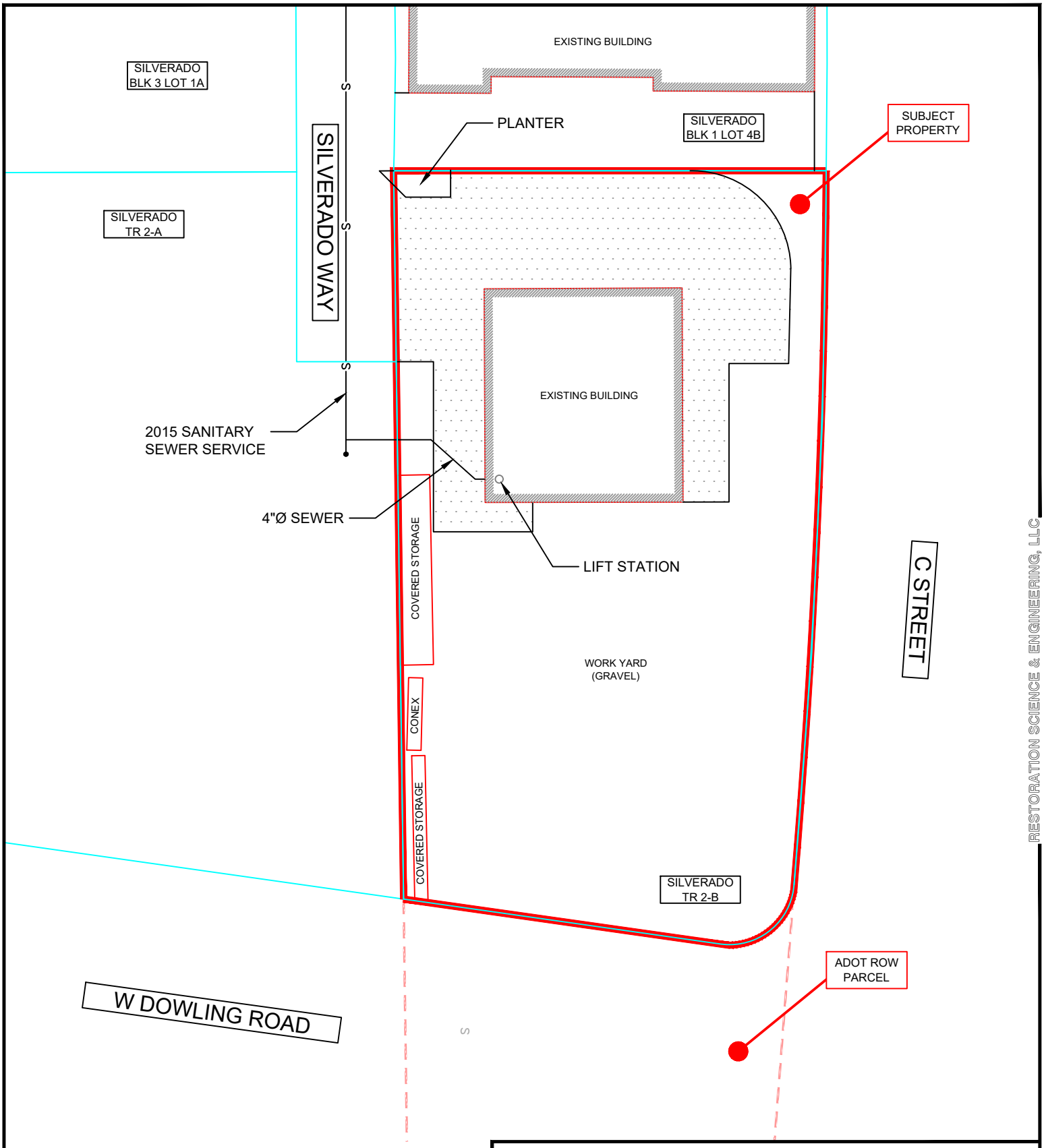
VICINITY MAP

ANCHORAGE, ALASKA

JOB NO: 22-2494	DRAWN: SWS
DATE: 04.22.2022	CHECKED: PAH

RESTORATION
Science & Engineering, LLC
911 West 8th Avenue, Suite 100
Anchorage, Alaska 99501
PH (907) 278-1023 FAX (907) 277-5718

FIGURE 1



LEGEND

- APPROXIMATE SUBJECT BOUNDARY
- APPROXIMATE PARCEL BOUNDARIES
- 2012 ADOT DIVISION BOUNDARY
- SANITARY SEWER
- ASPHALT
- BUILDINGS

40 0 80

GRAPHIC SCALE
1" = 80'

5801 SILVERADO WAY
TR 2-B, SILVERADO SUBDIVISION
PROPERTY TRANSFER

PLOT PLAN OF SITE FEATURES

ANCHORAGE, ALASKA

JOB NO: 22-2494	DRAWN: SWS
DATE: 04.22.2022	CHECKED: PAH

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FIGURE 2

*AERIAL IMAGE FROM APRIL, 2011

LEGEND

- APPROXIMATE SUBJECT BOUNDARY
- APPROXIMATE PARCEL BOUNDARIES
- 2012 ADOT DIVISION BOUNDARY

75 0 150

GRAPHIC SCALE
1" = 150'

5801 SILVERADO WAY
TR 2-B, SILVERADO SUBDIVISION
PROPERTY TRANSFER

2011 TR 2 -B SITE MAP
PRE-AKDOT ACQUISITION

ANCHORAGE, ALASKA

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DATE: 04.22.2022	CHECKED: PAH

FIGURE 3

*AERIAL IMAGE FROM APRIL, 2021

LEGEND

- APPROXIMATE SUBJECT BOUNDARY
- APPROXIMATE PARCEL BOUNDARIES
- PREVIOUS PROPERTY BOUNDARY

75 0 150

GRAPHIC SCALE
1" = 150'

5801 SILVERADO WAY
TR 2-B, SILVERADO SUBDIVISION
PROPERTY TRANSFER

2021 TR 2-B SITE MAP
POST-AKDOT ACQUISITION

ANCHORAGE, ALASKA

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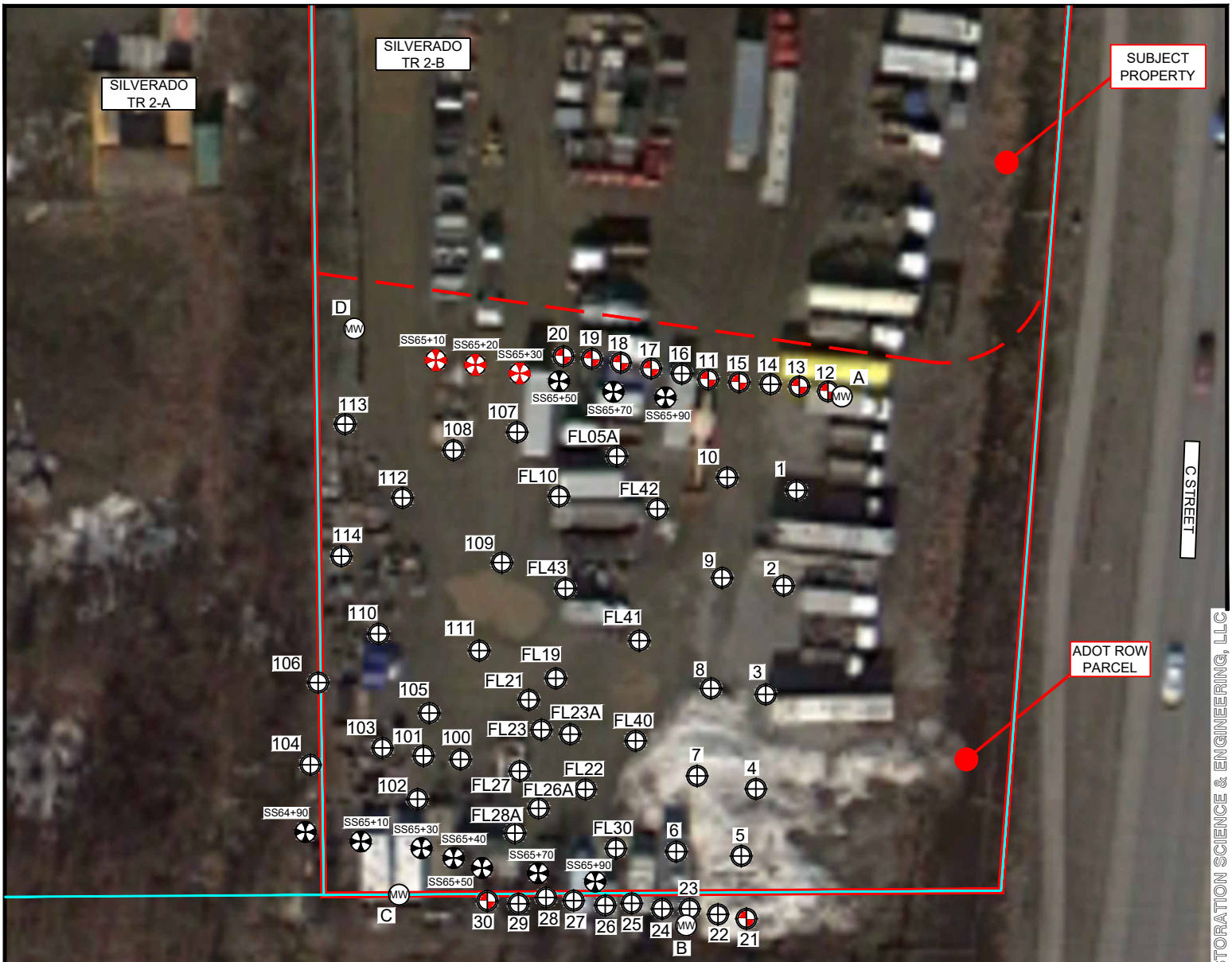
JOB NO: 22-2494	DRAWN: SWS
DATE: 04.22.2022	CHECKED: PAH

FIGURE 4



PID	Depth	Benzene (mg/Kg)	DRO (mg/Kg)	Cr (mg/Kg)	Ni (mg/Kg)	% Solids
SS65+10	4'	0.052	-	-	-	85.1
SS65+20	4'	0.050	-	-	-	82
SS65+30	4'	0.039	-	-	-	83.5
11	4'-6"	0.13	-	-	-	27.8
12	4'-6"	0.089	-	-	-	28.6
13	4'-6"	0.190	-	-	-	26.6
15	4'-6"	0.130	260	-	-	28.1
17	4'-6"	0.200	-	-	-	30
17	6'-8"	0.089	-	-	-	30
18	4'-6"	-	310	-	-	17.5
19	4'-6"	0.350	-	-	-	28.4
20	6'-8"	0.970	360/420	-	-	30.8
21	6'-8"	-	270	-	-	18.3
30	6'-8"	-	440	-	-	-
B	5'-7"	-	260	-	-	20.8
D	5'-7"	-	-	430	140	48.3

*AERIAL IMAGE FROM APRIL, 2011

LEGEND

- APPROXIMATE SUBJECT BOUNDARY
- APPROXIMATE PARCEL BOUNDARIES
- 2012 ADOT DIVISION BOUNDARY
- A MW MONITORING WELL
- BORING SAMPLE
- BORING SAMPLE EXCEEDING DEC SAMPLE LIMITS
- SIDEWALL SAMPLE
- SIDEWALL SAMPLE EXCEEDING DEC SAMPLE LIMITS

25 0 50

GRAPHIC SCALE
1" = 50'

5801 SILVERADO WAY
TR 2-B, SILVERADO SUBDIVISION
PROPERTY TRANSFER

2012, 2015-2016 ADOT ROW PARCEL INVESTIGATIONS
SHOWING EXCEEDANCE LOCATIONS, CONCENTRATIONS AND DEPTHS
ANCHORAGE, ALASKA

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JOB NO: 22-2494 | DRAWN: SWS
DATE: 04.22.2022 | CHECKED: PAH

FIGURE 5

*AERIAL IMAGE FROM APRIL, 2021

LEGEND

- APPROXIMATE SUBJECT BOUNDARY
- APPROXIMATE PARCEL BOUNDARIES
- PREVIOUS PROPERTY BOUNDARY
- A MW — LEGACY MONITORING WELL
- RSE-1 MW — RSE MONITORING WELL
- LEGACY BORING SAMPLE
- RSE BORING SAMPLE
- LEGACY SIDEWALL SAMPLE

30 0 60

GRAPHIC SCALE
1" = 60'

5801 SILVERADO WAY
TR 2-B, SILVERADO SUBDIVISION
PROPERTY TRANSFER

2022 INVESTIGATION
PROPOSED BORING AND
MONITORING WELL LOCATIONS

ANCHORAGE, ALASKA

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JOB NO: 22-2494	DRAWN: SWS
DATE: 04.22.2022	CHECKED: PAH

FIGURE 6

Appendix B

1 – ADOT ROW Parcel Tabulated Sample Results
with Highlighted COPC Exceedances

TABLE 1 - CONFIRMATION SOIL SAMPLES - # 12-005
HYDROCARBON CONCENTRATIONS SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
LOT 2 EXCAVATION SIDEWALL SAMPLE LOCATIONS
ANCHORAGE, ALASKA
JULY 2015

HYDROCARBON CONCENTRATIONS IN EXCAVATION SIDEWALL SAMPLE LOCATIONS										
SAMPLE ID / DEPTH	DATE COLLECTED	PID READING (ppm)	RESIDUAL RANGE ORGANICS GC / SGC (mg/Kg)	DIESEL RANGE ORGANICS GC / SGC (mg/Kg)	GASOLINE RANGE ORGANICS (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)	TESTAMERICA LABORATORY WORK ORDER NUMBER
So. S/W 65+90@10'	4/30/2015	1.5	83	ND (31)	ND (18)	ND (0.055)	ND (0.37)	ND (0.37)	ND (2.2)	230-480-1
So. S/W 65+70@10'		1.4	110	57	ND (46)	ND (0.14)	ND (0.92)	ND (0.92)	ND (5.5)	
So. S/W 65+50@10'		1.2	ND (65)	ND (32)	ND (27)	ND (0.080)	ND (0.53)	ND (0.53)	ND (3.2)	
No. S/W 65+90@10'	5/1/2015	2.3	43	ND (21)	ND (15)	ND (0.045)	ND (0.30)	ND (0.30)	ND (1.8)	
DUP 7		2.3	53	ND (24)	ND (16)	ND (0.048)	ND (0.32)	ND (0.32)	ND (1.9)	
No. S/W 65+70@10'		1.9	120	17	ND (9.4)	ND (0.028)	ND (0.19)	ND (0.19)	ND (1.1)	
No. S/W 65+50@10'		1.7	58	ND (20)	ND (12)	ND (0.035)	ND (0.23)	ND (0.23)	ND (1.4)	
Trip Blank	Not Applicable				ND (5.9)	ND (0.018)	ND (0.12)	ND (0.12)	ND (0.71)	
So. S/W 65+40@10'	7/13/2015	2.1	ND / ND (95)	ND / ND (38)	ND (8.5)	ND (0.085)	ND (0.085)	ND (0.085)	ND (0.085)	230-556-1 Rev 1
So. S/W 65+30@10'		1.4	ND / ND (50)	ND / ND (20)	ND (2.0)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	
So. S/W 65+10@10'		0.9	ND / ND (52)	ND / ND (21)	ND (1.8)	ND (0.018)	ND (0.018)	ND (0.018)	ND (0.018)	
So. S/W 64+90@10'		1.2	ND / ND (52)	ND / ND (21)	ND (1.9)	ND (0.019)	ND (0.019)	ND (0.019)	ND (0.019)	
No. S/W 65+30@4'	7/14/2015	3.6	ND / ND (59)	ND / ND (24)	ND (2.9)	**0.039**	ND (0.029)	ND (0.029)	ND (0.029)	
DUP A		3.6	ND / ND (62)	ND / ND (25)	ND (3.3)	ND (0.033)	ND (0.033)	ND (0.033)	ND (0.033)	
No. S/W 65+20@4'		2.2	ND / ND (58)	ND / ND (23)	ND (3.0)	**0.050**	ND (0.030)	ND (0.030)	ND (0.030)	
No. S/W 65+10@4'		2.6	ND / ND (58)	ND / ND (23)	ND (2.9)	**0.052**	ND (0.029)	ND (0.029)	ND (0.029)	
Trip Blank	Not Applicable				ND (5.0)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	
Sample	**Date**	**PID**	**RRO**	**DRO**	**GRO**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes**	**TESTAMERICA WORK ORDER NUMBER**
ADEC Method 2 Soil Cleanup Levels As Amended Through January 2019			**11000**	**250**	**300**	**0.022**	**6.7**	**0.13**	**1.5**	

NOTES:

1) Photoionization Detector (PID) was the vapor monitoring instrument used for field screening.
2) Residual Range Organics (RRO) analyzed by using Method AK103.
3) Diesel Range Organics (DRO) analyzed by using Method AK102.
4) GC refers to the standard proceedure utilized for analysis via gas chromatography.
5) SGC refers to the additional silica gel cleanup proceedure employed during analysis via gas chromatography.
6) Gasoline Range Organics (GRO) analyzed by using Method AK101.
7) Aromatic volatiles (BTEX) analyzed by using EPA Method 8260C.
8) Total xylenes refers to the summation of p&m-xylene and o-xylene concentrations.
9) ND indicates the analyte was undetected at the detection limits noted in the laboratory analytical report.
10) Samples in the green highlighted cells are the primary sample with their corresponding duplicate sample.

TABLE 1 - CONFIRMATION SOIL SAMPLES - # 12-005
CONTAMINATED SOIL STOCKPILE
HYDROCARBON CONCENTRATIONS SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
ANCHORAGE, ALASKA
JULY 2015

HYDROCARBON CONCENTRATIONS IN CONTAMINATED SOIL STOCKPILE										
SAMPLE ID	**DATE COLLECTED**	**PID READING (ppm)**	**RESIDUAL RANGE ORGANICS GC / SGC (mg/Kg)**	**DIESEL RANGE ORGANICS GC / SGC (mg/Kg)**	**GASOLINE RANGE ORGANICS (mg/Kg)**	**BENZENE (mg/Kg)**	**TOLUENE (mg/Kg)**	**ETHYL-BENZENE (mg/Kg)**	**TOTAL XYLENES (mg/Kg)**	**TESTAMERICA LABORATORY WORK ORDER NUMBER**
Lot 16	7/13/2015	3.9	7900 / 1300	**950 / 530**	ND	ND	ND	ND	ND	230-558-1
Lot 17		2.2	10000 / 2200	**700 / 410**	ND	ND	ND	ND	ND	
Lot 18		2.6	5600 / 920	**750 / 560**	ND	ND	ND	ND	ND	
Lot 19		0.7	5600 / 950	**630 / 390**	ND	ND	ND	ND	ND	
Lot 20		0.4	6500 / 1200	**530 / 350**	ND	ND	ND	ND	ND	
Lot 21		1.4	7300 / 1400	**470** / 190	ND	ND	ND	ND	ND	
Lot 22		1.2	5400 / 870	**440** / 230	ND	ND	ND	ND	ND	
Lot 23		1.6	4900 / 700	**310** / 120	ND	ND	ND	ND	ND	
Lot 24		1.3	5200 / 980	**410** / 150	ND	ND	ND	ND	ND	
Lot 25		0.8	4200 / 790	**340** / 120	ND	ND	ND	ND	ND	
Lot 26		1.8	7200 / 1400	**520** / 180	ND	ND	ND	ND	ND	
Lot 27		1.3	6600 / 1200	**570** / 170	ND	ND	ND	ND	ND	
Lot 28		0.4	6300 / 1200	**520** / 190	**6900**	ND	ND	ND	ND	
Lot 29		3.5	6400 / 1300	**520** / 170	ND	ND	ND	ND	ND	
Lot 30		1.1	3300 / 620	**370** / 97	ND	ND	ND	ND	ND	
DUP B			3700 / 720	**360** / 110	ND	ND	ND	ND	ND	
Trip Blank	Not Applicable				14	ND	ND	ND	ND	

Lot 31	7/14/2015	1.1	6900 / 2000	**480** / 240	ND	ND	ND	ND	ND	230-563-1
Lot 32		1.8	5400 / 1400	**380** / 190	ND	ND	ND	ND	ND	
Lot 33		2.4	**12000** / 1300	**700** / 180	ND	ND	ND	ND	ND	
Lot 34		2.1	680 / ND	120 / ND	ND	ND	ND	ND	ND	
Lot 35		1.3	1800 / 530	**250** / 82	ND	ND	ND	ND	ND	
Lot 36		2.0	3600 / 1100	**440** / 170	ND	ND	ND	ND	ND	
DUP C			3000 / 760	**410** / 110	ND	ND	ND	ND	ND	
Lot 37	7/16/2015	1.3	6800 / 1200	**460** / 140	ND	ND	ND	ND	ND	
Lot 38		2.0	2100 / 510	**280** / 91	ND	ND	ND	ND	ND	
Lot 39		2.4	1700 / 410	240 / 71	ND	ND	ND	ND	ND	
Lot 40		1.7	3300 / 720	**450** / 130	ND	ND	ND	ND	ND	
Lot 41	7/17/2015	1.9	730 / ND	160 / ND	ND	ND	ND	ND	ND	
Lot 42		2.6	1000 / 420	160 / ND	ND	ND	ND	ND	ND	
DUP D			2000 / 670	200 / ND	ND	ND	ND	ND	ND	
Lot 43		1.4	550 / ND	130 / ND	ND	ND	ND	ND	ND	
Lot 44		2.5	1300 / 370	200 / ND	ND	ND	ND	ND	ND	
DUP E			1600 / 430	190 / ND	ND	ND	ND	ND	ND	
Trip Blank	Not Applicable				5.0	ND	ND	ND	ND	
Sample	**Date**	**PID**	**RRO**	**DRO**	**GRO**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes**	**TESTAMERICA WORK ORDER NUMBER**
ADEC Method 2 Soil Cleanup Levels			**11000**	**250**	**100**	**0.02**	**5.4**	**5.5**	**78**	

NOTES:

1) Photoionization Detector (PID) was the vapor monitoring instrument used for field screening.
2) Residual Range Organics (RRO) analyzed by using Method AK103.
3) Diesel Range Organics (DRO) analyzed by using Method AK102.
4) GC refers to the standard proceedure utilized for analysis via gas chromatography.
5) SGC refers to the additional silica gel cleanup proceedure employed during analysis via gas chromatography.
6) Gasoline Range Organics (GRO) analyzed by using Method AK101.
7) Aromatic volatiles (BTEX) analyzed by using EPA Method 8260C.
8) Total xylenes refers to the summation of p&m-xylene and o-xylene concentrations.
9) ND indicates the analyte was undetected at the detection limits noted in the laboratory analytical report.
10) Samples in the green highlighted cells are the primary sample with their corresponding duplicate sample.

TABLE 1A - CONFIRMATION SOIL SAMPLES - # 12-005
HYDROCARBON CONCENTRATIONS SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
LOT 2 SOIL BORING SAMPLE LOCATIONS
ANCHORAGE, ALASKA
AUGUST 2015

HYDROCARBON CONCENTRATIONS IN SOIL BORING SAMPLE LOCATIONS										
SAMPLE ID / DEPTH	DATE COLLECTED	PID READING (ppm)	RESIDUAL RANGE ORGANICS (mg/Kg)	DIESEL RANGE ORGANICS (mg/Kg)	GASOLINE RANGE ORGANICS (mg/Kg)	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL-BENZENE (mg/Kg)	TOTAL XYLENES (mg/Kg)	TESTAMERICA LABORATORY WORK ORDER NUMBER
TB7 12'-14'	4/20/2015	0.6	120	11	ND (2.0)	ND (0.0059)	ND (0.039)	ND (0.039)	ND (0.24)	230-464-1
TB10 12'-14'		0.1	53	ND (14)	ND (5.7)	ND (0.017)	ND (0.11)	ND (0.11)	ND (0.68)	
DUP			45	ND (14)	ND (4.8)	ND (0.014)	ND (0.097)	ND (0.097)	ND (0.58)	
TB11 4'-6'	4/21/2015	0.6	910	150	ND (27)	**0.13**	ND (0.54)	ND (0.54)	ND (3.2)	230-465-1
TB11 6'-8'		0.5	1100	150	ND (35)	ND (0.10)	ND (0.69)	ND (0.69)	ND (4.2)	
TB12 4'-6'		0.6	780	160	ND (25)	**0.089**	ND (0.49)	ND (0.49)	ND (3.0)	
TB12 6'-8'		0.6	470	99	ND (22)	ND (0.067)	ND (0.45)	ND (0.45)	ND (2.7)	
TB13 4'-6'		0.5	1100	190	ND (27)	**0.19**	ND (0.54)	ND (0.54)	ND (3.2)	
TB13 6'-8'		0.7	790	120	ND (37)	ND (0.11)	ND (0.75)	ND (0.75)	ND (4.5)	
TB14 4'-6'		1.2	960	210	ND (21)	ND (0.063)	ND (0.42)	ND (0.42)	ND (2.5)	
TB14 6'-8'		0.9	440	90	ND (16)	ND (0.047)	ND (0.31)	ND (0.31)	ND (1.9)	
TB15 4'-6'		1.1	1400	**260**	ND (25)	**0.13**	ND (0.51)	ND (0.51)	ND (3.0)	
TB15 6'-8'		1.0	730	190	ND (34)	ND (0.10)	ND (0.68)	ND (0.68)	ND (4.1)	
TB16 4'-6'		0.7	880	120	ND (61)	ND (0.18)	ND (1.2)	ND (1.2)	ND (7.3)	
TB16 6'-8'		0.8	900	92	ND (51)	ND (0.15)	ND (1.0)	ND (1.0)	ND (6.2)	
TB17 4'-6'		0.4	1000	190	ND (26)	**0.20**	ND (0.52)	ND (0.52)	ND (3.1)	
TB17 6'-8'		1.9	770	160	ND (23)	**0.089**	ND (0.45)	ND (0.45)	ND (2.7)	
TB18 4'-6'		0.9	1400	**310**	ND (43)	ND (0.13)	ND (0.86)	ND (0.86)	ND (5.2)	
TB18 6'-8'		0.8	1100	190	ND (25)	ND (0.076)	ND (0.51)	ND (0.51)	ND (3.0)	
TB19 4'-6'		0.5	2300	240	ND (29)	**0.35**	ND (0.58)	ND (0.58)	ND (3.5)	
TB19 6'-8'		0.5	760	140	ND (47)	ND (0.14)	ND (0.95)	ND (0.95)	ND (5.7)	

TB20 6'-8'	4/22/2015	0.8	2600	**360**	ND (27)	**0.97**	ND (0.54)	ND (0.54)	ND (3.3)	230-466-1
DUP2			3100	**420**	ND (27)	**0.47**	ND (0.55)	ND (0.55)	ND (3.3)	
TB21 4'-6'		0.8	280	83	ND (4.3)	ND (0.13)	ND (0.87)	ND (0.87)	ND (5.2)	
TB21 6'-8'		1.2	1600	**270**	ND (45)	ND (0.14)	ND (0.91)	ND (0.91)	ND (5.5)	
TB22 4'-6'		0.4	1300	240	ND (53)	ND (0.16)	ND (1.1)	ND (1.1)	ND (6.3)	
TB22 6'-8'		0.4	590	120	ND (63)	ND (0.19)	ND (1.3)	ND (1.3)	ND (7.6)	
TB23 4'-6'	4/22/2015	0.6	360	ND (92)	ND (95)	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.71)	230-471-1
TB23 6'-8'		0.5	1400	220	ND (120)	ND (0.31)	ND (0.31)	ND (0.31)	ND (0.93)	
TB24 4'-6'		0.6	240	ND (75)	ND (96)	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.72)	
TB24 6'-8'		0.6	1400	110	ND (67)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.51)	
DUP3			1400	200	ND (110)	ND (0.28)	ND (0.28)	ND (0.28)	ND (0.83)	
TB25 4'-6'		0.4	750	ND (100)	ND (82)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.61)	
TB28 4'-6'	4/23/2015	0.9	330	ND (78)	ND (95)	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.71)	
DUP4			510	ND (78)	ND (73)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.55)	
TB28 6'-8'		0.4	670	ND (120)	ND (110)	ND (0.26)	ND (0.26)	ND (0.26)	ND (0.79)	
TB29 4'-6'		0.6	330	ND (70)	ND (62)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.47)	
TB29 6'-8'		1.0	1100	ND (83)	ND (72)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.54)	
TB30 4'-6'		0.4	2000	130	ND (65)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.49)	
TB30 6'-8'		0.4	1300	**440**	ND (82)	ND (0.21)	ND (0.21)	ND (0.21)	ND (0.62)	
MWC 5'-7'		1.2	420	ND (68)	ND (95)	ND (0.24)	ND (0.24)	ND (0.24)	ND (0.71)	
MWA 5'-7'	4/24/2015	0.4	520	70	ND (98)	ND (0.29)	ND (2.0)	ND (2.0)	ND (12)	230-472-1
MWB 5'-7'		0.6	2300	**260**	ND (85)	ND (0.25)	ND (1.7)	ND (1.7)	ND (10)	
MWD 5'-7'		0.3	610	130	ND (54)	ND (0.16)	ND (1.1)	ND (1.1)	ND (6.4)	
FL10 12'-14'	5/21/2015	0.2	ND (55)	ND (22)	13	ND (0.019)	ND (0.048)	ND (0.048)	ND (0.048)	230-495-1
FL28A 12'-14'		0.1	1000	160	ND (9.6)	ND (0.038)	ND (0.096)	ND (0.096)	ND (0.096)	
108 12'-14'	8/25/2015	0.9	ND (24)	13	ND (6.0)	ND (0.018)	ND (0.12)	ND (0.12)	ND (0.72)	230-608-1
109 12'-14'		0.7	ND (24)	13	ND (3.8)	ND (0.011)	ND (0.076)	ND (0.076)	ND (0.45)	
Sample	**Date**	**PID**	**RRO**	**DRO**	**GRO**	**Benzene**	**Toluene**	**Ethyl-benzene**	**Xylenes**	**TESTAMERICA WORK ORDER NUMBER**
ADEC Method 2 Soil Cleanup Levels As Amended Through January 2019			**11000**	**250**	**300**	**0.022**	**6.7**	**0.13**	**1.5**	

NOTES:

1) Photoionization Detector (PID) was the vapor monitoring instrument used for field screening.
2) Residual Range Organics (RRO) analyzed by using Method AK103.
3) Diesel Range Organics (DRO) analyzed by using Method AK102.
4) Gasoline Range Organics (GRO) analyzed by using Method AK101.
5) Aromatic volatiles (BTEX) analyzed by using EPA Method 8260C.
6) Total xylenes refers to the summation of p&m-xylene and o-xylene concentrations.
7) ND indicates the analyte was undetected at the reporting limits noted in the parentheses.
Samples in the green highlighted cells are the primary sample with their corresponding duplicate sample.
Results in the yellow highlighted cells exceed ADEC Method 2 Soil Cleanup Levels.

TABLE 2 - CONFIRMATION SOIL SAMPLES - # 12-005
CONTAMINATED SOIL STOCKPILE
METALS CONCENTRATION SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
ANCHORAGE, ALASKA
JULY 2015

METALS CONCENTRATION IN SOILS				
SAMPLE ID	DATE COLLECTED	CHROMIUM (mg/Kg)	NICKEL (mg/Kg)	TESTAMERICA LABORATORY WORK ORDER NUMBER
Lot 16	7/13/2015	11	20	230-558-1
Lot 17		8.1	13	
Lot 18		9.0	17	
Lot 19		9.6	17	
Lot 20		7.4	12	
Lot 21		ND	13	
Lot 22		ND	ND	
Lot 23		8.4	15	
Lot 24		7.4	14	
Lot 25		3.4	5.4	
Lot 26		8.5	13	
Lot 27		7.2	14	
Lot 28		8.0	14	
Lot 29		5.4	8.9	
Lot 30		4.7	7.7	
DUP B		4.7	8.3	
Lot 31	7/14/2015	ND	10	230-563-1
Lot 32		ND	5.5	
Lot 33		ND	10	
Lot 34		ND	8.4	
Lot 35		ND	5.7	
Lot 36		7.4	9.4	
DUP C		ND	4.6	
Lot 37	7/16/2015	ND	6.6	
Lot 38		ND	6.7	
Lot 39		ND	4.8	
Lot 40		ND	7.9	
Lot 41	7/17/2015	ND	ND	
Lot 42		ND	ND	
DUP D		ND	ND	
Lot 43		ND	5.1	
Lot 44		ND	ND	
DUP E		ND	ND	
ADEC Method 2 Soil Cleanup Levels		**25**	**86**	**TestAmerica Laboratory Work Order Number**
Mean element concentrations in soils of Alaska (Gough and others, 1988)		**64**	**33**	

NOTES:

1) Chromium analyses by method EPA 6010 (ICP/MS).

2) Nickel analyses by method EPA 6010 (ICP/MS).

3) Samples in green highlighted cells are the primary sample with the corresponding duplicate sample.

TABLE 2 - CONFIRMATION SOIL SAMPLES - # 12-005
METAL CONCENTRATIONS SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
LOT 2 EXCAVATION SIDEWALL SAMPLE LOCATIONS
ANCHORAGE, ALASKA
JULY 2015

METAL CONCENTRATIONS IN EXCAVATION SIDEWALL LOCATIONS				
SAMPLE ID / DEPTH	**DATE COLLECTED**	**CHROMIUM (mg/Kg)**	**NICKEL (mg/Kg)**	**TESTAMERICA LABORATORY WORK ORDER NUMBER**
So. S/W 65+90@10'	4/30/2015	20	29	230-480-1
So. S/W 65+70@10'		14	23	
So. S/W 65+50@10'		28	38	
No. S/W 65+90@10'	5/1/2015	27	35	
DUP 7		31	40	
No. S/W 65+70@10'		27	31	
No. S/W 65+50@10'		26	35	
So. S/W 65+40@10'	7/13/2015	26	34	230-556-1
So. S/W 65+30@10'		26	28	
So. S/W 65+10@10'		28	31	
So. S/W 64+90@10'		28	28	
No. S/W 65+30@4'	7/14/2015	24	25	
DUP A		26	25	
No. S/W 65+20@4'		26	26	
No. S/W 65+10@4'		23	24	
ADEC Method 2 Soil Cleanup Levels		**25**	**86**	**TestAmerica Laboratory Work Order Number**
Mean element concentrations in soils of Alaska (Gough and others, 1988)		**64**	**33**	

NOTES:
1) Chromium analyses by method EPA 6010 (ICP/MS).
2) Nickel analyses by method EPA 6010 (ICP/MS).
3) Samples in green highlighted cells are the primary sample with the corresponding duplicate sample.

TABLE 2 - CONFIRMATION SOIL SAMPLES - # 12-005
METAL CONCENTRATIONS SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
LOT 2 SOIL BORING LOCATIONS
ANCHORAGE, ALASKA
AUGUST 2015

METAL CONCENTRATIONS IN SOIL BORING LOCATIONS				
SAMPLE ID / DEPTH	DATE COLLECTED	CHROMIUM (mg/Kg)	NICKEL (mg/Kg)	TESTAMERICA LABORATORY WORK ORDER NUMBER
TB1 12'-14'	4/20/2015	24	30	230-464-1
TB2 12'-14'		24	33	
TB3 12'-14'		22	30	
DUP		22	32	
TB4 12'-14'		22	31	
TB5 12'-14'		21	30	
TB6 12'-14'		23	29	
TB7 12'-14'		19	18	
TB8 12'-14'		24	32	
TB9 12'-14'		20	29	
TB10 12'-14'		29	35	
TB11 4'-6'	4/21/2015	9.3	10	230-465-1
TB11 6'-8'		8.6	10	
TB12 4'-6'		13	17	
TB12 6'-8'		17	18	
TB13 4'-6'		8.5	11	
TB13 6'-8'		6.0	10	
TB14 4'-6'		8.4	9.6	
TB14 6'-8'		36	27	
TB15 4'-6'		11	9.2	
TB15 6'-8'		4.0	8.3	
TB16 4'-6'		5.2	7.2	
TB16 6'-8'		2.8	ND (4.6)	
TB17 4'-6'		11	12	
TB17 6'-8'		13	13	
TB18 4'-6'		3.5	5.2	
TB18 6'-8'		7.5	ND (12)	
TB19 4'-6'	4/22/2015	9.2	5.5	230-466-1
DUP1		11	12	
TB19 6'-8'		14	ND (18)	
TB20 4'-6'		6.3	6.8	
TB20 6'-8'		7.6	6.9	
DUP2		7.3	8.0	
TB21 4'-6'		5.9	12	
TB21 6'-8'		6.1	4.9	
TB22 4'-6'		2.7	ND (5.4)	
TB22 6'-8'		3.6	ND	
TB23 4'-6'		7.3	12	
TB23 6'-8'		ND (5.8)	ND (12)	

TB24 4'-6'	4/22/2015	6.1	12	230-471-1
TB24 6'-8'		6.7	ND (8.8)	
DUP3		7.7	ND (9.6)	
TB25 4'-6'		7.7	10	
TB25 6'-8'		ND (7.1)	ND (14)	
TB26 4'-6'	4/23/2015	6.4	9.5	
TB26 6'-8'		ND (7.0)	ND (14)	
TB27 4'-6'		ND (6.9)	ND (14)	
TB27 6'-8'		7.8	15	
TB28 4'-6'		7.1	14	
DUP4		7.3	13	
TB28 6'-8'		9.9	ND (12)	
TB29 4'-6'		6.5	12	
TB29 6'-8'		4.3	ND (8.6)	
TB30 4'-6'		5.2	ND (7.0)	
TB30 6'-8'		ND (4.1)	ND (8.2)	
MWC 5'-7'		7.1	9.2	
MWA 5'-7'	4/24/2015	6.7	11	230-472-1
MWB 5'-7'		31	ND (22)	
MWD 5'-7'		**430**	**140**	
FL05A 12'-14'	5/21/2015	36	42	230-495-1
FL10 12'-14'		43	54	
FL19 12'-14'		37	36	
FLDUP5		36	35	
FL21 12'-14'		44	49	
FL22 12'-14'		43	40	
FL23 12'-14'		46	46	
FL26A 12'-14'		34	39	
FL27 12'-14'		44	43	
FLDUP3		39	36	
FL28A 12'-14'		33	39	
FL30 12'-14'		44	44	
FLDUP4		45	45	
FL40 12'-14'		41	39	
FL41 12'-14'		43	41	
FL42 12'-14'		34	42	
FL43 12'-14'		38	36	
FLDUP6		40	49	
100 12'-14'	8/24/2015	27	30	230-608-1
101 12'-14'		27	30	
DUP X		29	32	
102 12'-14'		31	33	
103 12'-14'		26	29	
104 12'-14'		29	31	
105 12'-14'		29	33	
106 12'-14'		46	57	
DUP Y		41	50	
107 12'-14'		28	32	
108 12'-14'	8/25/2015	31	34	
DUP Z		37	40	
109 12'-14'		30	31	
110 12'-14'		28	33	

111 12'-14'	6/25/2015	33	38	
112 12'-14'		27	28	
113 12'-14'		42	51	
114 12'-14'		25	29	
ADEC Method 2 Soil Cleanup Levels		**25**	**86**	**TestAmerica Laboratory Work Order Number**
Mean element concentrations in soils of Alaska (Gough and others, 1988)		**64**	**33**	

NOTES:

1) Chromium analyses by method EPA 6010 (ICP/MS).

2) Nickel analyses by method EPA 6010 (ICP/MS).

3) Samples in green highlighted cells are the primary sample with the corresponding d

4) Samples in the pattern shaded cells are the soil samples collected from the ground

TABLE 3 - CONFIRMATION SOIL SAMPLES - # 12-005
CONTAMINATED SOIL STOCKPILE
CONTAMINANT CONCENTRATION SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
ANCHORAGE, ALASKA
JULY 2015

CONTAMINANT CONCENTRATIONS IN SOILS				
SAMPLE ID	**DATE COLLECTED**	**Volatile Organic Compounds (ug/Kg)**	**Semivolatile Organic Compounds (ug/Kg)**	**TESTAMERICA LABORATORY WORK ORDER NUMBER**
Lot 16	7/13/2015	ND	ND	230-558-1
Lot 29	7/13/2015	ND	ND	
Trip Blank	Not Applicable	ND	Not Analyzed	
Lot 33	7/14/2015	ND	ND	230-563-1
Lot 42	7/17/2015	ND	ND	
Trip Blank	Not Applicable	ND	Not Analyzed	

NOTES:
1) Volatile Organic Compound analyses by EPA Method 8260C.
2) Semivolatile Organic Compound analyses by EPA Method 8270D.
3) ND signifies all contaminant constituents were measured as non-detectable.

TABLE 3 - CONFIRMATION SOIL SAMPLES - # 12-005
CONTAMINANT CONCENTRATIONS SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
LOT 2 EXCAVATION SIDEWALL SAMPLE LOCATIONS
ANCHORAGE, ALASKA
JULY 2015

CONTAMINANT CONCENTRATIONS IN EXCAVATION SIDEWALL LOCATIONS					
SAMPLE ID / DEPTH	**DATE COLLECTED**	**PID READING (ppm)**	**VOLATILE ORGANIC COMPOUNDS (mg/Kg)**	**POLYAROMATIC HYDROCARBONS (ug/Kg)**	**TESTAMERICA LABORATORY WORK ORDER NUMBER**
So. S/W 65+90@10'	4/30/2015	1.5	ND (0.37-3.7)	ND (31)	230-480-1
So. S/W 65+70@10'		1.4	ND (0.14-28)	ND (55)	
So. S/W 65+50@10'		1.2	ND (0.53-3.2)	ND (32)	
No. S/W 65+90@10'	5/1/2015	2.3	ND (0.30-9.1)	ND (21)	
DUP 7		2.3	ND (0.032-9.7)	ND (24)	
No. S/W 65+70@10'		1.9	ND (0.019-5.6)	ND (17)	
No. S/W 65+50@10'		1.7	ND (0.023-6.9)	ND (21)	
Trip Blank	Not Applicable		ND (0.012-3.5)	Not Analyzed	
So. S/W 65+40@10'	7/13/2015	2.1	ND (0.100-0.200)	ND (0.038-0.077)	230-556-1 Rev 1
So. S/W 65+30@10'		1.4	ND (0.026-0.053)	ND (0.020-0.041)	
So. S/W 65+10@10'		0.9	ND (0.022-0.043)	ND (0.020-0.041)	
So. S/W 64+90@10'		1.2	ND (0.024-0.048)	ND (0.021-0.041)	
No. S/W 65+30@4'	7/14/2015	3.6	Benzene 0.039	ND (0.023-0.046)	
DUP A		3.6	ND (0.040-0.080)	ND (0.024-0.049)	
No. S/W 65+20@4'		2.2	Benzene 0.050	ND (0.024-0.047)	
No. S/W 65+10@4'		2.6	Benzene 0.052	ND (0.022-0.044)	
Trip Blank	Not Applicable		ND (0.050-0.100)	Not Analyzed	
Sample	**Date**	**PID**	**VOCs**	**PAHs**	**Lab Work Order No.**

NOTES:
1) Photoionization Detector (PID) was the vapor monitoring instrument used for field screening.
2) Volatile Organic Compounds (VOCs) analyzed by using EPA Method 8260C.
3) Polynuclear Aromatics (PAHs) analyzed by using EPA Method 8270D.
4) ND indicates the analyte was undetected at the detection limits noted in the laboratory analytical report.
5) Not Analyzed indicates the analysis was not performed on this sample.
6) Samples in the green highlighted cells are the primary samples with their corresponding duplicate samples.

TABLE 3 - CONFIRMATION SOIL SAMPLES - # 12-005
CONTAMINANT CONCENTRATIONS SUMMARY
ADOT WEST DOWLING ROAD - PHASE II
LOT 2 SOIL BORING LOCATIONS
ANCHORAGE, ALASKA
AUGUST 2015

CONTAMINANT CONCENTRATIONS IN SOIL BORING LOCATIONS					
SAMPLE ID / DEPTH	**DATE COLLECTED**	**PID READING (ppm)**	**VOLATILE ORGANIC COMPOUNDS (mg/Kg)**	**POLYAROMATIC HYDROCARBONS (mg/Kg)**	**TESTAMERICA LABORATORY WORK ORDER NUMBER**
TB3 12'-14'	4/20/2015	0.9	ND	ND	230-464-1
DUP		0.9	ND	ND	
Trip Blank	Not Applicable		ND	NA	
FL27 12'-14'	5/21/2015	2.3	trans-1,2-Dichloroethene 0.670	Phenanthrene 0.031	230-495-1
FLDUP3		2.3	trans-1,2-Dichloroethene 0.230	Phenanthrene 0.028	
FL30 12'-14'		1.6	Methylene Chloride 0.024 trans-1,2-Dichloroethene 0.250	ND	
FLDUP4		1.6	trans-1,2-Dichloroethene 0.310	Phenanthrene 0.025	
Trip Blank	Not Applicable		trans-1,2-Dichloroethene 0.350	NA	
100 12'-14'	8/24/2015	0.4	ND	ND	230-608-1
106 12'-14'		0.3	ND	Phenanthrene 0.015	
DUP Y		0.3	ND	ND	
Trip Blank	Not Applicable		ND	NA	
Sample	**Date**	**PID**	**VOCs**	**PAHs**	**Lab Work Order No.**

NOTES:
1) Photoionization Detector (PID) was the vapor monitoring instrument used for field screening.
2) Volatile Organic Compounds (VOCs) analyzed by using EPA Method 8260C.
3) Polynuclear Aromatics (PAHs) analyzed by using EPA Method 8270D.
4) ND indicates the analyte was undetected at the detection limits noted in the laboratory analytical report.
5) NA indicates the analysis was not performed on this sample.
6) Samples in the green highlighted cells are the primary samples with their corresponding duplicate samples.

Appendix C:

1 – ADOT ROW Parcel Groundwater Gradient and Flow Direction

5801 Silverado Way ADOT ROW Parcel Monitoring Wells
Measuring Point and Groudnwater Elevations
9/20/2016

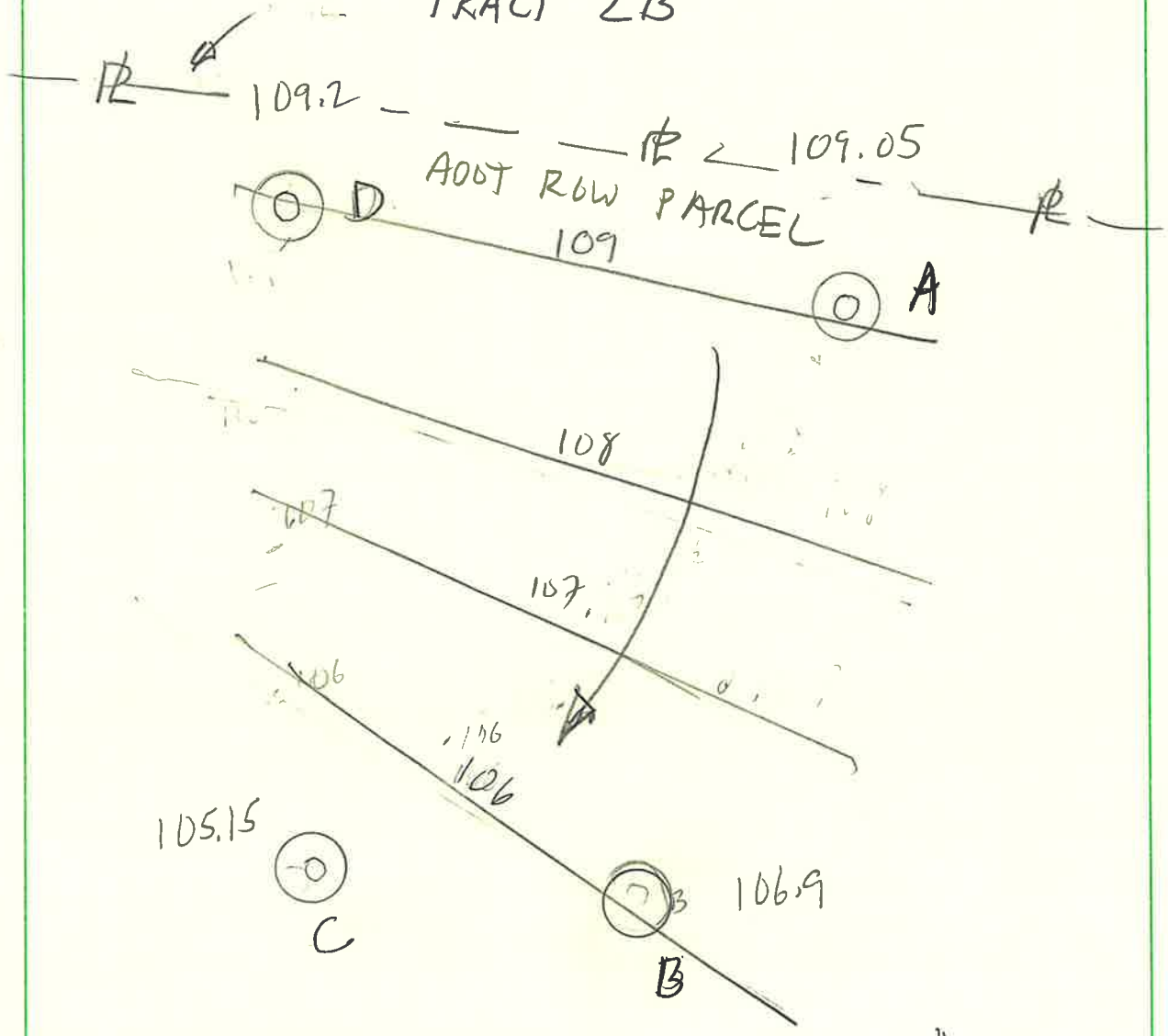
Well ID	MP Elevation	Depth to Water	GW Elevation	Stickup AGS	Ground Surface Elevation	GW Depth BGS	Silt Depth BGS	Top of Silt Elevation	Water Zone Thickness
A	113.2	4.15	109.05	2	111.2	2.15	11	100.2	8.85
B	111.7	4.8	106.9	2	109.7	2.8	11	98.7	8.2
C	112.9	7.75	105.15	2	110.9	5.75	15	95.9	9.25
D	114	4.8	109.2	2	112	2.8	15	97	12.2

Well measuring point and depth to groundwater measurements are reported in Tellus September 2020
Depth to groundwater are from measurements on September 20, 2016.

5801 SILVERADO WAY ADOT ROW PARCEL	7-16-22	DMP

APPROXIMATE GW GRADIENT 9-21-16

TRACT 2B



LEGEND

℄ = property Line

⊙A = TELLUS MONITORING WELLS INSTALLED 4-23-15

NORTH

LOCATION

WEATHER

TELLUS, Ltd.
Geological Services
TEST BORING LOG

HOLE NO. MW6
SHEET 1 OF 1
TOTAL DEPTH 22.0'
DATE BEGUN 4/23/15
DATE COMPLETED 4/23/15

GROUNDWATER TABLE
ATD=AT TIME OF DRILLING AB=AFTER BORING
DEPTH IN FEET 5.0'
TIME
DATE 4/23/15

PROJECT NAME WDR PHASE II - LOT 2
PROJECT NUMBER 12-005
GEOLOGIST/ENGINEER S. ERDMANN
DRILLING CONTACTOR/CREW DISCOVERY
METHOD USED GEOPROBE W/ 6.5" OD HSA 140lb HAMMER

SAMPLING METHOD: (SPT)=STANDARD PENETRATION TEST T=TUBE R=RING

SAMPLING METHOD	SAMPLE NUMBER	BLOW COUNT	DEPTH SAMPLED	RECOVERY	DEPTH IN FEET	SOIL DESCRIPTION
					0	GRAY SANDY GRAVEL SURFACE
					1	
					2	
					3	
					4	
					5	5.0'-7.0' MOIST BROWN PEAT. PID = 1.2 UNITS NO ODOR.
1530	2	1			6	
		0				
		3			7	
					8	
					9	
					10	10.0'-12.0' MOIST BROWN PEAT. PID = 0.8 UNITS NO ODOR
		0			11	
		1				
		2			12	
					13	
					14	
					15	15.0'-17.0' GRAY SILT. DRY. PID = 0.0 UNITS NO ODOR.
		6			16	
		9				
		9				
		9			17	
					18	
					19	
					20	20.0'-22.0' GRAY SANDY SILT. PID = 0.1 UNITS DRY, NO ODOR
		6				
		18				
		22				
		18			–	TOTAL DEPTH @ 22.0'

BORING LOG SUMMARY

WELL SCHEMATIC: 4'-19' 0.020 SCREEN 0'-1' SAND &
3'-20' SILICA SAND STEEL
1'-3' BENTONITE CHIP MONUM

LOCATION

WEATHER

TELLUS, Ltd.
Geological Services
TEST BORING LOG

HOLE NO. MW05
SHEET 1 OF 1
TOTAL DEPTH 22.0'.
DATE BEGUN 4/24/15
DATE COMPLETED 4/24/15

PROJECT NAME WDR PHASE II - LOT 2
PROJECT NUMBER 12-005
GEOLOGIST/ENGINEER S. ERDMANN
DRILLING CONTACTOR/CREW DISCOVERY
METHOD USED BRUIN CME 55 w/ 8.0" OD HSA 340lb HAMMER

GROUNDWATER TABLE
ATD=AT TIME OF DRILLING AB=AFTER BORING
DEPTH IN FEET 5.0'
TIME
DATE 4/24/15

SAMPLING METHOD: (SPT)=STANDARD PENETRATION TEST T=TUBE R=RING

SAMPLING METHOD	SAMPLE NUMBER	BLOW COUNT	DEPTH SAMPLED	RECOVERY	DEPTH IN FEET	SOIL DESCRIPTION
					0	GRAY SANDY GRAVEL SURFACE. NO ODOR.
					1	
					2	
					3	
					4	
0945		1			5	5.0'-6.0' GRAY SAND. WET, NO ODOR. PID=0.2 UNITS
		1			6	6.0'-7.0' BROWN MOIST PEAT. NO ODOR PID=0.3 UNITS
		1			7	
		1			8	
					9	
		1			10	10.0'-12.0' BROWN MOIST PEAT. NO ODOR. PID=0.2 UNITS
		2			11	
		2			12	
		1			13	
					14	
					15	15.0'-17.0' GRAY SILT. DRY, NO ODOR. PID=0.0 UNITS
		4			16	
		6			17	
		4			18	
		2			19	
					20	20.0'-22.0' GRAY SILT. DRY, NO ODOR. PID=0.0 UNITS
		1			–	
		2			–	
		1			–	
		2			–	TOTAL DEPTH @ 22.0'

BORING LOG SUMMARY

WELL SCHEMATIC:
4'-19' 0.020 SCREEN
3'-20' SILICA SAND
1'-3' BENT. CHIPS
0'-1' SAND W/ STEEL MONUMENT

LOCATION

WEATHER

TELLUS, Ltd.
Geological Services
TEST BORING LOG

HOLE NO. MW4
SHEET 1 OF 1
TOTAL DEPTH 22.0'
DATE BEGUN 4/24/15
DATE COMPLETED 4/24/15

GROUNDWATER TABLE
ATD=AT TIME OF DRILLING AB=AFTER BORING
DEPTH IN FEET 5.0'
TIME
DATE 4/24/15

PROJECT NAME WDR PHASE II - LOT 2
PROJECT NUMBER 12-005
GEOLOGIST/ENGINEER S. ERDMANN
DRILLING CONTACTOR/CREW DISCOVERY
METHOD USED CME 55 W/ 8.0" OD HSA 340lb HAMMER

SAMPLING METHOD (SPT=STANDARD PENETRATION TEST T=TUBE R=RING)

SAMPLING METHOD	SAMPLE NUMBER	BLOW COUNT	DEPTH SAMPLED	RECOVERY	DEPTH IN FEET	SOIL DESCRIPTION
					0	0.0'-2.0' GRAY SANDY GRAVEL DRY, NO ODOR. PID = 0.1 UNITS
					1	
					2	
					3	
					4	
					5	5.0'-7.0' MOIST BROWN PEAT. NO ODOR. PID = 0.4 UNI
H20	1	1			6	
		2			7	
		1			8	
					9	
					10	10.0'-11.0' MOIST BROWN PEAT. NO ODOR. PID= 0.3 U
		1			11	11.0'-12.0' GRAY SILT, MOIST. NO ODOR. PID= 0.1 UNI
		1			12	
		2			13	
		3			14	
					15	15.0'-17.0' GRAY SILT, MOIST. NO ODOR. PID=0.2 UNI
		1			16	
		3			17	
		2			18	
		2			19	
					20	20.0'-22.0' GRAY SILT, MOIST. NO ODOR. PID= 0.0 UNITS
		3			-	TOTAL DEPTH @ 22.0'
		3			-	
		4			-	WELL SCHEMATIC: 4'-19' 0.020 SCREEN
		4			-	3'-20' SILICA SAND
					-	1'-3' BENT. CHIPS
					-	0'-1' SAND W/ STEEL MNMNT

BORING LOG SUMMARY

LOCATION

WEATHER

TELLUS, Ltd.
Geological Services

TEST BORING LOG

HOLE NO. MW5
SHEET 1 OF 1
TOTAL DEPTH 22.0'
DATE BEGUN 4/24/15
DATE COMPLETED 4/24/15

GROUNDWATER TABLE
ATD–AT TIME OF DRILLING AB–AFTER BORING
DEPTH IN FEET 5.0'
TIME
DATE 4/24/15

PROJECT NAME WDR PHASE II – LOT 2
PROJECT NUMBER 12-005
GEOLOGIST/ENGINEER S. ERDMANN
DRILLING CONTACTOR/CREW DISCOVERY
METHOD USED CME 55 W/ 8.0" OD HSA 340 lb HAMMER

SAMPLING METHOD: (SPT)–STANDARD PENETRATION TEST T–TUBE R–RING

SAMPLING METHOD	SAMPLE NUMBER	BLOW COUNT	DEPTH SAMPLED	RECOVERY	DEPTH IN FEET	SOIL DESCRIPTION
					0	0.0'–2.0' GRAY SANDY GRAVEL. NO ODOR. PID = 0.3 UNITS
					1	
					2	
					3	
					4	
					5	5.0'–7.0' MOIST BROWN PEAT. NO ODOR. PID = 0.6 UNITS
HAND		1/2			6	
		1/1			7	
					8	
					9	
					10	10.0'–11.0' MOIST BROWN PEAT. NO ODOR. PID = 0.5 UNITS
		1/2			11	11.0'–12.0' GRAY SILT. MOIST. NO ODOR. PID = 0.1 UNITS
					12	
					13	
					14	
					15	15.0'–17.0' GRAY SILT. DRY. NO ODOR. PID = 0.0 UNITS
		3/2			16	
		1/1			17	
					18	
					19	
					20	20.0'–22.0' GRAY SILT. DRY. NO ODOR. PID = 0.0 UNITS
					–	TOTAL DEPTH @ 22.0'

BORING LOG SUMMARY

WELL SCHEMATIC:

4'–19' 0.020 SCREEN
3'–20' SILICA SAND
1'–3' BENT. CHIPS
0'–1' SAND W/ STEEL MONUMENT

GROUNDWATER COLLECTION DATA FORM

DATE: 9/20/16 - 9/23/16	JOB #: 12-005
LOCATION: WEST DOWLING ROAD LOT 2, ANCHORAGE, ALASKA	WEATHER: 9/20/16 - OVERCAST & 62°F 9/21/16 - OVERCAST & 58°F 9/22/16 - RAINING & WINDY 52°F 9/23/16 - OVERCAST & 56°F

MONITORING WELL DATA

WELL #	C	B	A	D
DATE/TIME	SW CRNR	SE CRNR	NE CRNR	NW CRNR
DTW (FT.) BTOC	7.75	4.8	4.15	4.8
DTB (FT.) BTOC	9.95	18.9	20.9	21.2
DTP (FT.)	—	—	—	—
WELL DIAMETER (INCHES)	2	2	2	2
COLUMN HEIGHT (FT.)	2.2	14.1	16.75	16.4
(3) WELL VOLUMES (GAL.)	.375/1.25	1.84/5.75	3.0/9.0	2.9/9.0
DATE/TIME PURGED	9/21@1000	9/21@1600	9/22@1200	9/23@1100
PURGE METHOD	BAILER	S/S MONSOON PUMP		
VOLUME PURGED Gallons	3.0	10.0	15.0	12.0
PURGED DRY?	YES	YES	YES	YES
DTW After Purging	7.8	4.9	4.3	6.4
Date/Time Sampled	9/21@1200	9/21@1800	9/22@1535	9/23@1300
pH/Temp °C	6.01/7.9°C	6.1/7.82°C	7.7/11.7°C	7.2/12.9°C
Conductivity mS/cm	0.784	0.669	0.424	0.680
Dissolved Oxygen mg/L	10.2	11.1	10.4	8.9
Odor	SWAMPY	SWAMPY	NONE	NONE
color	CLEAR	CLEAR	CLEAR	CLEAR
Sheen	NONE	NONE	NONE	NONE
Comments	CASING BROKEN	WELL DISTURBED	—	SLOW RECHARGE
ORP	99.7	100.6	88.4	68.5

Salinity (%)

Turbidity

Casing Volumes: 1.5 Inch – 0.106 Gal/Ft 2.0 Inch – 0.174 Gal/Ft 4.0 Inch – 0.661 G

TABLE 1 - WEST DOWLING ROAD # 12-005
CONTAMINANT CONCENTRATIONS IN GROUNDWATER
FROM WELLS LOCATED ACROSS LOT 2 AREA
ANCHORAGE, ALASKA
OCTOBER 2016

CONTAMINANT CONCENTRATIONS IN GROUNDWATER									
WELL NUMBER SAMPLE ID	**DATE SAMPLED**	**DEPTH TO WATER BELOW TOP OF WELL CASING (ft)**	**RESIDUAL RANGE ORGANICS (mg/L)**	**DIESEL RANGE ORGANICS (mg/L)**	**GASOLINE RANGE ORGANICS (mg/L)**	**BENZENE (ug/L)**	**TOLUENE (ug/L)**	**ETHYL-BENZENE (ug/L)**	**TOTAL XYLENES (ug/L)**
A	9/22/2016	4.15	0.23	0.24	ND	ND	ND	ND	ND
B	9/21/2016	4.8	0.32	0.26	ND	ND	ND	ND	ND
C	9/21/2016	7.75	0.21	0.21	ND	ND	ND	ND	ND
D	9/23/2016	4.8	0.37	0.41	ND	**7.2**	ND	ND	ND
Trip Blank	Not Applicable				ND	ND	ND	ND	ND
ADEC Groundwater Cleanup Levels Per 18 AAC 75.345, Table C.			1.1	1.5	1.3	5.0	1000	700	10,000

NOTES:
1) Residual Range Organics (RRO) by Method AK 103.
2) Diesel Range Organics (DRO) by Method AK 102 .
3) Gasoline Range Organics (GRO) by Method AK 101.
4) Aromatic volatiles (BTEX) by EPA Method 8260C. Total xylenes refers to the summation of p&m-xylene and o-xylene concentrations.
5) ND indicates the analyte was undetected at the detection limits noted in the laboratory analytical report.
6) Highlighted values indicate detected concentrations are above ADEC Groundwater Cleanup Levels.

TABLE 4 - WEST DOWLING ROAD # 12-005
HISTORICAL (12/2015 Through 9/2016) CONTAMINANT CONCENTRATIONS IN GROUNDWATER FROM WELLS LOCATED ACROSS LOT 2 AREA
ANCHORAGE, ALASKA

HISTORICAL CONTAMINANT CONCENTRATIONS IN GROUNDWATER						
WELL NUMBER SAMPLE ID	**DATE SAMPLED**	**DEPTH TO WATER BELOW TOP OF WELL CASING (ft)**	**PAHs (ug/L)**	**VOCs (ug/L)**	**Chromium (mg/L)**	**Nickel (mg/L)**
A	12/2/2015	5.9	ND	ND	0.044	0.049
	February - May	Frozen & Unable To Be Sampled				
	6/9/2016	5.7	ND	Benzene 2.9	ND	ND
	9/22/2016	4.15	ND	ND	0.0035	ND
B	12/1/2015	4.35	ND	**Benzene 5.6**	0.003	ND
	February - May	Frozen & Unable To Be Sampled				
	6/9/2016	5.0	ND	ND	ND	ND
	9/21/2016	4.8	ND	ND	0.0022	ND
C	12/1/2015	6.7	ND	ND	0.011	0.017
	February - May	Frozen & Unable To Be Sampled				
	6/9/2016	7.6	ND	ND	0.0047	0.015
	9/21/2016	7.75	ND	ND	ND	ND
D	12/2/2015	5.4	ND	ND	0.0092	0.019
	February - May	Frozen & Unable To Be Sampled				
	6/10/2016	5.85	ND	**Benzene 8.1**	0.0052	0.019
	9/23/2016	4.8	ND	**Benzene 7.2**	0.0044	ND
ADEC Groundwater Cleanup Levels Per 18 AAC 75.345, Table C.				Benzene 5.0	0.10	0.10

NOTES:
1) Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270D SIM.
2) Volatile Organic Compounds (VOCs) by EPA Method 8260C.
3) Chromium by EPA Method 6020A.
4) Nickel by EPA Method 6020A.
5) ND indicates the analyte was undetected at the detection limits noted in the laboratory analytical report.
6) Highlighted values indicate detected concentrations are above ADEC Groundwater Cleanup Levels.

Appendix D:

SGS Data Quality Objectives

RESTORATION
Science & Engineering, LLC

SGS North America Inc.
200 W. Potter Drive, Anchorage, AK 99518
phone (907) 562-2343, fax (907) 561-

6020 Total RCRA Metals (W)

MATRI Water (Surface, Eff.,

ACODE: RCRA_MTLM1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW6020B	7440-38-2	Arsenic	2.5	3	6	ug/L	84	116	20
SW6020B	7440-39-3	Barium	0.94	1.5	3	ug/L	86	114	20
SW6020B	7440-43-9	Cadmium	0.62	1	2	ug/L	87	115	20
SW6020B	7440-47-3	Chromium	3.1	5	10	ug/L	85	116	20
SW6020B	7439-92-1	Lead	0.31	0.5	1	ug/L	88	115	20
SW6020B	7439-97-6	Mercury	0.18	0.25	0.5	ug/L	70	124	20
SW6020B	7782-49-2	Selenium	6.2	10	20	ug/L	80	120	20
SW6020B	7440-22-4	Silver	0.62	1	2	ug/L	85	116	20

6020 Total RCRA Metals (S)

MATRI Soil/Solid (dry weight)

ACODE: RCRA_MTLM2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW6020B	7440-38-2	Arsenic	0.31	0.5	1	mg/Kg	82	118	20
SW6020B	7440-39-3	Barium	0.094	0.15	0.3	mg/Kg	86	116	20
SW6020B	7440-43-9	Cadmium	0.062	0.1	0.2	mg/Kg	84	116	20
SW6020B	7440-47-3	Chromium	0.13	0.2	0.4	mg/Kg	83	119	20
SW6020B	7439-92-1	Lead	0.062	0.1	0.2	mg/Kg	84	118	20
SW6020B	7439-97-6	Mercury	0.1	0.15	0.3	mg/Kg	74	126	20
SW6020B	7782-49-2	Selenium	0.31	0.5	1	mg/Kg	80	119	20
SW6020B	7440-22-4	Silver	0.15	0.25	0.5	mg/Kg	83	118	20

AK101 GRO (W)

MATRI Water (Surface, Eff.,

ACODE: VF.GRO...1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
AK101	460-00-4	4-Bromofluorobenzene (surr)				ug/L	50	150	
AK101	GRO	Gasoline Range Organics	31	50	100	ug/L	60	120	20

AK101 GRO (S)

MATRI Soil/Solid (dry weight)

ACODE: VF.GRO...2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
AK101	460-00-4	4-Bromofluorobenzene (surr)				ug/Kg	50	150	
AK101	GRO	Gasoline Range Organics	750	1250	2500	ug/Kg	60	120	20

8021 BTEX (W)

MATRI Water (Surface, Eff.,

ACODE: VF_BTX...1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8021B	540-36-3	1,4-Difluorobenzene (surr)				ug/L	77	115	

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

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8021 BTEX (W)

MATRI Water (Surface, Eff.,

ACODE: VF_BTX...1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8021B	71-43-2	Benzene	0.15	0.25	0.5	ug/L	80	120	20
SW8021B	100-41-4	Ethylbenzene	0.31	0.5	1	ug/L	75	125	20
SW8021B	95-47-6	o-Xylene	0.31	0.5	1	ug/L	80	120	20
SW8021B	P & M -Xylene	P & M -Xylene	0.62	1	2	ug/L	75	130	20
SW8021B	108-88-3	Toluene	0.31	0.5	1	ug/L	75	120	20
SW8021B	1330-20-7	Xylenes (total)	0.93	1.5	3	ug/L	79	121	20

8021 BTEX (S)

MATRI Soil/Solid (dry weight)

ACODE: VF_BTXFP.2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8021B	540-36-3	1,4-Difluorobenzene (surr)				ug/Kg	72	119	
SW8021B	71-43-2	Benzene	4	6.25	12.5	ug/Kg	75	125	20
SW8021B	100-41-4	Ethylbenzene	7.8	12.5	25	ug/Kg	75	125	20
SW8021B	95-47-6	o-Xylene	7.8	12.5	25	ug/Kg	75	125	20
SW8021B	P & M -Xylene	P & M -Xylene	15	25	50	ug/Kg	80	125	20
SW8021B	108-88-3	Toluene	7.8	12.5	25	ug/Kg	70	125	20
SW8021B	1330-20-7	Xylenes (total)	22.8	37.5	75	ug/Kg	78	124	20

AK101/8021 GRO/BTEX (W)

MATRI Water (Surface, Eff.,

ACODE: VF_GROBTX1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
AK101 8021B	540-36-3	1,4-Difluorobenzene (surr)				ug/L	77	115	
AK101 8021B	460-00-4	4-Bromofluorobenzene (surr)				ug/L	50	150	
AK101 8021B	71-43-2	Benzene	0.15	0.25	0.5	ug/L	80	120	20
AK101 8021B	100-41-4	Ethylbenzene	0.31	0.5	1	ug/L	75	125	20
AK101 8021B	GRO	Gasoline Range Organics	31	50	100	ug/L	60	120	20
AK101 8021B	95-47-6	o-Xylene	0.31	0.5	1	ug/L	80	120	20
AK101 8021B	P & M -Xylene	P & M -Xylene	0.62	1	2	ug/L	75	130	20
AK101 8021B	108-88-3	Toluene	0.31	0.5	1	ug/L	75	120	20
AK101 8021B	1330-20-7	Xylenes (total)	0.93	1.5	3	ug/L	79	121	20

AK101/8021 GRO/BTEX (S)

MATRI Soil/Solid (dry weight)

ACODE: VF_GROBTX2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
AK101 8021B	540-36-3	1,4-Difluorobenzene (surr)				ug/Kg	72	119	
AK101 8021B	460-00-4	4-Bromofluorobenzene (surr)				ug/Kg	50	150	
AK101 8021B	71-43-2	Benzene	4	6.25	12.5	ug/Kg	75	125	20
AK101 8021B	100-41-4	Ethylbenzene	7.8	12.5	25	ug/Kg	75	125	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

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AK101/8021 GRO/BTEX (S)

MATRI Soil/Solid (dry weight)

ACODE: VF_GROBTX2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
AK101 8021B	GRO	Gasoline Range Organics	750	1250	2500	ug/Kg	60	120	20
AK101 8021B	95-47-6	o-Xylene	7.8	12.5	25	ug/Kg	75	125	20
AK101 8021B	P & M -Xylene	P & M -Xylene	15	25	50	ug/Kg	80	125	20
AK101 8021B	108-88-3	Toluene	7.8	12.5	25	ug/Kg	70	125	20
AK101 8021B	1330-20-7	Xylenes (total)	22.8	37.5	75	ug/Kg	78	124	20

602/624 Aromatics TAH (W)

MATRI Water (Surface, Eff.,

ACODE: VM.602A..1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
EPA 602/624	17060-07-0	1,2-Dichloroethane-D4 (surr)				ug/L	81	118	
EPA 602/624	460-00-4	4-Bromofluorobenzene (surr)				ug/L	85	114	
EPA 602/624	71-43-2	Benzene	0.12	0.2	0.4	ug/L	79	120	20
EPA 602/624	100-41-4	Ethylbenzene	0.31	0.5	1	ug/L	79	121	20
EPA 602/624	95-47-6	o-Xylene	0.31	0.5	1	ug/L	78	122	20
EPA 602/624	P & M -Xylene	P & M -Xylene	0.62	1	2	ug/L	80	121	20
EPA 602/624	108-88-3	Toluene	0.31	0.5	1	ug/L	80	121	20
EPA 602/624	2037-26-5	Toluene-d8 (surr)				ug/L	89	112	

8260 VOC (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260FXL

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	630-20-6	1,1,1,2-Tetrachloroethane	6.2	10	20	ug/Kg	78	125	20
SW8260D	71-55-6	1,1,1-Trichloroethane	7.8	12.5	25	ug/Kg	73	130	20
SW8260D	79-34-5	1,1,2,2-Tetrachloroethane	0.62	1	2	ug/Kg	70	124	20
SW8260D	79-00-5	1,1,2-Trichloroethane	0.25	0.4	0.8	ug/Kg	78	121	20
SW8260D	75-34-3	1,1-Dichloroethane	7.8	12.5	25	ug/Kg	76	125	20
SW8260D	75-35-4	1,1-Dichloroethene	7.8	12.5	25	ug/Kg	70	131	20
SW8260D	563-58-6	1,1-Dichloropropene	7.8	12.5	25	ug/Kg	76	125	20
SW8260D	87-61-6	1,2,3-Trichlorobenzene	15	25	50	ug/Kg	66	130	20
SW8260D	96-18-4	1,2,3-Trichloropropane	0.62	1	2	ug/Kg	73	125	20
SW8260D	120-82-1	1,2,4-Trichlorobenzene	7.8	12.5	25	ug/Kg	67	129	20
SW8260D	95-63-6	1,2,4-Trimethylbenzene	15	25	50	ug/Kg	75	123	20
SW8260D	96-12-8	1,2-Dibromo-3-chloropropane	31	50	100	ug/Kg	61	132	20
SW8260D	106-93-4	1,2-Dibromoethane	0.31	0.5	1	ug/Kg	78	122	20
SW8260D	95-50-1	1,2-Dichlorobenzene	7.8	12.5	25	ug/Kg	78	121	20
SW8260D	107-06-2	1,2-Dichloroethane	0.62	1	2	ug/Kg	73	128	20
SW8260D	17060-07-0	1,2-Dichloroethane-D4 (surr)				ug/Kg	71	136	
SW8260D	78-87-5	1,2-Dichloropropane	3.1	5	10	ug/Kg	76	123	20
SW8260D	108-67-8	1,3,5-Trimethylbenzene	7.8	12.5	25	ug/Kg	73	124	20
SW8260D	541-73-1	1,3-Dichlorobenzene	7.8	12.5	25	ug/Kg	77	121	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

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8260 VOC (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260FXL

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	142-28-9	1,3-Dichloropropane	3.1	5	10	ug/Kg	77	121	20
SW8260D	106-46-7	1,4-Dichlorobenzene	7.8	12.5	25	ug/Kg	75	120	20
SW8260D	594-20-7	2,2-Dichloropropane	7.8	12.5	25	ug/Kg	67	133	20
SW8260D	78-93-3	2-Butanone (MEK)	78	125	250	ug/Kg	51	148	20
SW8260D	95-49-8	2-Chlorotoluene	7.8	12.5	25	ug/Kg	75	122	20
SW8260D	591-78-6	2-Hexanone	31	50	100	ug/Kg	53	145	20
SW8260D	460-00-4	4-Bromofluorobenzene (surr)				ug/Kg	55	151	
SW8260D	106-43-4	4-Chlorotoluene	7.8	12.5	25	ug/Kg	72	124	20
SW8260D	99-87-6	4-Isopropyltoluene	25	50	100	ug/Kg	73	127	20
SW8260D	108-10-1	4-Methyl-2-pentanone (MIBK)	78	125	250	ug/Kg	65	135	20
SW8260D	67-64-1	Acetone	78	125	250	ug/Kg	36	164	20
SW8260D	71-43-2	Benzene	3.9	6.25	12.5	ug/Kg	77	121	20
SW8260D	108-86-1	Bromobenzene	7.8	12.5	25	ug/Kg	78	121	20
SW8260D	74-97-5	Bromochloromethane	7.8	12.5	25	ug/Kg	78	125	20
SW8260D	75-27-4	Bromodichloromethane	0.62	1	2	ug/Kg	75	127	20
SW8260D	75-25-2	Bromoform	7.8	12.5	25	ug/Kg	67	132	20
SW8260D	74-83-9	Bromomethane	6.2	10	20	ug/Kg	53	143	20
SW8260D	75-15-0	Carbon disulfide	31	50	100	ug/Kg	63	132	20
SW8260D	56-23-5	Carbon tetrachloride	3.9	6.25	12.5	ug/Kg	70	135	20
SW8260D	108-90-7	Chlorobenzene	7.8	12.5	25	ug/Kg	79	120	20
SW8260D	75-00-3	Chloroethane	62	100	200	ug/Kg	59	139	20
SW8260D	67-66-3	Chloroform	0.62	2	4	ug/Kg	78	123	20
SW8260D	74-87-3	Chloromethane	7.8	12.5	25	ug/Kg	50	136	20
SW8260D	156-59-2	cis-1,2-Dichloroethene	7.8	12.5	25	ug/Kg	77	123	20
SW8260D	10061-01-5	cis-1,3-Dichloropropene	3.9	6.25	12.5	ug/Kg	74	126	20
SW8260D	124-48-1	Dibromochloromethane	0.62	2.5	5	ug/Kg	74	126	20
SW8260D	74-95-3	Dibromomethane	7.8	12.5	25	ug/Kg	78	125	20
SW8260D	75-71-8	Dichlorodifluoromethane	15	25	50	ug/Kg	29	149	20
SW8260D	100-41-4	Ethylbenzene	7.8	12.5	25	ug/Kg	76	122	20
SW8260D	76-13-1	Freon-113	31	50	100	ug/Kg	66	136	20
SW8260D	87-68-3	Hexachlorobutadiene	6.2	10	20	ug/Kg	61	135	20
SW8260D	98-82-8	Isopropylbenzene (Cumene)	7.8	12.5	25	ug/Kg	68	134	20
SW8260D	75-09-2	Methylene chloride	31	50	100	ug/Kg	70	128	20
SW8260D	1634-04-4	Methyl-t-butyl ether	31	50	100	ug/Kg	73	125	20
SW8260D	91-20-3	Naphthalene	7.8	12.5	25	ug/Kg	62	129	20
SW8260D	104-51-8	n-Butylbenzene	7.8	12.5	25	ug/Kg	70	128	20
SW8260D	103-65-1	n-Propylbenzene	7.8	12.5	25	ug/Kg	73	125	20
SW8260D	95-47-6	o-Xylene	7.8	12.5	25	ug/Kg	77	123	20
SW8260D	P & M -Xylene	P & M -Xylene	15	25	50	ug/Kg	77	124	20
SW8260D	135-98-8	sec-Butylbenzene	7.8	12.5	25	ug/Kg	73	126	20
SW8260D	100-42-5	Styrene	7.8	12.5	25	ug/Kg	76	124	20
SW8260D	98-06-6	tert-Butylbenzene	7.8	12.5	25	ug/Kg	73	125	20
SW8260D	127-18-4	Tetrachloroethene	3.9	6.25	12.5	ug/Kg	73	128	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

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8260 VOC (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260FXL

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	108-88-3	Toluene	7.8	12.5	25	ug/Kg	77	121	20
SW8260D	2037-26-5	Toluene-d8 (surr)				ug/Kg	85	116	
SW8260D	156-60-5	trans-1,2-Dichloroethene	7.8	12.5	25	ug/Kg	74	125	20
SW8260D	10061-02-6	trans-1,3-Dichloropropene	3.9	6.25	12.5	ug/Kg	71	130	20
SW8260D	79-01-6	Trichloroethene	1.5	2.5	5	ug/Kg	77	123	20
SW8260D	75-69-4	Trichlorofluoromethane	15	25	50	ug/Kg	62	140	20
SW8260D	108-05-4	Vinyl acetate	31	50	100	ug/Kg	50	151	20
SW8260D	75-01-4	Vinyl chloride	0.25	0.4	0.8	ug/Kg	56	135	20
SW8260D	1330-20-7	Xylenes (total)	22.8	37.5	75	ug/Kg	78	124	20

8260 Petroleum VOC (W)

MATRI Water (Surface, Eff.,

ACODE: VM.8260PV1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	95-63-6	1,2,4-Trimethylbenzene	0.31	0.5	1	ug/L	79	124	20
SW8260D	106-93-4	1,2-Dibromoethane	0.018	0.0375	0.075	ug/L	77	121	20
SW8260D	107-06-2	1,2-Dichloroethane	0.15	0.25	0.5	ug/L	73	128	20
SW8260D	17060-07-0	1,2-Dichloroethane-D4 (surr)				ug/L	81	118	
SW8260D	108-67-8	1,3,5-Trimethylbenzene	0.31	0.5	1	ug/L	75	124	20
SW8260D	460-00-4	4-Bromofluorobenzene (surr)				ug/L	85	114	
SW8260D	71-43-2	Benzene	0.12	0.2	0.4	ug/L	79	120	20
SW8260D	100-41-4	Ethylbenzene	0.31	0.5	1	ug/L	79	121	20
SW8260D	98-82-8	Isopropylbenzene (Cumene)	0.31	0.5	1	ug/L	72	131	20
SW8260D	1634-04-4	Methyl-t-butyl ether	3.1	5	10	ug/L	71	124	20
SW8260D	91-20-3	Naphthalene	0.31	0.5	1	ug/L	61	128	20
SW8260D	104-51-8	n-Butylbenzene	0.31	0.5	1	ug/L	75	128	20
SW8260D	95-47-6	o-Xylene	0.31	0.5	1	ug/L	78	122	20
SW8260D	P & M -Xylene	P & M -Xylene	0.62	1	2	ug/L	80	121	20
SW8260D	135-98-8	sec-Butylbenzene	0.31	0.5	1	ug/L	77	126	20
SW8260D	98-06-6	tert-Butylbenzene	0.31	0.5	1	ug/L	78	124	20
SW8260D	108-88-3	Toluene	0.31	0.5	1	ug/L	80	121	20
SW8260D	2037-26-5	Toluene-d8 (surr)				ug/L	89	112	
SW8260D	1330-20-7	Xylenes (total)	1	1.5	3	ug/L	79	121	20

8260 Petroleum VOC (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260PV2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	95-63-6	1,2,4-Trimethylbenzene	15	25	50	ug/Kg	75	123	20
SW8260D	106-93-4	1,2-Dibromoethane	0.31	0.5	1	ug/Kg	78	122	20
SW8260D	107-06-2	1,2-Dichloroethane	0.62	1	2	ug/Kg	73	128	20
SW8260D	17060-07-0	1,2-Dichloroethane-D4 (surr)				ug/Kg	71	136	

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

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8260 Petroleum VOC (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260PV2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	108-67-8	1,3,5-Trimethylbenzene	7.8	12.5	25	ug/Kg	73	124	20
SW8260D	460-00-4	4-Bromofluorobenzene (surr)				ug/Kg	55	151	
SW8260D	71-43-2	Benzene	3.9	6.25	12.5	ug/Kg	77	121	20
SW8260D	100-41-4	Ethylbenzene	7.8	12.5	25	ug/Kg	76	122	20
SW8260D	98-82-8	Isopropylbenzene (Cumene)	7.8	12.5	25	ug/Kg	68	134	20
SW8260D	1634-04-4	Methyl-t-butyl ether	31	50	100	ug/Kg	73	125	20
SW8260D	91-20-3	Naphthalene	7.8	12.5	25	ug/Kg	62	129	20
SW8260D	104-51-8	n-Butylbenzene	7.8	12.5	25	ug/Kg	70	128	20
SW8260D	95-47-6	o-Xylene	7.8	12.5	25	ug/Kg	77	123	20
SW8260D	P & M -Xylene	P & M -Xylene	15	25	50	ug/Kg	77	124	20
SW8260D	135-98-8	sec-Butylbenzene	7.8	12.5	25	ug/Kg	73	126	20
SW8260D	98-06-6	tert-Butylbenzene	7.8	12.5	25	ug/Kg	73	125	20
SW8260D	108-88-3	Toluene	7.8	12.5	25	ug/Kg	77	121	20
SW8260D	2037-26-5	Toluene-d8 (surr)				ug/Kg	85	116	
SW8260D	1330-20-7	Xylenes (total)	22.8	37.5	75	ug/Kg	78	124	20

8260 BTEX (W)

MATRI Water (Surface, Eff.,

ACODE: VM.BTX...1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	17060-07-0	1,2-Dichloroethane-D4 (surr)				ug/L	81	118	
SW8260D	460-00-4	4-Bromofluorobenzene (surr)				ug/L	85	114	
SW8260D	71-43-2	Benzene	0.12	0.2	0.4	ug/L	79	120	20
SW8260D	100-41-4	Ethylbenzene	0.31	0.5	1	ug/L	79	121	20
SW8260D	95-47-6	o-Xylene	0.31	0.5	1	ug/L	78	122	20
SW8260D	P & M -Xylene	P & M -Xylene	0.62	1	2	ug/L	80	121	20
SW8260D	108-88-3	Toluene	0.31	0.5	1	ug/L	80	121	20
SW8260D	2037-26-5	Toluene-d8 (surr)				ug/L	89	112	
SW8260D	1330-20-7	Xylenes (total)	1	1.5	3	ug/L	79	121	20

8260 BTEX (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.BTXFX.2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	17060-07-0	1,2-Dichloroethane-D4 (surr)				ug/Kg	71	136	
SW8260D	460-00-4	4-Bromofluorobenzene (surr)				ug/Kg	55	151	
SW8260D	71-43-2	Benzene	3.9	6.25	12.5	ug/Kg	77	121	20
SW8260D	100-41-4	Ethylbenzene	7.8	12.5	25	ug/Kg	76	122	20
SW8260D	95-47-6	o-Xylene	7.8	12.5	25	ug/Kg	77	123	20
SW8260D	P & M -Xylene	P & M -Xylene	15	25	50	ug/Kg	77	124	20
SW8260D	108-88-3	Toluene	7.8	12.5	25	ug/Kg	77	121	20
SW8260D	2037-26-5	Toluene-d8 (surr)				ug/Kg	85	116	

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8260 BTEX (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.BTXFX.2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	1330-20-7	Xylenes (total)	22.8	37.5	75	ug/Kg	78	124	20

8260-SIM EDB+ DBCP+ 123TCP(W)

MATRI Water (Surface, Eff.,

ACODE: VM.SIMEDT1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D-SIM	96-18-4	1,2,3-Trichloropropane	0.0025	0.005	0.01	ug/L	73	122	20
SW8260D-SIM	96-12-8	1,2-Dibromo-3-chloropropane	0.0025	0.005	0.01	ug/L	62	128	20
SW8260D-SIM	106-93-4	1,2-Dibromoethane	0.00125	0.0025	0.005	ug/L	77	121	20
SW8260D-SIM	460-00-4	4-Bromofluorobenzene (surr)				ug/L	85	114	20
SW8260D-SIM	2037-26-5	Toluene-d8 (surr)				ug/L	89	112	20

8260-SIM EDB+ DBCP+ 123TCP(S)

MATRI Soil/Solid (dry weight)

ACODE: VM.SIMEDT2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D-SIM	96-18-4	1,2,3-Trichloropropane	0.0625	0.125	0.25	ug/Kg	73	125	20
SW8260D-SIM	96-12-8	1,2-Dibromo-3-chloropropane	0.0625	0.125	0.25	ug/Kg	61	132	20
SW8260D-SIM	106-93-4	1,2-Dibromoethane	0.031	0.0625	0.125	ug/Kg	78	122	20
SW8260D-SIM	460-00-4	4-Bromofluorobenzene (surr)				ug/Kg	55	151	
SW8260D-SIM	2037-26-5	Toluene-d8 (surr)				ug/Kg	85	116	

8260 VOC (W)

MATRI Water (Surface, Eff.,

ACODE: VMA8260..1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	630-20-6	1,1,1,2-Tetrachloroethane	0.15	0.25	0.5	ug/L	78	124	20
SW8260D	71-55-6	1,1,1-Trichloroethane	0.31	0.5	1	ug/L	74	131	20
SW8260D	79-34-5	1,1,2,2-Tetrachloroethane	0.15	0.25	0.5	ug/L	71	121	20
SW8260D	79-00-5	1,1,2-Trichloroethane	0.12	0.2	0.4	ug/L	80	119	20
SW8260D	75-34-3	1,1-Dichloroethane	0.31	0.5	1	ug/L	77	125	20
SW8260D	75-35-4	1,1-Dichloroethene	0.31	0.5	1	ug/L	71	131	20
SW8260D	563-58-6	1,1-Dichloropropene	0.31	0.5	1	ug/L	79	125	20
SW8260D	87-61-6	1,2,3-Trichlorobenzene	0.31	0.5	1	ug/L	69	129	20
SW8260D	96-18-4	1,2,3-Trichloropropane	0.31	0.5	1	ug/L	73	122	20
SW8260D	120-82-1	1,2,4-Trichlorobenzene	0.31	0.5	1	ug/L	69	130	20
SW8260D	95-63-6	1,2,4-Trimethylbenzene	0.31	0.5	1	ug/L	79	124	20
SW8260D	96-12-8	1,2-Dibromo-3-chloropropane	3.1	5	10	ug/L	62	128	20
SW8260D	106-93-4	1,2-Dibromoethane	0.018	0.0375	0.075	ug/L	77	121	20
SW8260D	95-50-1	1,2-Dichlorobenzene	0.31	0.5	1	ug/L	80	119	20
SW8260D	107-06-2	1,2-Dichloroethane	0.15	0.25	0.5	ug/L	73	128	20

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8260 VOC (W)

MATRI Water (Surface, Eff.,

ACODE: VMA8260..1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	17060-07-0	1,2-Dichloroethane-D4 (surr)				ug/L	81	118	
SW8260D	78-87-5	1,2-Dichloropropane	0.31	0.5	1	ug/L	78	122	20
SW8260D	108-67-8	1,3,5-Trimethylbenzene	0.31	0.5	1	ug/L	75	124	20
SW8260D	541-73-1	1,3-Dichlorobenzene	0.31	0.5	1	ug/L	80	119	20
SW8260D	142-28-9	1,3-Dichloropropane	0.15	0.25	0.5	ug/L	80	119	20
SW8260D	106-46-7	1,4-Dichlorobenzene	0.15	0.25	0.5	ug/L	79	118	20
SW8260D	594-20-7	2,2-Dichloropropane	0.31	0.5	1	ug/L	60	139	20
SW8260D	78-93-3	2-Butanone (MEK)	3.1	5	10	ug/L	56	143	20
SW8260D	95-49-8	2-Chlorotoluene	0.31	0.5	1	ug/L	79	122	20
SW8260D	591-78-6	2-Hexanone	3.1	5	10	ug/L	57	139	20
SW8260D	460-00-4	4-Bromofluorobenzene (surr)				ug/L	85	114	
SW8260D	106-43-4	4-Chlorotoluene	0.31	0.5	1	ug/L	78	122	20
SW8260D	99-87-6	4-Isopropyltoluene	0.31	0.5	1	ug/L	77	127	20
SW8260D	108-10-1	4-Methyl-2-pentanone (MIBK)	3.1	5	10	ug/L	67	130	20
SW8260D	71-43-2	Benzene	0.12	0.2	0.4	ug/L	79	120	20
SW8260D	108-86-1	Bromobenzene	0.31	0.5	1	ug/L	80	120	20
SW8260D	74-97-5	Bromochloromethane	0.31	0.5	1	ug/L	78	123	20
SW8260D	75-27-4	Bromodichloromethane	0.15	0.25	0.5	ug/L	79	125	20
SW8260D	75-25-2	Bromoform	0.31	0.5	1	ug/L	66	130	20
SW8260D	74-83-9	Bromomethane	2	2.5	5	ug/L	53	141	20
SW8260D	75-15-0	Carbon disulfide	3.1	5	10	ug/L	64	133	20
SW8260D	56-23-5	Carbon tetrachloride	0.31	0.5	1	ug/L	72	136	20
SW8260D	108-90-7	Chlorobenzene	0.15	0.25	0.5	ug/L	82	118	20
SW8260D	75-00-3	Chloroethane	0.31	0.5	1	ug/L	60	138	20
SW8260D	67-66-3	Chloroform	0.31	0.5	1	ug/L	79	124	20
SW8260D	74-87-3	Chloromethane	0.31	0.5	1	ug/L	50	139	20
SW8260D	156-59-2	cis-1,2-Dichloroethene	0.31	0.5	1	ug/L	78	123	20
SW8260D	10061-01-5	cis-1,3-Dichloropropene	0.15	0.25	0.5	ug/L	75	124	20
SW8260D	124-48-1	Dibromochloromethane	0.15	0.25	0.5	ug/L	74	126	20
SW8260D	74-95-3	Dibromomethane	0.31	0.5	1	ug/L	79	123	20
SW8260D	75-71-8	Dichlorodifluoromethane	0.31	0.5	1	ug/L	32	152	20
SW8260D	100-41-4	Ethylbenzene	0.31	0.5	1	ug/L	79	121	20
SW8260D	76-13-1	Freon-113	3.1	5	10	ug/L	70	136	20
SW8260D	87-68-3	Hexachlorobutadiene	0.31	0.5	1	ug/L	66	134	20
SW8260D	98-82-8	Isopropylbenzene (Cumene)	0.31	0.5	1	ug/L	72	131	20
SW8260D	75-09-2	Methylene chloride	3.1	5	10	ug/L	74	124	20
SW8260D	1634-04-4	Methyl-t-butyl ether	3.1	5	10	ug/L	71	124	20
SW8260D	91-20-3	Naphthalene	0.31	0.5	1	ug/L	61	128	20
SW8260D	104-51-8	n-Butylbenzene	0.31	0.5	1	ug/L	75	128	20
SW8260D	103-65-1	n-Propylbenzene	0.31	0.5	1	ug/L	76	126	20
SW8260D	95-47-6	o-Xylene	0.31	0.5	1	ug/L	78	122	20
SW8260D	P & M -Xylene	P & M -Xylene	0.62	1	2	ug/L	80	121	20
SW8260D	135-98-8	sec-Butylbenzene	0.31	0.5	1	ug/L	77	126	20

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8260 VOC (W)

MATRI Water (Surface, Eff.,

ACODE: VMA8260..1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8260D	100-42-5	Styrene	0.31	0.5	1	ug/L	78	123	20
SW8260D	98-06-6	tert-Butylbenzene	0.31	0.5	1	ug/L	78	124	20
SW8260D	127-18-4	Tetrachloroethene	0.31	0.5	1	ug/L	74	129	20
SW8260D	108-88-3	Toluene	0.31	0.5	1	ug/L	80	121	20
SW8260D	2037-26-5	Toluene-d8 (surr)				ug/L	89	112	
SW8260D	156-60-5	trans-1,2-Dichloroethene	0.31	0.5	1	ug/L	75	124	20
SW8260D	10061-02-6	trans-1,3-Dichloropropene	0.31	0.5	1	ug/L	73	127	20
SW8260D	79-01-6	Trichloroethene	0.31	0.5	1	ug/L	79	123	20
SW8260D	75-69-4	Trichlorofluoromethane	0.31	0.5	1	ug/L	65	141	20
SW8260D	108-05-4	Vinyl acetate	3.1	5	10	ug/L	54	146	20
SW8260D	75-01-4	Vinyl chloride	0.05	0.075	0.15	ug/L	58	137	20
SW8260D	1330-20-7	Xylenes (total)	1	1.5	3	ug/L	79	121	20

AK102/103 DRO/RRO (S)

MATRI Soil/Solid (dry weight)

ACODE: XF.102/3.2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
AK102/103	5d Androstane	5a Androstane (surr)				mg/Kg	60	120	
AK102/103	DRO	Diesel Range Organics	6.2	10	20	mg/Kg	75	125	20
AK102/103	d-Triacontane	n-Triacontane-d62 (surr)				mg/Kg	60	120	
AK102/103	RRO	Residual Range Organics	43	50	100	mg/Kg	60	120	20

AK102/103 250-mL DRO/RRO SP(W)

MATRI Water (Surface, Eff.,

ACODE: XF.1023LS1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
AK102/103 LV	5d Androstane	5a Androstane (surr)				mg/L	60	120	
AK102/103 LV	DRO	Diesel Range Organics	0.18	0.3	0.6	mg/L	75	125	20
AK102/103 LV	d-Triacontane	n-Triacontane-d62 (surr)				mg/L	60	120	
AK102/103 LV	RRO	Residual Range Organics	0.15	0.25	0.5	mg/L	60	120	20

8082 PCBs (W)

MATRI Water (Surface, Eff.,

ACODE: XG.8082..1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8082A	12674-11-2	Aroclor-1016	0.031	0.05	0.1	ug/L	46	129	30
SW8082A	11104-28-2	Aroclor-1221	0.31	0.5	1	ug/L	70	130	30
SW8082A	11141-16-5	Aroclor-1232	0.031	0.05	0.1	ug/L	70	130	30
SW8082A	53469-21-9	Aroclor-1242	0.031	0.05	0.1	ug/L	70	130	30
SW8082A	12672-29-6	Aroclor-1248	0.031	0.05	0.1	ug/L	70	130	30
SW8082A	11097-69-1	Aroclor-1254	0.031	0.05	0.1	ug/L	34	127	30

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8082 PCBs (W)

MATRI Water (Surface, Eff.,

ACODE: XG.8082..1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8082A	11096-82-5	Aroclor-1260	0.031	0.05	0.1	ug/L	45	134	30
SW8082A	Deca.(PCB)	Decachlorobiphenyl (surr)				mg/L	40	135	

8082 PCBs (S)

MATRI Soil/Solid (dry weight)

ACODE: XG.8082..2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8082A	12674-11-2	Aroclor-1016	12.5	25	50	ug/Kg	47	134	30
SW8082A	11104-28-2	Aroclor-1221	25	50	100	ug/Kg	70	130	
SW8082A	11141-16-5	Aroclor-1232	12.5	25	50	ug/Kg	70	130	
SW8082A	53469-21-9	Aroclor-1242	12.5	25	50	ug/Kg	70	130	
SW8082A	12672-29-6	Aroclor-1248	12.5	25	50	ug/Kg	70	130	
SW8082A	11097-69-1	Aroclor-1254	12.5	25	50	ug/Kg	67	135	
SW8082A	11096-82-5	Aroclor-1260	12.5	25	50	ug/Kg	53	140	30
SW8082A	Deca.(PCB)	Decachlorobiphenyl (surr)				mg/Kg	60	125	

625 SVOCs (W)

MATRI Water (Surface, Eff.,

ACODE: XM.625CL.1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
EPA 625	120-82-1	1,2,4-Trichlorobenzene	0.0031	0.005	0.01	mg/L	29	116	20
EPA 625	95-50-1	1,2-Dichlorobenzene	0.0031	0.005	0.01	mg/L	32	111	20
EPA 625	541-73-1	1,3-Dichlorobenzene	0.0031	0.005	0.01	mg/L	28	110	20
EPA 625	106-46-7	1,4-Dichlorobenzene	0.0031	0.005	0.01	mg/L	29	112	20
EPA 625	118-79-6	2,4,6-Tribromophenol (surr)				mg/L	43	140	
EPA 625	88-06-2	2,4,6-Trichlorophenol	0.0031	0.005	0.01	mg/L	50	125	20
EPA 625	120-83-2	2,4-Dichlorophenol	0.0031	0.005	0.01	mg/L	47	121	20
EPA 625	105-67-9	2,4-Dimethylphenol	0.0031	0.005	0.01	mg/L	31	124	20
EPA 625	51-28-5	2,4-Dinitrophenol	0.03	0.05	0.1	mg/L	23	143	20
EPA 625	121-14-2	2,4-Dinitrotoluene	0.0031	0.005	0.01	mg/L	57	128	20
EPA 625	606-20-2	2,6-Dinitrotoluene	0.0031	0.005	0.01	mg/L	57	124	20
EPA 625	91-58-7	2-Chloronaphthalene	0.0031	0.005	0.01	mg/L	40	116	20
EPA 625	95-57-8	2-Chlorophenol	0.0031	0.005	0.01	mg/L	38	117	20
EPA 625	321-60-8	2-Fluorobiphenyl (surr)				mg/L	44	119	
EPA 625	367-12-4	2-Fluorophenol (surr)				mg/L	19	119	
EPA 625	534-52-1	2-Methyl-4,6-dinitrophenol	0.03	0.05	0.1	mg/L	44	137	20
EPA 625	88-75-5	2-Nitrophenol	0.0031	0.005	0.01	mg/L	47	123	20
EPA 625	91-94-1	3,3-Dichlorobenzidine	0.0031	0.005	0.01	mg/L	27	129	20
EPA 625	101-55-3	4-Bromophenyl-phenylether	0.0031	0.005	0.01	mg/L	55	124	20
EPA 625	59-50-7	4-Chloro-3-methylphenol	0.0031	0.005	0.01	mg/L	52	119	20
EPA 625	7005-72-3	4-Chlorophenyl-phenylether	0.0031	0.005	0.01	mg/L	53	121	20
EPA 625	100-02-7	4-Nitrophenol	0.015	0.025	0.05	mg/L	28	87	20

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625 SVOCs (W)

MATRI Water (Surface, Eff.,

ACODE: XM.625CL.1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
EPA 625	83-32-9	Acenaphthene	0.0031	0.005	0.01	mg/L	47	122	20
EPA 625	208-96-8	Acenaphthylene	0.0031	0.005	0.01	mg/L	41	130	20
EPA 625	120-12-7	Anthracene	0.0031	0.005	0.01	mg/L	57	123	20
EPA 625	56-55-3	Benzo(a)Anthracene	0.0031	0.005	0.01	mg/L	58	125	20
EPA 625	50-32-8	Benzo[a]pyrene	0.0031	0.005	0.01	mg/L	54	128	20
EPA 625	205-99-2	Benzo[b]Fluoranthene	0.0031	0.005	0.01	mg/L	53	131	20
EPA 625	191-24-2	Benzo[g,h,i]perylene	0.0031	0.005	0.01	mg/L	50	134	20
EPA 625	207-08-9	Benzo[k]fluoranthene	0.0031	0.005	0.01	mg/L	57	129	20
EPA 625	108-60-1	Bis(2chloro1methylethyl)Ether	0.0031	0.005	0.01	mg/L	37	130	20
EPA 625	111-91-1	Bis(2-Chloroethoxy)methane	0.0031	0.005	0.01	mg/L	48	120	20
EPA 625	111-44-4	Bis(2-Chloroethyl)ether	0.0031	0.005	0.01	mg/L	43	118	20
EPA 625	117-81-7	bis(2-Ethylhexyl)phthalate	0.0031	0.005	0.01	mg/L	55	135	20
EPA 625	85-68-7	Butylbenzylphthalate	0.0031	0.005	0.01	mg/L	53	134	20
EPA 625	218-01-9	Chrysene	0.0031	0.005	0.01	mg/L	59	123	20
EPA 625	53-70-3	Dibenzo[a,h]anthracene	0.0031	0.005	0.01	mg/L	51	134	20
EPA 625	84-66-2	Diethylphthalate	0.0031	0.005	0.01	mg/L	56	125	20
EPA 625	131-11-3	Dimethylphthalate	0.0031	0.005	0.01	mg/L	45	127	20
EPA 625	84-74-2	Di-n-butylphthalate	0.0031	0.005	0.01	mg/L	59	127	20
EPA 625	117-84-0	di-n-Octylphthalate	0.0031	0.005	0.01	mg/L	51	140	20
EPA 625	206-44-0	Fluoranthene	0.0031	0.005	0.01	mg/L	57	128	20
EPA 625	86-73-7	Fluorene	0.0031	0.005	0.01	mg/L	52	124	20
EPA 625	118-74-1	Hexachlorobenzene	0.0031	0.005	0.01	mg/L	53	125	20
EPA 625	87-68-3	Hexachlorobutadiene	0.0031	0.005	0.01	mg/L	22	124	20
EPA 625	77-47-4	Hexachlorocyclopentadiene	0.0094	0.015	0.03	mg/L	10	93	20
EPA 625	67-72-1	Hexachloroethane	0.0031	0.005	0.01	mg/L	21	115	20
EPA 625	193-39-5	Indeno[1,2,3-c,d] pyrene	0.0031	0.005	0.01	mg/L	52	134	20
EPA 625	78-59-1	Isophorone	0.0031	0.005	0.01	mg/L	42	124	20
EPA 625	91-20-3	Naphthalene	0.0031	0.005	0.01	mg/L	40	121	20
EPA 625	98-95-3	Nitrobenzene	0.0031	0.005	0.01	mg/L	45	121	20
EPA 625	4165-60-0	Nitrobenzene-d5 (surr)				mg/L	44	120	
EPA 625	62-75-9	N-Nitrosodimethylamine	0.0031	0.005	0.01	mg/L	26	70	20
EPA 625	621-64-7	N-Nitroso-di-n-propylamine	0.0031	0.005	0.01	mg/L	49	119	20
EPA 625	86-30-6	N-Nitrosodiphenylamine	0.0031	0.005	0.01	mg/L	51	123	20
EPA 625	87-86-5	Pentachlorophenol	0.015	0.025	0.05	mg/L	35	138	20
EPA 625	85-01-8	Phenanthrene	0.0031	0.005	0.01	mg/L	59	120	20
EPA 625	108-95-2	Phenol	0.0031	0.005	0.01	mg/L	24	67	20
EPA 625	13127-88-3	Phenol-d6 (surr)				mg/L	10	115	
EPA 625	129-00-0	Pyrene	0.0031	0.005	0.01	mg/L	57	126	20
EPA 625	1718-51-0	Terphenyl-d14 (surr)				mg/L	50	134	

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

SGS North America Inc.
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8270 SVOC (S)

MATRI Soil/Solid (dry weight)

ACODE: XM.8270..2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8270D	120-82-1	1,2,4-Trichlorobenzene	0.078	0.125	0.25	mg/Kg	34	118	20
SW8270D	95-50-1	1,2-Dichlorobenzene	0.078	0.125	0.25	mg/Kg	33	117	20
SW8270D	541-73-1	1,3-Dichlorobenzene	0.078	0.125	0.25	mg/Kg	30	115	20
SW8270D	106-46-7	1,4-Dichlorobenzene	0.078	0.125	0.25	mg/Kg	31	115	20
SW8270D	90-13-1	1-Chloronaphthalene	0.078	0.125	0.25	mg/Kg	48	115	20
SW8270D	90-12-0	1-Methylnaphthalene	0.078	0.125	0.25	mg/Kg	40	119	20
SW8270D	95-95-4	2,4,5-Trichlorophenol	0.078	0.125	0.25	mg/Kg	41	124	20
SW8270D	118-79-6	2,4,6-Tribromophenol (surr)				mg/Kg	35	125	
SW8270D	88-06-2	2,4,6-Trichlorophenol	0.078	0.125	0.25	mg/Kg	39	126	20
SW8270D	120-83-2	2,4-Dichlorophenol	0.078	0.125	0.25	mg/Kg	40	122	20
SW8270D	105-67-9	2,4-Dimethylphenol	0.078	0.125	0.25	mg/Kg	30	127	20
SW8270D	51-28-5	2,4-Dinitrophenol	0.94	1.5	3	mg/Kg	62	113	20
SW8270D	121-14-2	2,4-Dinitrotoluene	0.078	0.125	0.25	mg/Kg	48	126	20
SW8270D	87-65-0	2,6-Dichlorophenol	0.078	0.125	0.25	mg/Kg	41	117	20
SW8270D	606-20-2	2,6-Dinitrotoluene	0.078	0.125	0.25	mg/Kg	46	124	20
SW8270D	91-58-7	2-Chloronaphthalene	0.078	0.125	0.25	mg/Kg	41	114	20
SW8270D	95-57-8	2-Chlorophenol	0.078	0.125	0.25	mg/Kg	34	121	20
SW8270D	321-60-8	2-Fluorobiphenyl (surr)				mg/Kg	44	115	
SW8270D	367-12-4	2-Fluorophenol (surr)				mg/Kg	35	115	
SW8270D	534-52-1	2-Methyl-4,6-dinitrophenol	0.62	1	2	mg/Kg	29	132	20
SW8270D	91-57-6	2-Methylnaphthalene	0.078	0.125	0.25	mg/Kg	38	122	20
SW8270D	95-48-7	2-Methylphenol (o-Cresol)	0.078	0.125	0.25	mg/Kg	32	122	20
SW8270D	88-74-4	2-Nitroaniline	0.078	0.125	0.25	mg/Kg	44	127	20
SW8270D	88-75-5	2-Nitrophenol	0.078	0.125	0.25	mg/Kg	36	123	20
SW8270D	3&4-Methylphen.	3&4-Methylphenol (p&m-Cresol)	0.31	0.5	1	mg/Kg	34	119	20
SW8270D	91-94-1	3,3-Dichlorobenzidine	0.15	0.25	0.5	mg/Kg	22	121	20
SW8270D	99-09-2	3-Nitroaniline	0.15	0.25	0.5	mg/Kg	33	119	20
SW8270D	101-55-3	4-Bromophenyl-phenylether	0.078	0.125	0.25	mg/Kg	46	124	20
SW8270D	59-50-7	4-Chloro-3-methylphenol	0.078	0.125	0.25	mg/Kg	45	122	20
SW8270D	106-47-8	4-Chloroaniline	0.31	0.5	1	mg/Kg	17	106	20
SW8270D	7005-72-3	4-Chlorophenyl-phenylether	0.078	0.125	0.25	mg/Kg	45	121	20
SW8270D	100-01-6	4-Nitroaniline	0.94	1.5	3	mg/Kg	77	120	20
SW8270D	100-02-7	4-Nitrophenol	0.62	1	2	mg/Kg	30	132	20
SW8270D	83-32-9	Acenaphthene	0.078	0.125	0.25	mg/Kg	40	123	20
SW8270D	208-96-8	Acenaphthylene	0.078	0.125	0.25	mg/Kg	32	132	20
SW8270D	62-53-3	Aniline	0.62	1	2	mg/Kg	24	89	20
SW8270D	120-12-7	Anthracene	0.078	0.125	0.25	mg/Kg	47	123	20
SW8270D	103-33-3	Azobenzene	0.078	0.125	0.25	mg/Kg	39	125	20
SW8270D	56-55-3	Benzo(a)Anthracene	0.078	0.125	0.25	mg/Kg	49	126	20
SW8270D	50-32-8	Benzo[a]pyrene	0.078	0.125	0.25	mg/Kg	45	129	20
SW8270D	205-99-2	Benzo[b]Fluoranthene	0.078	0.125	0.25	mg/Kg	45	132	20
SW8270D	191-24-2	Benzo[g,h,i]perylene	0.078	0.125	0.25	mg/Kg	43	134	20
SW8270D	207-08-9	Benzo[k]fluoranthene	0.078	0.125	0.25	mg/Kg	47	132	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

SGS North America Inc.
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8270 SVOC (S)

MATRI Soil/Solid (dry weight)

ACODE: XM.8270..2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8270D	65-85-0	Benzoic acid	0.47	0.75	1.5	mg/Kg	53	124	20
SW8270D	100-51-6	Benzyl alcohol	0.078	0.125	0.25	mg/Kg	29	122	20
SW8270D	108-60-1	Bis(2chloro1methylethyl)Ether	0.078	0.125	0.25	mg/Kg	33	131	20
SW8270D	111-91-1	Bis(2-Chloroethoxy)methane	0.078	0.125	0.25	mg/Kg	36	121	20
SW8270D	111-44-4	Bis(2-Chloroethyl)ether	0.078	0.125	0.25	mg/Kg	31	120	20
SW8270D	117-81-7	bis(2-Ethylhexyl)phthalate	0.078	0.125	0.25	mg/Kg	51	133	20
SW8270D	85-68-7	Butylbenzylphthalate	0.078	0.125	0.25	mg/Kg	48	132	20
SW8270D	86-74-8	Carbazole	0.078	0.125	0.25	mg/Kg	50	123	20
SW8270D	218-01-9	Chrysene	0.078	0.125	0.25	mg/Kg	50	124	20
SW8270D	53-70-3	Dibenzo[a,h]anthracene	0.078	0.125	0.25	mg/Kg	45	134	20
SW8270D	132-64-9	Dibenzofuran	0.078	0.125	0.25	mg/Kg	44	120	20
SW8270D	84-66-2	Diethylphthalate	0.078	0.125	0.25	mg/Kg	50	124	20
SW8270D	131-11-3	Dimethylphthalate	0.078	0.125	0.25	mg/Kg	48	124	20
SW8270D	84-74-2	Di-n-butylphthalate	0.078	0.125	0.25	mg/Kg	51	128	20
SW8270D	117-84-0	di-n-Octylphthalate	0.15	0.25	0.5	mg/Kg	45	140	20
SW8270D	206-44-0	Fluoranthene	0.078	0.125	0.25	mg/Kg	50	127	20
SW8270D	86-73-7	Fluorene	0.078	0.125	0.25	mg/Kg	43	125	20
SW8270D	118-74-1	Hexachlorobenzene	0.078	0.125	0.25	mg/Kg	45	122	20
SW8270D	87-68-3	Hexachlorobutadiene	0.078	0.125	0.25	mg/Kg	32	123	20
SW8270D	77-47-4	Hexachlorocyclopentadiene	0.2	0.35	0.7	mg/Kg	34	74	20
SW8270D	67-72-1	Hexachloroethane	0.078	0.125	0.25	mg/Kg	28	117	20
SW8270D	193-39-5	Indeno[1,2,3-c,d] pyrene	0.078	0.125	0.25	mg/Kg	45	133	20
SW8270D	78-59-1	Isophorone	0.078	0.125	0.25	mg/Kg	30	122	20
SW8270D	91-20-3	Naphthalene	0.078	0.125	0.25	mg/Kg	35	123	20
SW8270D	98-95-3	Nitrobenzene	0.078	0.125	0.25	mg/Kg	34	122	20
SW8270D	4165-60-0	Nitrobenzene-d5 (surr)				mg/Kg	37	122	
SW8270D	62-75-9	N-Nitrosodimethylamine	0.078	0.125	0.25	mg/Kg	23	120	20
SW8270D	621-64-7	N-Nitroso-di-n-propylamine	0.078	0.125	0.25	mg/Kg	36	120	20
SW8270D	86-30-6	N-Nitrosodiphenylamine	0.078	0.125	0.25	mg/Kg	38	127	20
SW8270D	87-86-5	Pentachlorophenol	0.62	1	2	mg/Kg	25	133	20
SW8270D	85-01-8	Phenanthrene	0.078	0.125	0.25	mg/Kg	50	121	20
SW8270D	108-95-2	Phenol	0.078	0.125	0.25	mg/Kg	34	121	20
SW8270D	13127-88-3	Phenol-d6 (surr)				mg/Kg	33	122	
SW8270D	129-00-0	Pyrene	0.078	0.125	0.25	mg/Kg	47	127	20
SW8270D	1718-51-0	Terphenyl-d14 (surr)				mg/Kg	54	127	

8270 SVOC (W)

MATRI Water (Surface, Eff.,

ACODE: XM.8270CL1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8270D	120-82-1	1,2,4-Trichlorobenzene	0.0031	0.005	0.01	mg/L	29	116	20
SW8270D	95-50-1	1,2-Dichlorobenzene	0.0031	0.005	0.01	mg/L	32	111	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

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8270 SVOC (W)

MATRI Water (Surface, Eff.,

ACODE: XM.8270CL1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8270D	541-73-1	1,3-Dichlorobenzene	0.0031	0.005	0.01	mg/L	28	110	20
SW8270D	106-46-7	1,4-Dichlorobenzene	0.0031	0.005	0.01	mg/L	29	112	20
SW8270D	90-13-1	1-Chloronaphthalene	0.0031	0.005	0.01	mg/L	58	111	20
SW8270D	90-12-0	1-Methylnaphthalene	0.0031	0.005	0.01	mg/L	41	119	20
SW8270D	95-95-4	2,4,5-Trichlorophenol	0.0031	0.005	0.01	mg/L	53	123	20
SW8270D	118-79-6	2,4,6-Tribromophenol (surr)				mg/L	43	140	
SW8270D	88-06-2	2,4,6-Trichlorophenol	0.0031	0.005	0.01	mg/L	50	125	20
SW8270D	120-83-2	2,4-Dichlorophenol	0.0031	0.005	0.01	mg/L	47	121	20
SW8270D	105-67-9	2,4-Dimethylphenol	0.0031	0.005	0.01	mg/L	31	124	20
SW8270D	51-28-5	2,4-Dinitrophenol	0.015	0.05	0.1	mg/L	23	143	20
SW8270D	121-14-2	2,4-Dinitrotoluene	0.0031	0.005	0.01	mg/L	57	128	20
SW8270D	87-65-0	2,6-Dichlorophenol	0.0031	0.005	0.01	mg/L	50	118	20
SW8270D	606-20-2	2,6-Dinitrotoluene	0.0031	0.005	0.01	mg/L	57	124	20
SW8270D	91-58-7	2-Chloronaphthalene	0.0031	0.005	0.01	mg/L	40	116	20
SW8270D	95-57-8	2-Chlorophenol	0.0031	0.005	0.01	mg/L	38	117	20
SW8270D	321-60-8	2-Fluorobiphenyl (surr)				mg/L	44	119	
SW8270D	367-12-4	2-Fluorophenol (surr)				mg/L	19	119	
SW8270D	534-52-1	2-Methyl-4,6-dinitrophenol	0.015	0.05	0.1	mg/L	44	137	20
SW8270D	91-57-6	2-Methylnaphthalene	0.0031	0.005	0.01	mg/L	40	121	20
SW8270D	95-48-7	2-Methylphenol (o-Cresol)	0.0031	0.005	0.01	mg/L	30	117	20
SW8270D	88-74-4	2-Nitroaniline	0.0031	0.005	0.01	mg/L	55	117	20
SW8270D	88-75-5	2-Nitrophenol	0.0031	0.005	0.01	mg/L	47	123	20
SW8270D	3&4-Methylphen.	3&4-Methylphenol (p&m-Cresol)	0.0062	0.01	0.02	mg/L	29	110	20
SW8270D	91-94-1	3,3-Dichlorobenzidine	0.0031	0.005	0.01	mg/L	27	129	20
SW8270D	99-09-2	3-Nitroaniline	0.0031	0.005	0.01	mg/L	41	128	20
SW8270D	101-55-3	4-Bromophenyl-phenylether	0.0031	0.005	0.01	mg/L	55	124	20
SW8270D	59-50-7	4-Chloro-3-methylphenol	0.0031	0.005	0.01	mg/L	52	119	20
SW8270D	106-47-8	4-Chloroaniline	0.0031	0.005	0.01	mg/L	33	117	20
SW8270D	7005-72-3	4-Chlorophenyl-phenylether	0.0031	0.005	0.01	mg/L	53	121	20
SW8270D	100-01-6	4-Nitroaniline	0.0031	0.005	0.01	mg/L	55	105	20
SW8270D	100-02-7	4-Nitrophenol	0.015	0.025	0.05	mg/L	28	87	20
SW8270D	83-32-9	Acenaphthene	0.0031	0.005	0.01	mg/L	47	122	20
SW8270D	208-96-8	Acenaphthylene	0.0031	0.005	0.01	mg/L	41	130	20
SW8270D	62-53-3	Aniline	0.015	0.025	0.05	mg/L	10	87	20
SW8270D	120-12-7	Anthracene	0.0031	0.005	0.01	mg/L	57	123	20
SW8270D	103-33-3	Azobenzene	0.0031	0.005	0.01	mg/L	61	116	20
SW8270D	56-55-3	Benzo(a)Anthracene	0.0031	0.005	0.01	mg/L	58	125	20
SW8270D	50-32-8	Benzo[a]pyrene	0.0031	0.005	0.01	mg/L	54	128	20
SW8270D	205-99-2	Benzo[b]Fluoranthene	0.0031	0.005	0.01	mg/L	53	131	20
SW8270D	191-24-2	Benzo[g,h,i]perylene	0.0031	0.005	0.01	mg/L	50	134	20
SW8270D	207-08-9	Benzo[k]fluoranthene	0.0031	0.005	0.01	mg/L	57	129	20
SW8270D	65-85-0	Benzoic acid	0.025	0.025	0.05	mg/L	21	107	20
SW8270D	100-51-6	Benzyl alcohol	0.0031	0.005	0.01	mg/L	31	112	20

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8270 SVOC (W)

MATRI Water (Surface, Eff.,

ACODE: XM.8270CL1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
SW8270D	108-60-1	Bis(2chloro1methylethyl)Ether	0.0031	0.005	0.01	mg/L	37	130	20
SW8270D	111-91-1	Bis(2-Chloroethoxy)methane	0.0031	0.005	0.01	mg/L	48	120	20
SW8270D	111-44-4	Bis(2-Chloroethyl)ether	0.0031	0.005	0.01	mg/L	43	118	20
SW8270D	117-81-7	bis(2-Ethylhexyl)phthalate	0.0031	0.005	0.01	mg/L	55	135	20
SW8270D	85-68-7	Butylbenzylphthalate	0.0031	0.005	0.01	mg/L	53	134	20
SW8270D	86-74-8	Carbazole	0.0031	0.005	0.01	mg/L	60	122	20
SW8270D	218-01-9	Chrysene	0.0031	0.005	0.01	mg/L	59	123	20
SW8270D	53-70-3	Dibenzo[a,h]anthracene	0.0031	0.005	0.01	mg/L	51	134	20
SW8270D	132-64-9	Dibenzofuran	0.0015	0.0025	0.005	mg/L	53	118	20
SW8270D	84-66-2	Diethylphthalate	0.0031	0.005	0.01	mg/L	56	125	20
SW8270D	131-11-3	Dimethylphthalate	0.0031	0.005	0.01	mg/L	45	127	20
SW8270D	84-74-2	Di-n-butylphthalate	0.0031	0.005	0.01	mg/L	59	127	20
SW8270D	117-84-0	di-n-Octylphthalate	0.0031	0.005	0.01	mg/L	51	140	20
SW8270D	206-44-0	Fluoranthene	0.0031	0.005	0.01	mg/L	57	128	20
SW8270D	86-73-7	Fluorene	0.0031	0.005	0.01	mg/L	52	124	20
SW8270D	118-74-1	Hexachlorobenzene	0.0031	0.005	0.01	mg/L	53	125	20
SW8270D	87-68-3	Hexachlorobutadiene	0.0031	0.005	0.01	mg/L	22	124	20
SW8270D	77-47-4	Hexachlorocyclopentadiene	0.0094	0.015	0.03	mg/L	10	93	20
SW8270D	67-72-1	Hexachloroethane	0.0031	0.005	0.01	mg/L	21	115	20
SW8270D	193-39-5	Indeno[1,2,3-c,d] pyrene	0.0031	0.005	0.01	mg/L	52	134	20
SW8270D	78-59-1	Isophorone	0.0031	0.005	0.01	mg/L	42	124	20
SW8270D	91-20-3	Naphthalene	0.0031	0.005	0.01	mg/L	40	121	20
SW8270D	98-95-3	Nitrobenzene	0.0031	0.005	0.01	mg/L	45	121	20
SW8270D	4165-60-0	Nitrobenzene-d5 (surr)				mg/L	44	120	
SW8270D	62-75-9	N-Nitrosodimethylamine	0.0031	0.005	0.01	mg/L	26	70	20
SW8270D	621-64-7	N-Nitroso-di-n-propylamine	0.0031	0.005	0.01	mg/L	49	119	20
SW8270D	86-30-6	N-Nitrosodiphenylamine	0.0031	0.005	0.01	mg/L	51	123	20
SW8270D	87-86-5	Pentachlorophenol	0.015	0.025	0.05	mg/L	35	138	20
SW8270D	85-01-8	Phenanthrene	0.0031	0.005	0.01	mg/L	59	120	20
SW8270D	108-95-2	Phenol	0.0031	0.005	0.01	mg/L	24	67	20
SW8270D	13127-88-3	Phenol-d6 (surr)				mg/L	10	115	
SW8270D	129-00-0	Pyrene	0.0031	0.005	0.01	mg/L	57	126	20
SW8270D	1718-51-0	Terphenyl-d14 (surr)				mg/L	50	134	

8270-SIM 250-mL PAH (W)

MATRI Water (Surface, Eff.,

ACODE: XM.PAHLV.1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
8270D SIM LV	90-12-0	1-Methylnaphthalene	0.015	0.025	0.05	ug/L	41	115	20
8270D SIM LV	91-57-6	2-Methylnaphthalene	0.015	0.025	0.05	ug/L	39	114	20
8270D SIM LV	7297-45-2	2-Methylnaphthalene-d10 (surr)				ug/L	47	106	
8270D SIM LV	83-32-9	Acenaphthene	0.015	0.025	0.05	ug/L	48	114	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

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8270-SIM 250-mL PAH (W)

MATRI Water (Surface, Eff.,

ACODE: XM.PAHLV.1

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
8270D SIM LV	208-96-8	Acenaphthylene	0.015	0.025	0.05	ug/L	35	121	20
8270D SIM LV	120-12-7	Anthracene	0.015	0.025	0.05	ug/L	53	119	20
8270D SIM LV	56-55-3	Benzo(a)Anthracene	0.015	0.025	0.05	ug/L	59	120	20
8270D SIM LV	50-32-8	Benzo[a]pyrene	0.0062	0.01	0.02	ug/L	53	120	20
8270D SIM LV	205-99-2	Benzo[b]Fluoranthene	0.015	0.025	0.05	ug/L	53	126	20
8270D SIM LV	191-24-2	Benzo[g,h,i]perylene	0.015	0.025	0.05	ug/L	44	128	20
8270D SIM LV	207-08-9	Benzo[k]fluoranthene	0.015	0.025	0.05	ug/L	54	125	20
8270D SIM LV	218-01-9	Chrysene	0.015	0.025	0.05	ug/L	57	120	20
8270D SIM LV	53-70-3	Dibenzo[a,h]anthracene	0.0062	0.01	0.02	ug/L	44	131	20
8270D SIM LV	206-44-0	Fluoranthene	0.015	0.025	0.05	ug/L	58	120	20
8270D SIM LV	93951-69-0	Fluoranthene-d10 (surr)				ug/L	24	116	
8270D SIM LV	86-73-7	Fluorene	0.015	0.025	0.05	ug/L	50	118	20
8270D SIM LV	193-39-5	Indeno[1,2,3-c,d] pyrene	0.015	0.025	0.05	ug/L	48	130	20
8270D SIM LV	91-20-3	Naphthalene	0.031	0.05	0.1	ug/L	43	114	20
8270D SIM LV	85-01-8	Phenanthrene	0.015	0.025	0.05	ug/L	53	115	20
8270D SIM LV	129-00-0	Pyrene	0.015	0.025	0.05	ug/L	53	121	20

8270-SIM PAH (S)

MATRI Soil/Solid (dry weight)

ACODE: XM.SIMS..2

Method	CAS #	Analyte	DL	LOD	LOQ	Unit	Recovery Limits		RPD Limit
8270D SIM (PAH)	90-12-0	1-Methylnaphthalene	6.25	12.5	25	ug/Kg	43	111	20
8270D SIM (PAH)	91-57-6	2-Methylnaphthalene	6.25	12.5	25	ug/Kg	39	114	20
8270D SIM (PAH)	7297-45-2	2-Methylnaphthalene-d10 (surr)				ug/Kg	58	103	
8270D SIM (PAH)	83-32-9	Acenaphthene	6.25	12.5	25	ug/Kg	44	111	20
8270D SIM (PAH)	208-96-8	Acenaphthylene	6.25	12.5	25	ug/Kg	39	116	20
8270D SIM (PAH)	120-12-7	Anthracene	6.25	12.5	25	ug/Kg	50	114	20
8270D SIM (PAH)	56-55-3	Benzo(a)Anthracene	6.25	12.5	25	ug/Kg	54	122	20
8270D SIM (PAH)	50-32-8	Benzo[a]pyrene	6.25	12.5	25	ug/Kg	50	125	20
8270D SIM (PAH)	205-99-2	Benzo[b]Fluoranthene	6.25	12.5	25	ug/Kg	53	128	20
8270D SIM (PAH)	191-24-2	Benzo[g,h,i]perylene	6.25	12.5	25	ug/Kg	49	127	20
8270D SIM (PAH)	207-08-9	Benzo[k]fluoranthene	6.25	12.5	25	ug/Kg	56	123	20
8270D SIM (PAH)	218-01-9	Chrysene	6.25	12.5	25	ug/Kg	57	118	20
8270D SIM (PAH)	53-70-3	Dibenzo[a,h]anthracene	6.25	12.5	25	ug/Kg	50	129	20
8270D SIM (PAH)	206-44-0	Fluoranthene	6.25	12.5	25	ug/Kg	55	119	20
8270D SIM (PAH)	93951-69-0	Fluoranthene-d10 (surr)				ug/Kg	54	113	
8270D SIM (PAH)	86-73-7	Fluorene	6.25	12.5	25	ug/Kg	47	114	20
8270D SIM (PAH)	193-39-5	Indeno[1,2,3-c,d] pyrene	6.25	12.5	25	ug/Kg	49	130	20
8270D SIM (PAH)	91-20-3	Naphthalene	5	10	20	ug/Kg	38	111	20
8270D SIM (PAH)	85-01-8	Phenanthrene	6.25	12.5	25	ug/Kg	49	113	20
8270D SIM (PAH)	129-00-0	Pyrene	6.25	12.5	25	ug/Kg	55	117	20

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GRO/BTEX Combo, AK101/8021 (W)

MATRI Water (Surface, Eff.,

ACODE: VF_GROBTX1

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
AK101 8021B	1,4-Difluorobenzene (surr)				ug/L			77	115	
AK101 8021B	4-Bromofluorobenzene (surr)				ug/L			50	150	
AK101 8021B	Benzene	0.15	0.25	0.5	ug/L			80	120	20
AK101 8021B	Ethylbenzene	0.31	0.5	1	ug/L			75	125	20
AK101 8021B	Gasoline Range Organics	31	50	100	ug/L			60	120	20
AK101 8021B	o-Xylene	0.31	0.5	1	ug/L			80	120	20
AK101 8021B	P & M -Xylene	0.62	1	2	ug/L			75	130	20
AK101 8021B	Toluene	0.31	0.5	1	ug/L			75	120	20

GRO/BTEX Combo, AK101/8021 (S)

MATRI Soil/Solid (dry weight)

ACODE: VF_GROBTX2

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
AK101 8021B	1,4-Difluorobenzene (surr)				ug/Kg			72	119	
AK101 8021B	4-Bromofluorobenzene (surr)				ug/Kg			50	150	
AK101 8021B	Benzene	4	6.25	12.5	ug/Kg			75	125	20
AK101 8021B	Ethylbenzene	7.8	12.5	25	ug/Kg			75	125	20
AK101 8021B	Gasoline Range Organics	750	1250	2500	ug/Kg			60	120	20
AK101 8021B	o-Xylene	7.8	12.5	25	ug/Kg			75	125	20
AK101 8021B	P & M -Xylene	15	25	50	ug/Kg			80	125	20
AK101 8021B	Toluene	7.8	12.5	25	ug/Kg			70	125	20

VOC 8260 MeOH Extr. (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260FXL

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
SW8260C	1,1,1,2-Tetrachloroethane	6.2	10	20	ug/Kg			78	125	20
SW8260C	1,1,1-Trichloroethane	7.8	12.5	25	ug/Kg			73	130	20
SW8260C	1,1,2,2-Tetrachloroethane	3.9	6.25	12.5	ug/Kg			70	124	20
SW8260C	1,1,2-Trichloroethane	3.1	5	10	ug/Kg			78	121	20
SW8260C	1,1-Dichloroethane	7.8	12.5	25	ug/Kg			76	125	20
SW8260C	1,1-Dichloroethene	7.8	12.5	25	ug/Kg			70	131	20
SW8260C	1,1-Dichloropropene	7.8	12.5	25	ug/Kg			76	125	20
SW8260C	1,2,3-Trichlorobenzene	15	25	50	ug/Kg			66	130	20
SW8260C	1,2,3-Trichloropropane	7.8	12.5	25	ug/Kg			73	125	20
SW8260C	1,2,4-Trichlorobenzene	7.8	12.5	25	ug/Kg			67	129	20
SW8260C	1,2,4-Trimethylbenzene	15	25	50	ug/Kg			75	123	20
SW8260C	1,2-Dibromo-3-chloropropane	31	50	100	ug/Kg			61	132	20
SW8260C	1,2-Dibromoethane	3.1	5	10	ug/Kg			78	122	20
SW8260C	1,2-Dichlorobenzene	7.8	12.5	25	ug/Kg			78	121	20
SW8260C	1,2-Dichloroethane	3.1	5	10	ug/Kg			73	128	20
SW8260C	1,2-Dichloroethane-D4 (surr)				ug/Kg			71	136	
SW8260C	1,2-Dichloropropane	3.1	5	10	ug/Kg			76	123	20
SW8260C	1,3,5-Trimethylbenzene	7.8	12.5	25	ug/Kg			73	124	20

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VOC 8260 MeOH Extr. (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260FXL

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
SW8260C	1,3-Dichlorobenzene	7.8	12.5	25	ug/Kg			77	121	20
SW8260C	1,3-Dichloropropane	3.1	5	10	ug/Kg			77	121	20
SW8260C	1,4-Dichlorobenzene	7.8	12.5	25	ug/Kg			75	120	20
SW8260C	2,2-Dichloropropane	7.8	12.5	25	ug/Kg			67	133	20
SW8260C	2-Butanone (MEK)	78	125	250	ug/Kg			51	148	20
SW8260C	2-Chlorotoluene	7.8	12.5	25	ug/Kg			75	122	20
SW8260C	2-Hexanone	31	50	100	ug/Kg			53	145	20
SW8260C	4-Bromofluorobenzene (surr)				ug/Kg			55	151	
SW8260C	4-Chlorotoluene	7.8	12.5	25	ug/Kg			72	124	20
SW8260C	4-Isopropyltoluene	7.8	12.5	25	ug/Kg			73	127	20
SW8260C	4-Methyl-2-pentanone (MIBK)	78	125	250	ug/Kg			65	135	20
SW8260C	Benzene	3.9	6.25	12.5	ug/Kg			77	121	20
SW8260C	Bromobenzene	7.8	12.5	25	ug/Kg			78	121	20
SW8260C	Bromochloromethane	7.8	12.5	25	ug/Kg			78	125	20
SW8260C	Bromodichloromethane	7.8	12.5	25	ug/Kg			75	127	20
SW8260C	Bromoform	7.8	12.5	25	ug/Kg			67	132	20
SW8260C	Bromomethane	62	100	200	ug/Kg			53	143	20
SW8260C	Carbon disulfide	31	50	100	ug/Kg			63	132	20
SW8260C	Carbon tetrachloride	3.9	6.25	12.5	ug/Kg			70	135	20
SW8260C	Chlorobenzene	7.8	12.5	25	ug/Kg			79	120	20
SW8260C	Chloroethane	62	100	200	ug/Kg			59	139	20
SW8260C	Chloroform	7.8	12.5	25	ug/Kg			78	123	20
SW8260C	Chloromethane	7.8	12.5	25	ug/Kg			50	136	20
SW8260C	cis-1,2-Dichloroethene	7.8	12.5	25	ug/Kg			77	123	20
SW8260C	cis-1,3-Dichloropropene	3.9	6.25	12.5	ug/Kg			74	126	20
SW8260C	Dibromochloromethane	7.8	12.5	25	ug/Kg			74	126	20
SW8260C	Dibromomethane	7.8	12.5	25	ug/Kg			78	125	20
SW8260C	Dichlorodifluoromethane	15	25	50	ug/Kg			29	149	20
SW8260C	Ethylbenzene	7.8	12.5	25	ug/Kg			76	122	20
SW8260C	Freon-113	31	50	100	ug/Kg			66	136	20
SW8260C	Hexachlorobutadiene	6.2	10	20	ug/Kg			61	135	20
SW8260C	Isopropylbenzene (Cumene)	7.8	12.5	25	ug/Kg			68	134	20
SW8260C	Methylene chloride	31	50	100	ug/Kg			70	128	20
SW8260C	Methyl-t-butyl ether	31	50	100	ug/Kg			73	125	20
SW8260C	Naphthalene	7.8	12.5	25	ug/Kg			62	129	20
SW8260C	n-Butylbenzene	7.8	12.5	25	ug/Kg			70	128	20
SW8260C	n-Propylbenzene	7.8	12.5	25	ug/Kg			73	125	20
SW8260C	o-Xylene	7.8	12.5	25	ug/Kg			77	123	20
SW8260C	P & M -Xylene	15	25	50	ug/Kg			77	124	20
SW8260C	sec-Butylbenzene	7.8	12.5	25	ug/Kg			73	126	20
SW8260C	Styrene	7.8	12.5	25	ug/Kg			76	124	20
SW8260C	tert-Butylbenzene	7.8	12.5	25	ug/Kg			73	125	20
SW8260C	Tetrachloroethene	3.9	6.25	12.5	ug/Kg			73	128	20
SW8260C	Toluene	7.8	12.5	25	ug/Kg			77	121	20

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VOC 8260 MeOH Extr. (S)

MATRI Soil/Solid (dry weight)

ACODE: VM.8260FXL

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
SW8260C	Toluene-d8 (surr)				ug/Kg			85	116	
SW8260C	trans-1,2-Dichloroethene	7.8	12.5	25	ug/Kg			74	125	20
SW8260C	trans-1,3-Dichloropropene	3.9	6.25	12.5	ug/Kg			71	130	20
SW8260C	Trichloroethene	3.1	5	10	ug/Kg			77	123	20
SW8260C	Trichlorofluoromethane	15	25	50	ug/Kg			62	140	20
SW8260C	Vinyl acetate	31	50	100	ug/Kg			50	151	20
SW8260C	Vinyl chloride	3.1	5	10	ug/Kg			56	135	20
SW8260C	Xylenes (total)	22.8	37.5	75	ug/Kg			78	124	20

VOC, 8260 (W) FULL

MATRI Water (Surface, Eff.,

ACODE: VMA8260..1

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
SW8260C	1,1,1,2-Tetrachloroethane	0.15	0.25	0.5	ug/L			78	124	20
SW8260C	1,1,1-Trichloroethane	0.31	0.5	1	ug/L			74	131	20
SW8260C	1,1,2,2-Tetrachloroethane	0.15	0.25	0.5	ug/L			71	121	20
SW8260C	1,1,2-Trichloroethane	0.12	0.2	0.4	ug/L			80	119	20
SW8260C	1,1-Dichloroethane	0.31	0.5	1	ug/L			77	125	20
SW8260C	1,1-Dichloroethene	0.31	0.5	1	ug/L			71	131	20
SW8260C	1,1-Dichloropropene	0.31	0.5	1	ug/L			79	125	20
SW8260C	1,2,3-Trichlorobenzene	0.31	0.5	1	ug/L			69	129	20
SW8260C	1,2,3-Trichloropropane	0.31	0.5	1	ug/L			73	122	20
SW8260C	1,2,4-Trichlorobenzene	0.31	0.5	1	ug/L			69	130	20
SW8260C	1,2,4-Trimethylbenzene	0.31	0.5	1	ug/L			79	124	20
SW8260C	1,2-Dibromo-3-chloropropane	3.1	5	10	ug/L			62	128	20
SW8260C	1,2-Dibromoethane	0.31	0.5	1	ug/L			77	121	20
SW8260C	1,2-Dichlorobenzene	0.31	0.5	1	ug/L			80	119	20
SW8260C	1,2-Dichloroethane	0.15	0.25	0.5	ug/L			73	128	20
SW8260C	1,2-Dichloroethane-D4 (surr)				ug/L			81	118	
SW8260C	1,2-Dichloropropane	0.31	0.5	1	ug/L			78	122	20
SW8260C	1,3,5-Trimethylbenzene	0.31	0.5	1	ug/L			75	124	20
SW8260C	1,3-Dichlorobenzene	0.31	0.5	1	ug/L			80	119	20
SW8260C	1,3-Dichloropropane	0.15	0.25	0.5	ug/L			80	119	20
SW8260C	1,4-Dichlorobenzene	0.15	0.25	0.5	ug/L			79	118	20
SW8260C	2,2-Dichloropropane	0.31	0.5	1	ug/L			60	139	20
SW8260C	2-Butanone (MEK)	3.1	5	10	ug/L			56	143	20
SW8260C	2-Chlorotoluene	0.31	0.5	1	ug/L			79	122	20
SW8260C	2-Hexanone	3.1	5	10	ug/L			57	139	20
SW8260C	4-Bromofluorobenzene (surr)				ug/L			85	114	
SW8260C	4-Chlorotoluene	0.31	0.5	1	ug/L			78	122	20
SW8260C	4-Isopropyltoluene	0.31	0.5	1	ug/L			77	127	20
SW8260C	4-Methyl-2-pentanone (MIBK)	3.1	5	10	ug/L			67	130	20
SW8260C	Benzene	0.12	0.2	0.4	ug/L			79	120	20
SW8260C	Bromobenzene	0.31	0.5	1	ug/L			80	120	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

SGS North America Inc.
200 W. Potter Drive, Anchorage, AK
phone (907) 562-2343, fax (907) 561-5301

VOC, 8260 (W) FULL

MATRI Water (Surface, Eff.,

ACODE: VMA8260..1

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
SW8260C	Bromochloromethane	0.31	0.5	1	ug/L			78	123	20
SW8260C	Bromodichloromethane	0.15	0.25	0.5	ug/L			79	125	20
SW8260C	Bromoform	0.31	0.5	1	ug/L			66	130	20
SW8260C	Bromomethane	1.5	2.5	5	ug/L			53	141	20
SW8260C	Carbon disulfide	3.1	5	10	ug/L			64	133	20
SW8260C	Carbon tetrachloride	0.31	0.5	1	ug/L			72	136	20
SW8260C	Chlorobenzene	0.15	0.25	0.5	ug/L			82	118	20
SW8260C	Chloroethane	0.31	0.5	1	ug/L			60	138	20
SW8260C	Chloroform	0.31	0.5	1	ug/L			79	124	20
SW8260C	Chloromethane	0.31	0.5	1	ug/L			50	139	20
SW8260C	cis-1,2-Dichloroethene	0.31	0.5	1	ug/L			78	123	20
SW8260C	cis-1,3-Dichloropropene	0.15	0.25	0.5	ug/L			75	124	20
SW8260C	Dibromochloromethane	0.15	0.25	0.5	ug/L			74	126	20
SW8260C	Dibromomethane	0.31	0.5	1	ug/L			79	123	20
SW8260C	Dichlorodifluoromethane	0.31	0.5	1	ug/L			32	152	20
SW8260C	Ethylbenzene	0.31	0.5	1	ug/L			79	121	20
SW8260C	Freon-113	3.1	5	10	ug/L			70	136	20
SW8260C	Hexachlorobutadiene	0.31	0.5	1	ug/L			66	134	20
SW8260C	Isopropylbenzene (Cumene)	0.31	0.5	1	ug/L			72	131	20
SW8260C	Methylene chloride	1	2.5	5	ug/L			74	124	20
SW8260C	Methyl-t-butyl ether	3.1	5	10	ug/L			71	124	20
SW8260C	Naphthalene	0.31	0.5	1	ug/L			61	128	20
SW8260C	n-Butylbenzene	0.31	0.5	1	ug/L			75	128	20
SW8260C	n-Propylbenzene	0.31	0.5	1	ug/L			76	126	20
SW8260C	o-Xylene	0.31	0.5	1	ug/L			78	122	20
SW8260C	P & M -Xylene	0.62	1	2	ug/L			80	121	20
SW8260C	sec-Butylbenzene	0.31	0.5	1	ug/L			77	126	20
SW8260C	Styrene	0.31	0.5	1	ug/L			78	123	20
SW8260C	tert-Butylbenzene	0.31	0.5	1	ug/L			78	124	20
SW8260C	Tetrachloroethene	0.31	0.5	1	ug/L			74	129	20
SW8260C	Toluene	0.31	0.5	1	ug/L			80	121	20
SW8260C	Toluene-d8 (surr)				ug/L			89	112	
SW8260C	trans-1,2-Dichloroethene	0.31	0.5	1	ug/L			75	124	20
SW8260C	trans-1,3-Dichloropropene	0.31	0.5	1	ug/L			73	127	20
SW8260C	Trichloroethene	0.31	0.5	1	ug/L			79	123	20
SW8260C	Trichlorofluoromethane	0.31	0.5	1	ug/L			65	141	20
SW8260C	Vinyl acetate	3.1	5	10	ug/L			54	146	20
SW8260C	Vinyl chloride	0.05	0.075	0.15	ug/L			58	137	20
SW8260C	Xylenes (total)	1	1.5	3	ug/L			79	121	20

DRO/RRO by AK102/AK103 (S)

MATRI Soil/Solid (dry weight)

ACODE: XF.102/3.2

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

SGS North America Inc.
200 W. Potter Drive, Anchorage, AK
phone (907) 562-2343, fax (907) 561-5301

DRO/RRO by AK102/AK103 (S)

MATRI Soil/Solid (dry weight)

ACODE: XF.102/3.2

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
AK102/103	5a Androstane (surr)				mg/Kg			60	120	
AK102/103	Diesel Range Organics	6.2	10	20	mg/Kg			75	125	20
AK102/103	n-Triacontane-d62 (surr)				mg/Kg			60	120	
AK102/103	Residual Range Organics	6.2	10	20	mg/Kg			60	120	20

DRO/RRO by AK102/3 Low Vol (W)

MATRI Water (Surface, Eff.,

ACODE: XFC1023LV1

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
AK102/103 LV	5a Androstane (surr)				mg/L			60	120	
AK102/103 LV	Diesel Range Organics	0.18	0.3	0.6	mg/L			75	125	20
AK102/103 LV	n-Triacontane-d62 (surr)				mg/L			60	120	
AK102/103 LV	Residual Range Organics	0.15	0.25	0.5	mg/L			60	120	20

8270 PAH SIM 18 LV (W)

MATRI Water (Surface, Eff.,

ACODE: XM.PAHLV.1

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
8270D SIM LV	1-Methylnaphthalene	0.015	0.025	0.05	ug/L			41	115	20
8270D SIM LV	2-Fluorobiphenyl (surr)				ug/L			53	106	
8270D SIM LV	2-Methylnaphthalene	0.015	0.025	0.05	ug/L			39	114	20
8270D SIM LV	Acenaphthene	0.015	0.025	0.05	ug/L			48	114	20
8270D SIM LV	Acenaphthylene	0.015	0.025	0.05	ug/L			35	121	20
8270D SIM LV	Anthracene	0.015	0.025	0.05	ug/L			53	119	20
8270D SIM LV	Benzo(a)Anthracene	0.015	0.025	0.05	ug/L			59	120	20
8270D SIM LV	Benzo[a]pyrene	0.0062	0.01	0.02	ug/L			53	120	20
8270D SIM LV	Benzo[b]Fluoranthene	0.015	0.025	0.05	ug/L			53	126	20
8270D SIM LV	Benzo[g,h,i]perylene	0.015	0.025	0.05	ug/L			44	128	20
8270D SIM LV	Benzo[k]fluoranthene	0.015	0.025	0.05	ug/L			54	125	20
8270D SIM LV	Chrysene	0.015	0.025	0.05	ug/L			57	120	20
8270D SIM LV	Dibenzo[a,h]anthracene	0.0062	0.01	0.02	ug/L			44	131	20
8270D SIM LV	Fluoranthene	0.015	0.025	0.05	ug/L			58	120	20
8270D SIM LV	Fluorene	0.015	0.025	0.05	ug/L			50	118	20
8270D SIM LV	Indeno[1,2,3-c,d] pyrene	0.015	0.025	0.05	ug/L			48	130	20
8270D SIM LV	Naphthalene	0.031	0.05	0.1	ug/L			43	114	20
8270D SIM LV	Phenanthrene	0.015	0.025	0.05	ug/L			53	115	20
8270D SIM LV	Pyrene	0.015	0.025	0.05	ug/L			53	121	20
8270D SIM LV	Terphenyl-d14 (surr)				ug/L			58	132	

8270 PAH SIM 18 (S)

MATRI Soil/Solid (dry weight)

ACODE: XM.SIMS..2

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
8270D SIM (PAH)	1-Methylnaphthalene	1.5	2.5	5	ug/Kg			43	111	20

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

SGS North America Inc.
200 W. Potter Drive, Anchorage, AK
phone (907) 562-2343, fax (907) 561-5301

8270 PAH SIM 18 (S)

ACODE: XM.SIMS..2

MATRI Soil/Solid (dry weight)

Method	Analyte	DL	LOD	LOQ		Regulated Low	Regulated High	Recovery Limits		RPD Limit
8270D SIM (PAH)	2-Fluorobiphenyl (surr)				ug/Kg			46	115	
8270D SIM (PAH)	2-Methylnaphthalene	1.5	2.5	5	ug/Kg			39	114	20
8270D SIM (PAH)	Acenaphthene	1.5	2.5	5	ug/Kg			44	111	20
8270D SIM (PAH)	Acenaphthylene	1.5	2.5	5	ug/Kg			39	116	20
8270D SIM (PAH)	Anthracene	1.5	2.5	5	ug/Kg			50	114	20
8270D SIM (PAH)	Benzo(a)Anthracene	1.5	2.5	5	ug/Kg			54	122	20
8270D SIM (PAH)	Benzo[a]pyrene	1.5	2.5	5	ug/Kg			50	125	20
8270D SIM (PAH)	Benzo[b]Fluoranthene	1.5	2.5	5	ug/Kg			53	128	20
8270D SIM (PAH)	Benzo[g,h,i]perylene	1.5	2.5	5	ug/Kg			49	127	20
8270D SIM (PAH)	Benzo[k]fluoranthene	1.5	2.5	5	ug/Kg			56	123	20
8270D SIM (PAH)	Chrysene	1.5	2.5	5	ug/Kg			57	118	20
8270D SIM (PAH)	Dibenzo[a,h]anthracene	1.5	2.5	5	ug/Kg			50	129	20
8270D SIM (PAH)	Fluoranthene	1.5	2.5	5	ug/Kg			55	119	20
8270D SIM (PAH)	Fluorene	1.5	2.5	5	ug/Kg			47	114	20
8270D SIM (PAH)	Indeno[1,2,3-c,d] pyrene	1.5	2.5	5	ug/Kg			49	130	20
8270D SIM (PAH)	Naphthalene	1.5	2.5	5	ug/Kg			38	111	20
8270D SIM (PAH)	Phenanthrene	1.5	2.5	5	ug/Kg			49	113	20
8270D SIM (PAH)	Pyrene	1.5	2.5	5	ug/Kg			55	117	20
8270D SIM (PAH)	Terphenyl-d14 (surr)				ug/Kg			58	133	

NOTE: Detection Limits and Control Limits are subject to change as per the requirements of the SGS QAP. The detection limits presented are dynamic and are subject to change based on sample mass and/or matrix interference. For non-DoD projects, results are reported to the LOQ. Projects for DoD, and other clients which request J-value results, will be reported to the DL. Please note, however, that DoD criteria stipulate that analytes below the DL are reported as less than the LOD.

Appendix E:

RSE Groundwater Sampling Form

RSE GROUNDWATER SAMPLING FORM **DATE:** _____ **WEATHER:** _____

PROJECT NAME: _____ **SITE LOCATION:** _____ **SAMPLER:** _____

PROJECT NO.: _____ **WELL NUMBER:** _____ **COMPANY:** _____

CONTACT #:

WATER COLUMN INFORMATION

A) TOTAL DEPTH OF WELL (FT): _____

B) DEPTH TO WATER FROM TOC (FT): _____

C) COLUMN OF WATER IN WELL (FT): _____
*row "A" value minus row "B" value

WELL LOCATION MAP AND SURVEY

PURGE INFORMATION

1.5-in = 0.09 GAL/FT PURGE _____
METHOD: 2-IN = 0.17 GAL/FT

D) GALLONS PER FOOT OF 2-INCH SCREEN: _____ *e.g. peristaltic or bladder pump, Bailer

E) COLUMN OF WATER IN WELL (FT): _____
*value from row "C" in previous section

F) VOLUME OF WATER IN WELL (GAL): _____
*row "D" value multiplied by row "E" value

TOTAL VOLUME REMOVED (GAL): _____

WATER OBSERVATIONS

WATER LEVEL AND FIELD PARAMETERS

INSTRUMENT: _____
*e.g. YSI 63, YSI 556, other

TIME	DTW	DRAW-DOWN (-) / RECHARGE (+)	GALLONS REMOVED	TEMP. (°C)	pH (pH Units)	CONDUCTIVITY (mS/cm)	SP. CONDUCTANCE (µS/cm)	SALINITY (ppt)	TURBIDITY (NTU)	O_2 (mg/L)	REDOX (mV)

Odor or Sheen Observed?
Notes:

SAMPLE INFORMATION (Also See Lab COC)

SAMPLE ID	DATE:	TIME	SAMPLER

SAMPLE ID: _____

FIELD DUPLICATE: _____

EQUIPMENT BLANK: _____

LAB ANALYSIS REQUESTED:

TRIP BLANK: _____

COMMENTS:

Appendix F:

ADEC Contaminated Media Transport Form

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites and Prevention Preparedness and Response Programs

Contaminated Media Transport and Treatment or Disposal Approval Form

HAZARD ID # or SPILL ID #	NAME OF CONTAMINATED SITE OR SPILL

CONTAMINATED SITE OR SPILL LOCATION – ADDRESS OR OTHER APPROPRIATE DESCRIPTION

CURRENT PHYSICAL LOCATION OF MEDIA	SOURCE OF THE CONTAMINATION (DAY TANK, FIRE TRAINING PIT, LUST, ETC.)

CONTAMINANTS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED

POST TREATMENT ANALYSIS REQUIRED *(such as GRO, DRO, RRO, VOCs, metals, PFAS, and/or Chlorinated Solvents)*

COMMENTS OR OTHER IMPORTANT INFORMATION

TREATMENT FACILITY, LANDFILL, AND/OR FINAL DESTINATION OF MEDIA	PHYSICAL ADDRESS/PHONE NUMBER
RESPONSIBLE PARTY	**ADDRESS/PHONE NUMBER**
WASTE MANAGEMENT CO. / ORGANIZER	**ADDRESS/PHONE NUMBER**

***Note, disposal of polluted soil in a landfill requires prior approval from the landfill operator and ADEC Solid Waste Program.**

Name of the Person Requesting Approval (printed) | Title/Association

Signature | Date | Phone Number

----------DEC USE ONLY----------

Based on the information provided, ADEC approves transport of the above mentioned material. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported and a post treatment analytical report, if disposed of at an approved treatment facility. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

DEC Project Manager Name (printed) | Project Manager Title

Signature | Date | Phone Number

Instructions to Complete
Contaminated Media Transport and Treatment or Disposal Approval Form

The Alaska Department of Environmental Conservation (DEC) must approve the movement or disposal of contaminated soil and water from a site in accordance with 18 Alaska Administrative Code (AAC) 75.325(i), 18 AAC 75.370(b), and 18 AAC 78.274(b). The *Contaminated Media Transport and Treatment or Disposal Approval Form* should be used to document this approval. Soil treatment facilities regulated under 18 AAC 75.365 are required by their Operations Plans to only accept contaminated soil for which an approval form has been signed by a DEC project manager.

Site information can be found on the Contaminated Site Database (www.alaska.gov/Applications/SPAR/PublicMVC/CSP/Search/) or the Spills Database (http://dec.alaska.gov/Applications/SPAR/PublicMVC/PERP/SpillSearch).

Instructions to Complete:

1. **Hazard ID or Spill ID #:** For a contaminated site, the Hazard ID can be found on the Contaminated Sites Database. For a spill, the Spill ID can be found in the subject line of letters from DEC or the Spills Database. If the waste originates from multiple sites, all Hazard IDs or Spill IDs must be listed.

2. **Name of Contaminated Site or Spill:** For a contaminated site, the official site name can be found on the Contaminated Sites Database. For a spill, the official name of the spill is found in the subject line of letters from DEC or the Spills Database.

3. **Contaminated Site or Spill Location – Address or Other Appropriate Description:** This address or description captures the origin of the contaminated media or the location of the spill. For a contaminated site, the address or other appropriate description can be found on the Contaminated Sites Database. For a spill, this can be found on the Spill Report or the Spills Database.

4. **Current Physical Location of the Media:** Provide the physical location where the contaminated media (soil, water, etc.) is currently stored. This location may be the same as location provided in the "Contaminated Site or Spill Location", or it could be a hazardous waste facility or other location/staging area agreed upon in the DEC-approved work plan.

5. **Source of Contamination (Day Tank, Fire Training Pit, LUST, etc.):** List all sources which contributed to the contamination in the media being transported. Sources can include previous releases that have comingled. If the source is unknown, state "Unknown".

6. **Contaminants of Concern (CoCs):** List all contaminants detected above the most stringent Method 2 Tables B1 and B2 soil cleanup levels in 18 AAC 75.341(c) and (d), the Table C groundwater cleanup levels in 18 AAC 75.345, and other applicable action levels (e.g., TCLP results). Attach the laboratory data package for the contaminated media that is being disposed of and, if applicable, a data summary table or narrative to this form. Data gathered during site characterization activities may be sufficient to determine the CoCs. There are situations in which generator knowledge of the contaminant source may be accepted by a treatment or disposal facility in lieu of analytical sample results, such as, diesel-impacted media from a heating oil tank. If you are using generator knowledge in lieu of analytical sample results, include a statement which documents this knowledge in the Comments section.

7. **Estimated Volume:** Include the total volume of contaminated media to be transported; for instance, "Nine 55-gallon drums" or ""25 cubic yards of soil."

8. **Date(s) Generated:** Provide the date the media was generated (e.g., excavated, pumped out of the ground, etc.). If the media was generated over multiple days, list the range of dates.

9. **Post Treatment Analysis Required (such as GRO, DRO, RRO, VOCs, PAHs, metals, PFAS, chlorinated solvents, etc.):** Provide the list of all contaminants that exceed the most stringent Method 2 cleanup levels. For DEC-approved soil treatment facilities in Alaska, specific post treatment analyses will be determined by the facility based upon the contaminants and requirements of their Operations Plan. If the media are being transported to a landfill or permitted liquid waste facility without off-site treatment, include "Not Applicable".

10. **Comments or Other Important Information:** Provide any other information which needs to be conveyed.
    a. If generator knowledge of the CoCs is being used in lieu of sample analytical results, an explanation needs to be provided in this field.
    b. If the material is going to be placed in a landfill in Alaska, include a statement that the landfill has agreed to accept the material and provide the contact information for the landfill point of contact. If the material is going to be placed in a Class 2 or 3 landfill, attach the DEC Solid Waste Program's approval letter to this form.
    c. If the media is going to an intermediate location or facility prior to its final destination, describe the complete transportation route with intermediate locations in this field.

11. **Treatment Facility, Landfill, and/or Final Destination of Media:** Include the name of the facility, landfill, or the final destination of the media. A list of DEC-approved Alaskan soil treatment facilities is available at www.dec.alaska.gov/spar/csp/offsite-remediation/. If multiple treatment facilities will be used, use separate forms to document what media will go to which facility. For material that will go to a waste transfer facility prior to disposal at another facility, the final destination should be listed.
    a. **Physical Address/Phone Number:** Provide the physical location and telephone number of the facility, landfill, or the final destination of the media.

12. **Responsible Party:** Provide the name of the party responsible for the contaminated site or spill.
    a. **Address/Phone Number:** Provide the mailing address and telephone number of the responsible party.

13. **Waste Management Co./Organizer:** Provide the name of company or person shipping and/or organizing the shipment of the media.
    a. **Address/Phone Number:** Provide the mailing address and telephone number of the waste management company or organizer.

Submit this completed form along with all necessary attachments to the assigned DEC project manager for approval, or contact the Contaminated Sites Program at (907) 269-7558 or the Prevention, Preparedness and Response Program at (907) 269-7557.

Appendix G:

Preliminary Conceptual Site Model

RESTORATION
Science & Engineering, LLC

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: Commercial Property 5801 Silverado Way

File Number: ADEC File No. 2100.38.531 Hazard ID 25892

Completed by: David Nyman, PE QEP

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☒ USTs
- ☒ ASTs
- ☒ Dispensers/fuel loading racks
- ☒ Drums
- ☒ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☐ Other:

Release Mechanisms *(check potential release mechanisms at the site)*

- ☒ Spills
- ☒ Leaks
- ☒ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☐ Sediment
- ☒ Groundwater
- ☐ Surface water
- ☐ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

Suspected low concentrations of hydrocarbon contaminated soil remains at the site at depths greater than 2 feet bgs.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

No soil contaminants listed in Appendix B are present in site soil.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the ground-water is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Incomplete

Comments:

Shallow groundwater in this area is not currently used as a source of drinking water due to availability of Municipality of Anchorage AWWU. Groundwater is as shallow as 1.5 ft bgs and is not suitable for development as a potable water supply now or in the future. Area groundwater wells are installed to 60 ft or deeper and a dry silt was identified at the bottom of the ADOT ROW excavation. The nearest

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☒

If both boxes are checked, label this pathway complete: Incomplete

Comments:

The contaminants are not expected to migrate to surface water in the future. Surface water ponds and wetlands are not expected to be used as a water source.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☐

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☒

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☐

If all of the boxes are checked, label this pathway complete: Incomplete

Comments:

Site is a fenced industrial property surrounded by similar properties and ADOT road rights of way rendering it unsuitable for harvest of wild and farmed foods.

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Volatile contaminant Benzene is present on ADOT ROW property, however only at levels slightly above ADEC Method Two Migration to Groundwater (MTG) soil cleanup levels. Organic rich soil is expected to adsorb residual organic contaminants tightly.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☐

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Incomplete

Comments:

The project site is greater than 40 feet from any occupied building.

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Potential exposure to groundwater is possible during construction activities, however the contaminant levels are very low, the area is secured with fencing. Contaminants are present on ADOT ROW property, however only at levels slightly above ADEC Method Two Migration to Groundwater (MTG) soil cleanup levels.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

No completed pathway for volatile compounds from this site is possible, as the area is served by MOA AWWU water. Local shallow groundwater i (1.5 ft bgs) is not used as a drinking water source now or in the future due to its direct connection to surface water.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Inhalation of fugitive dust particles is not likely an issue. Sand blasting has previously occurred on the property and the sand has been sampled and shown to meet cleanup standards. If excessive respirable particles are observed during site inspections and require control, these will be identified in reporting.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

No direct contact with sediments is anticipated and none of the compounds listed in Appendix B were compounds of potential concern with this project.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

The compounds of potential concern (COPC) associated with this project were only slightly above ADEC Method Two migration to groundwater cleanup levels and GCLs. Shallow groundwater is not a developable drinking water resource in the due to its shallow nature. The site is served by MOA AWWU water system. Organic rich soil and corresponding low percent solid samples results in results concentrations non-comparative with ADEC mineral soil based MTG cleanup levels. Peat soil contributes an average of 165 mg/Kg DRO from naturally occurring compounds present. This results in exaggerated DRO values reported. The low percent solids in peat samples also provides exaggerated results Benzene results non-comparative to ADEC MTG cleanup levels. The high Total Organic Carbon (TOC) in peat soil as analyzed by the Cleanup level calculator results in Benzene cleanup levels elevated above those found on the ADOT property.

Print Form

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Commercial Property 5801Siverado Way, Anchorage, Alaska
ADEC File No. 2100.38.531, Hazard ID 25892

Completed By: Peter Hannon QEP & David Nyman, PE
Date Completed: May 23, 2022

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

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

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

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

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

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

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

The compounds of potential concern (COPC) associated with this project were only slightly above ADEC Method Two migration to groundwater cleanup levels. Any COPCs remaining at this site are greater than 2 feet bgs and no groundwater was encountered during project excavation to 19 feet bgs.

Revised, 10/01/2010

APPENDIX B

SOIL CONTAMINANTS EVALUATED FOR DERMAL EXPOSURE

Soil contaminants are evaluated for dermal exposure when a specific absorption factor is available (EPA, 2004c). Where specific absorption factors were not available for an organic compound and it is not considered a volatile, an absorption fraction of 0.10 is applied. It is generally accepted that volatile compounds evaporate from skin before significant absorption occurs and are addressed through the inhalation exposure pathway.

Acenaphthene	Dichlorophenol, 2,4-	Naphthalene
Acenaphthylene	Dichlorophenoxy Acetic Acid, 2,4-	Nitroglycerin
Anthracene	Dieldrin	Nitroguanidine
Arsenic, Inorganic	Diethyl Phthalate	Nitroso-di-N-propylamine, N-
Benz[a]anthracene	Dimethylphenol, 2,4-	Nitrosodiphenylamine, N-
Benzo[a]pyrene	Dimethylphthalate	Nitrotoluene, m-
Benzo[b]fluoranthene	Dinitrobenzene, 1,2-	Nitrotoluene, p-
Benzo[g,h,i]perylene	Dinitrobenzene, 1,3-	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)
Benzo[k]fluoranthene	Dinitrobenzene, 1,4-	Octyl Phthalate, di-N-
Benzoic Acid	Dinitrophenol, 2,4-	Pentachlorophenol
Benzyl Alcohol	Dinitrotoluene, 2,4-	Pentaerythritol tetranitrate (PETN)
Bis(2-ethylhexyl)phthalate	Dinitrotoluene, 2,6-	Perfluorooctane Sulfonate (PFOS)
Butyl Benzyl Phthalate	Dinitrotoluene, 2-Amino-4,6-	Perfluorooctanoic acid (PFOA)
Cadmium (Diet)	Dinitrotoluene, 4-Amino-2,6-	Phenanthrene
Chlordane	Diphenylamine	Phenol
Chlordecone (Kepone)	Endrin	Polychlorinated Biphenyls (high risk)
Chloroaniline, p-	Ethylene Glycol	Pyrene
Chloronaphthalene, Beta-	Fluoranthene	TCDD, 2,3,7,8-
Chrysene	Fluorene	Tetryl (Trinitrophenylmethylnitramine)
Cresol, m-	Hexachlorocyclohexane, Alpha-	Toxaphene
Cresol, o-	Hexachlorocyclohexane, Beta-	Trichlorophenol, 2,4,5-
Cresol, p-	Hexachlorocyclohexane, Gamma- (Lindane)	Trichlorophenol, 2,4,6-
DDD	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	Trichlorophenoxyacetic Acid, 2,4,5-
DDT	Indeno[1,2,3-cd]pyrene	Trichlorophenoxypropionic acid, -2,4,5
Dibenz[a,h]anthracene	Isophorone	Trinitrobenzene, 1,3,5-
Dibenzofuran	Methoxychlor	Trinitrotoluene, 2,4,6-
Dibutyl Phthalate	Methylnaphthalene, 1-	
Dichlorobenzidine, 3,3'-	Methylnaphthalene, 2-	

APPENDIX C

BIOACCUMULATIVE COMPOUNDS OF POTENTIAL CONCERN

Bioaccumulation factors (BAFs) and bioconcentration factors (BCFs) provide a direct indication of a chemical's ability to bioaccumulate, although they can vary widely depending on their basis (estimated or measured), the species used, and the measurement method. A BAF is the ratio of contaminants in tissues to the concentration in the surrounding environment (e.g., via food, sediment and water). A BCF is the ratio of the concentration of a chemical in an organism to its concentration in the surrounding water only.

In addition, it is common practice to use the log Kow to characterize the hydrophobicity, and thereby bioaccumulation potential, of organic compounds (EPA, 2000). The minimum criteria defining bioaccumulation potential for nonionic organic compounds is a log Kow greater than 3.5. The value of 3.5 was used as a minimum threshold based on observed relationships between the Kow of an unmetabolized chemical and its potential for biomagnification. Specifically, uptake efficiency tends to increase with increasing log Kow for values between 3 and 6 (Thomann, 1989). For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The ADEC list was developed by including organic compounds that either have a BAF or BCF equal to or greater than 1,000 from the 2015 EPA national bioaccumulation factor supplemental information table (Excel) (January 2016) for human health water quality criteria. Compounds without a BCF or BAF were retained when the log Kow generated from the ADEC cleanup level calculator was greater than 3.5. These compounds were entered into EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2016) to estimate the BCF. Compounds were included in the list when the BCF was greater than 1,000 and excluded when the BCF was less than 1000. The PBT Profiler is located at http://www.pbtprofiler.net/. Compounds with a log K_{ow} greater than 3.5 that are not found in the PBT Profiler are included in the list of bioaccumulative compounds below. Inorganic compounds are also identified as bioaccumulative if they are listed as such by EPA (2000).

Compounds from Table B-1 of 18 AAC 75.341 determined bioaccumulative based on the process above or otherwise footnoted.

Aldrin	DDT	Methoxychlor
Arsenic, Inorganic	Dibenz[a,h]anthracene	Methyl Mercury
Benz[a]anthracene	Dibutyl Phthalate	Nickel
Benzo[a]pyrene	Dieldrin	Perfluorooctane Sulfonate (PFOS)[1]
Benzo[b]fluoranthene	Dimethylphthalate	Perfluorooctanoic acid (PFOA)[2]
Benzo[g,h,i]perylene	Endrin	Phenanthrene
Benzo[k]fluoranthene	Fluoranthene	Polychlorinated Biphenyls
Butyl Benzyl Phthalate	Heptachlor	Selenium
Cadmium	Heptachlor Epoxide	Silver
Chlordane	Hexachlorobenzene	TCDD, 2,3,7,8-
Chlordecone (Kepone)	Hexachlorobutadiene	Toxaphene
Chromium(VI)	Hexachlorocyclohexane, Alpha-	Trichlorobenzene, 1,2,4-
Chrysene	Hexachlorocyclohexane, Gamma- (Lindane)	Tri-n-butyltin
Copper	Hexachloroethane	Zinc
DDD	Indeno[1,2,3-cd]pyrene	
DDE	Lead	

[1]The weight of evidence for trophic magnification was deemed sufficient to consider PFOS to be bioaccumulative by the Stockholm Convention Persistent Organic Pollutants Review Committee (OECD 2002).

[2]The weight of evidence for trophic magnification was deemed sufficient to consider PFOA to be bioaccumulative by the Stockholm Convention Persistent Organic Pollutants Review Committee (UNEP 2015).

APPENDIX D

VOLATILE COMPOUNDS OF POTENTIAL CONCERN

A chemical is identified here as sufficiently volatile and toxic for further evaluation if the Henry's Law constant is greater than 1 x 10^{-5} atm-m^3/mol or vapor pressure is greater than 1 millimeter of mercury (mm HG), and the vapor concentration of the pure component exceeds the indoor air target risk level when the subsurface vapor source is in soil or saturated vapor concentration exceeds the target indoor air risk level, when the subsurface vapor source is in groundwater (EPA, 2015).

Acenaphthene*	**Fluorene***
Acenaphthylene*	Formaldehyde
Acetone	Heptachlor
Aldrin	Heptachlor Epoxide
Anthracene*	Hexachlorobenzene
Benz[a]anthracene	Hexachlorobutadiene
Benzaldehyde*	Hexachlorocyclopentadiene
Benzene	Hexachloroethane
Bis(2-chloroethyl)ether	**Hexane, N-**
Bromobenzene	Hexanone, 2-
Bromodichloromethane	Hydrazine
Bromoform	Isopropanol
Bromomethane	Mercury (elemental)
Butadiene, 1,3-	Methanol
Butanol, N-*	Methyl Ethyl Ketone (2-Butanone)
Butylbenzene, n-*	Methyl Isobutyl Ketone (4-methyl-2-pentanone)
Butylbenzene, sec-*	Methyl tert-Butyl Ether (MTBE)
Butylbenzene, tert-*	Methylene Chloride
Carbon Disulfide	**Methylnaphthalene, 1-***
Carbon Tetrachloride	**Methylnaphthalene, 2-***
Chlordane	**Naphthalene**
Chlorobenzene	Nitrobenzene
Chloroform	Nitrosodimethylamine, N-
Chloromethane	Nitrotoluene, o-*
Chloronaphthalene, Beta-*	**Phenanthrene***
Chlorophenol, 2-*	Phosphorus, White*
Cumene	Polychlorinated Biphenyls
Cyanide (CN-)	**Propyl benzene**
Cyclohexane	**Pyrene***
DDE, p,p'-	Styrene
Dibenzofuran*	TCDD, 2,3,7,8-
Dibromochloromethane*	Tetrachloroethane, 1,1,1,2-
Dibromoethane, 1,2-	Tetrachloroethane, 1,1,2,2-
Dibromomethane (Methylene Bromide)	Tetrachloroethylene

Dichlorobenzene, 1,2-	**Toluene**
Dichlorobenzene, 1,3-	Trichloro-1,2,2-trifluoroethane, 1,1,2-
Dichlorobenzene, 1,4-	Trichlorobenzene, 1,2,3-*
Dichlorodifluoromethane	Trichlorobenzene, 1,2,4-
Dichloroethane, 1,1-	Trichloroethane, 1,1,1-
Dichloroethane, 1,2-	Trichloroethane, 1,1,2-
Dichloroethylene, 1,1-	Trichloroethylene
Dichloroethylene, 1,2-cis-*	Trichlorofluoromethane*
Dichloroethylene, 1,2-trans-*	Trichloropropane, 1,2,3-
Dichloropropane, 1,2-	**Trimethylbenzene, 1,2,4-**
Dichloropropene, 1,3-	**Trimethylbenzene, 1,3,5-***
Dioxane, 1,4-	Tri-n-butyltin*
Endosulfan*	Vinyl Acetate
Ethyl Chloride	Vinyl Chloride
Ethylbenzene	**Xylenes**

Notes:

1. Bolded chemicals should be investigated when petroleum is present. If fuel was spilled that contained additives (e.g., 1, 2-dichloroethane, ethylene dibromide, methyl *tert*-butyl ether), these chemicals should also be investigated.
2. The chemicals listed here are found in Table B1 of 18 AAC 75.341 and Table C of 18 AAC 75.345 and are volatile compounds as defined in DEC's Procedures for Calculating Cleanup Levels. If a chemical is not on this list, contact DEC to determine if a target level should be calculated.
3. At this time, DEC does not require evaluation of total petroleum ranges (GRO, DRO, or RRO) for the indoor air inhalation (vapor intrusion) pathway.
4. "*" indicates DEC has not calculated an inhalation screening level for this chemical due to a lack of toxicity information for the inhalation exposure pathways. The DEC project manager may require further evaluation of this chemical. Contact the DEC risk assessor for additional assistance.

APPENDIX E

CONTAMINANT PROPERTIES USED TO EVALUATE TRANSPORT MECHANISMS

These parameters describe chemical properties of the site contaminants. Important chemical parameters used to evaluate transport mechanisms are shown below. The values specific to each chemical determine how easily a chemical is transported by various mechanisms. The default values used by the DEC can be found in the DEC's Procedures for Calculating Cleanup Levels (September 2016).

Important Physical and Chemical Parameters Used to Evaluate Transport Mechanisms.

Purpose	Parameter	Symbol	Meaning
Does the contaminant cling to organic matter or does it move with water?	**Organic carbon partition coefficient**	**K_{oc}**	Provides a measure of the extent of chemical partitioning between organic carbon and water at equilibrium. The higher the K_{oc}, the more likely a chemical is to bind to soil or sediment than to remain in water.
	Soil/water partition coefficient	**K_d**	Provides a soil or sediment-specific measure of the extent of chemical partitioning between soil or sediment and water, unadjusted for dependence upon organic carbon. The higher the K_d, the more likely a chemical is to bind to soil or sediment than to remain in water.
	Octanol coefficient	**K_{ow}**	Provides a measure of the extent of chemical partitioning between water and octanol at equilibrium. The greater the K_{ow}, the more likely a chemical is to partition to octanol than to remain in water. Octanol is used as a surrogate for lipids (fat), and K_{ow} can be used to predict bioconcentration in aquatic organisms.
Does it dissolve in water?	**Solubility**		Is the upper limit on a chemical's dissolved concentration in water at a specified temperature? Aqueous concentrations in excess of solubility may indicate sorption onto sediments, the presence of solubilizing chemicals such as solvents, or the presence of a non-aqueous phase liquid.
Does it vaporize?	**Henry's Law Constant**	**H_1**	Provides a measure of the extent of chemical partitioning between air and water at equilibrium. The higher the Henry's Law

Purpose	Parameter	Symbol	Meaning
			constant, the more likely a chemical is to volatize than to remain in water.
Does it vaporize?	**Vapor Pressure**		Is the pressure exerted by a chemical vapor in equilibrium with its solid or liquid form at any given temperature? It is used to calculate the rate of volatilization of a pure substance from a surface or in estimating a Henry's Law constant for chemicals with low water solubility. The higher the vapor pressure, the more likely a chemical is to exist in a gaseous state.
Does it spread?	**Movement of molecules**	**Diffusivity**	Describes the movement of a molecule in a liquid or gas medium as a result of differences in concentration. It is used to calculate the dispersive component of chemical transport. The higher the diffusivity, the more likely a chemical is to move in response to concentration gradients.
Does it accumulate in living tissue?		**Bioconcentration Factor (BCF)**	Provides a measure of the extent of chemical partitioning at equilibrium between a biological medium such as fish tissue or plant tissue and an external medium such as water. The higher the BCF, the greater the accumulation in living tissue is likely to be.
How easily does it break down over time?	**Persistence**	**Media-Specific Half-Life**	Provides a relative measure of persistence of a chemical in a given medium, although actual values can vary greatly depending on site-specific conditions. The greater the half-life, the more persistent a chemical is likely to be.

Source: *Risk Assessment Guidance for Superfund, Volume 1, Part A*, Exhibit 6-4 (EPA 1989).